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Experiences of nursing home staff using the targeted interdisciplinary model for evaluation and treatment of neuropsychiatric symptoms (TIME) – a qualitative study

Bjørn Lichtwarck ^{a,b}, Janne Myhre^a, Alka R. Goyal^{a,b,c}, Anne Marie Mork Rokstad^{c,d}, Geir Selbaek^{a,b,c}, Øyvind Kirkevold^{a,c,e} and Sverre Bergh^{a,c}

^aCentre For Old Age Psychiatric Research, Innlandet Hospital Trust, Ottestad, Norway; ^bInstitute of Health and Society, Faculty of Medicine, University of Oslo, Oslo, Norway; ^cNorwegian National Advisory Unit on Ageing and Health, Vestfold Hospital Trust, Tønsberg, Norway; ^dFaculty of Health Sciences and Social Care, Molde University College, Molde, Norway; ^eDepartment of Health, Care and Nursing, Faculty of Medicine NTNU, Norwegian University of Science and Technology, Gjøvik, Norway

ABSTRACT

Background/Aims: Neuropsychiatric symptoms (NPS) in dementia pose great challenges for residents and staff in nursing homes. The Targeted Interdisciplinary Model for Evaluation and Treatment of Neuropsychiatric Symptoms (TIME) has recently in a randomized controlled trial demonstrated reductions in NPS. We explored the participating staff's experiences with the model and how it meets the challenges when dealing with the complexity of NPS.

Methods: Three to six months after the end of the intervention, we interviewed 32 of the caregivers, leaders, and physicians participating in the trial, in five focus groups. We used thematic content analysis.

Results: The analysis yielded two main themes: (1) a systematic reflection method enhanced learning at work; (2) the structure of the approach helped staff to cope with NPS in residents with dementia.

Conclusion: TIME shifts the way of learning for the staff from a traditional to a more innovative and reflection-based learning through a process of learning how to learn at work. The staff's experienced increased coping in their approach to complex problems. Our results emphasize the importance of a structured and biopsychosocial approach to NPS in clinical practice. Future research should explore models for integrating situated learning in daily routines in nursing homes.

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Neuropsychiatric symptoms; agitation; dementia; case conference; psychosocial intervention; nursing home

Background

Nursing homes are intended to serve as a home for their residents and at the same time provide them with health and social care. The average age of nursing home residents in Norway is 84 years, and residents usually have several chronic diseases that require continuous treatment (Nygaard, Naik, Ruths, & Straand, 2003; Vossius et al., 2015). About 84% of nursing home residents have dementia (Helvik, Engedal, Benth, & Selbaek, 2015). Studies have shown that up to 75% of residents with dementia have clinically significant neuropsychiatric symptoms (NPS) including agitation, aggression, anxiety, depression, psychosis, and apathy (Selbaek, Kirkevold, & Engedal, 2007). NPS are usually conceived as having multiple causes that have the possibility to interact with each other (Kales, Gitlin, & Lyketsos, 2015; Savva et al., 2009). The causes can be attributed to patient factors like the neurological changes in the brain and premorbid personality, unmet needs, and acute or chronic medical conditions. They can be attributed to the environmental factors such as over- and understimulation, noise and complex environments, and to caregiver factors such as communication issues, lack of knowledge, and mismatch between expectations and dementia severity (Kales et al., 2015). In one individual patient, it might be difficult to determine which ones are important. NPS are often regarded as unpredictable. Most symptoms are unstable and tend to fluctuate in individual residents, although

agitation and apathy seem to be rather persistent (Selbaek, Engedal, Benth, & Bergh, 2014; Wetzels, Zuidema, de Jonghe, Verhey, & Koopmans, 2010). All these characteristics make NPS qualify as complex or so-called wicked problems (Conklin, 2006). This suggests that the approach must be comprehensive and biopsychosocial, and treatment measures must be flexible and tailored to the individual resident (Engel, 1977; Kales, Gitlin, & Lyketsos, 2014).

NPS and the considerable extent of comorbidity among residents make heavy demands on the staff (Terum et al., 2017; Zwijsen et al., 2014). Both the staff's knowledge and their ability to interpret and take actions to meet the residents' needs and to cope with complex challenges will be challenged. Knowledge in this context means the staff's knowledge about the residents' life story, dementia, and neuropsychiatric symptoms as well as their physical conditions. Coping, defined as problem-focused processes or emotion-focused coping strategies, becomes crucial for the staff when approaching these challenges (Lazarus, 1991). According to Lazarus both processes of coping includes cognitive, emotional, and behavioral responses to internal or external demands. The problem-focused coping process is based on actions to resolve problems, while emotion-based, also called cognitive-based coping, involves mainly new alternative interpretations of problems. In this paper, we use coping in both these senses because both strategies are deemed appropriate

for the staff when approaching NPS in persons with dementia. One of many factors involved in coping strategies, is knowledge and learning (Lazarus, 1991). These two factors are the targets for several psychosocial interventions aiming at changing caregivers' behaviours and actions towards residents (Brasure et al., 2016; Livingston et al., 2014). In-service training, or extern courses, as well as advice from specialists and experts are often used to improve staff knowledge. This way of learning can be regarded as the reproduction of already packaged knowledge delivered by others, either as generalised knowledge or as direct advice for referred patients (Ellström, 2006; Schon, 2008). One important question attached to this view on learning is whether practitioners can translate the abstract and generalised knowledge in their own context to a multitude of everyday, and infinitely new and varying complex, situations.

Several studies show that systematic approaches to training and supervision of the staff can have beneficial effects for residents and reduce staff burden, although evidence for the effects on the residents is conflicting (Brasure et al., 2016; Livingston et al., 2014; Testad et al., 2014; Zwijsen et al., 2014). A systematic review by Reuther et al. included seven studies of case conferences performed as interventions to address NPS. Case conferences are usually, as in this review, defined as a goal-oriented, systematic method used by team members to exchange professional opinions on a particular care, health or social problem. Four studies in the analysis showed a reduction in NPS in people with dementia (Reuther et al., 2012). The review highlighted the need for methodologically well-designed intervention studies. Only a few studies have assessed in depth the experiences of the staff of interventions including case conferences or multidisciplinary meetings (Holle, Kruger, Halek, Sirsch, & Bartholomeyczik, 2015; Zwijsen et al., 2014). The disadvantage of many of these approaches is that they require a good deal of support from external experts and long-lasting training, and this requires a lot of resources (Seitz et al., 2012). Some of the methods do not embrace the whole biological, psychological, and social range of problems associated with NPS.

In summary, because of the complex nature of NPS, the different stakeholders in the nursing homes and the variety of demands on the different professionals, our overall theoretical assumptions in this study, are derived from complexity science (Cilliers, 1998; Haynes, 2015).

The targeted interdisciplinary model for evaluation and treatment of neuropsychiatric symptoms (TIME)

The Targeted Interdisciplinary Model for Evaluation and Treatment of Neuropsychiatric Symptoms (TIME) represents a biopsychosocial approach, and is a multicomponent intervention for nursing home staff and physicians. In a recent randomized controlled trial, TIME demonstrated clinically significant reductions in agitation (primary outcome) and in symptoms of delusions, depression, and disinhibition, as well as improving quality of life (secondary outcomes) (Lichtwarck et al., 2018). TIME is based on the theoretical framework of cognitive behavioral therapy (CBT) and person-centred care (Beck, 2011; Kitwood, 1997). The intervention with TIME consists of three overlapping phases: a registration and assessment phase (Table 1); a guided reflection phase, including one or more case conferences (Table 2); and an action and evaluation phase. TIME serves as a guide for the staff to create

actions and treatment measures that are customised to the patient. These three phases coincide with reviews describing the 'state of the art' for management of NPS (Kales et al., 2014, 2015). For a detailed description of TIME, we refer to the TIME manual, available in Norwegian and English versions at www.tidmodell.no (Lichtwarck, Tverå, & Røen, 2015). The intervention was developed in nursing homes by the first author, BL, and his co-workers, based on practical experience, and has been used in clinical practice since 2008.

Regarding program performance in the randomised controlled trial, the intervention nursing homes performed a case conference in 91 percent of the included patients. No nursing home performed more than one case conference for each included patient during the trial. The staff performed 80 percent or more of the components in TIME for 89 percent of the included patients (Lichtwarck et al., 2018).

From CBT we have adapted the problem solving method (Hawton & Kirk, 2002). A well-known structuring approach in CBT is the four-column technique, through which every situation or problem is analysed in detail with columns for situation (facts), thoughts (staff's interpretations), emotions (staff's emotional reactions), and behavior (treatment actions). We adapted this technique to be used in the case conferences on a shared display for every situation or problem analysed by the staff. Person-centred care is applied in all the three phases in TIME. In the first phase the resident's personal history, social relations, resources, and preferences are central when gathering information from the resident and her relatives. In the case conference, one of the main questions the staff are to reflect upon is what they think are the resident's own thoughts behind her behavior and symptoms, i.e. the resident's perspective (Rosvik, Kirkevold, Engedal, Brooker, & Kirkevold, 2011). The treatment actions performed in the last phase must be customised for the resident based on a rigorous assessment of social, psychological, and biological factors.

Aims of the study

The aim of the study was to explore the staff's experiences with the TIME model and how it meets the challenges when dealing with the complexity of NPS. The study seeks to answer the following research questions: 1) In what way does TIME serve as a method of staff learning and reflection? 2) How can the model help to develop and strengthen staff members' coping in their work with NPS in patients with dementia?

Methods

Design

A qualitative explorative design with focus group interviews was used to answer the research questions. This study was part of the TIME trial, and was conducted three to six months after the randomized controlled trial was completed (Lichtwarck et al., 2016; Lichtwarck et al., 2018). This report follows The Consolidated Criteria For Reporting Qualitative Research (COREQ) (Tong, Sainsbury, & Craig, 2007). According to the study protocol of the TIME-trial we also used these focus groups interviews to collect data about barriers and facilitators to the implementation process of TIME (Lichtwarck et al., 2016). This is also reflected in the interview guide. The results exploring the implementation of TIME will be reported in a

Table 1. Registration and assessment phase.

Checklist for the registration and assessment phase of TIME			
Activity	Target symptoms: Agree on the primary challenges for the patient using the Neuropsychiatric Inventory-Nursing Home Version (NPI-NH) to define precise target symptoms for the assessment		Responsible
	Observation of the target symptoms using a 24 h observation form	Staff	
	NPI-NH ¹ to assess other neuropsychiatric symptoms	Staff	
	CSDD ² or another scale to assess possible symptoms of depression	Staff	
	Physical assessment	Nursing home physician	
	Review of medication	Nursing home physician	
	MOBID-2 ³ or another assessment scale to assess possible pain	Staff and/or Nursing home physician	
	CDR ⁴ and/or the MMSE ⁵ to assess the dementia stage	Staff and/or Nursing home physician	
	PSMS ⁶ or another assessment scale to assess activities in daily life	Staff	
	Collection of resident life history, including preferences and resources, using an optional questionnaire	Staff interview the resident (if possible) and/or the next of kin	
Make an appointment, i.e. set the date, time and place for the case conference	Staff/TIME administrator		

Notes: ¹Neuropsychiatric Inventory Nursing Home version (NPI-NH) (Cummings, 1997); ²Cornell Scale of Depression in Dementia (CSDD) (Alexopoulos, Abrams, Young, & Shamoian, 1988; Barca, Engedal, & Selbaek, 2010), ³Mobilisation-Observation-Behavior-Intensity-Dementia Scale (MOBID-2) (Husebo, Ostelo, & Strand, 2014), ⁴Clinical dementia Rating Scale (CDR)(Hughes, Berg, Danziger, Coben, & Martin, 1982); ⁵Mini-Mental State Examination (MMSE) (Folstein, Robins, & Helzer, 1983), ⁶Physical Self-Maintenance Scale (PSMS) (Lawton & Brody, 1969)

subsequent paper reporting from a process evaluation using mixed methods, and are not included in the present presentation.

Implementation of TIME

A detailed description of the intervention phases of the TIME trial is available in the study protocol (Lichtwarck et al., 2016). The intervention with TIME in the nursing homes lasted for three months.

The staff in the intervention nursing homes were offered a two-hour lecture covering dementia and NPS, and a three-hour training including role play following the steps in the TIME manual. The leading registered nurse selected three TIME-administrators for each ward, based on their interest in professional development, their legitimacy with the rest of the staff, and not having a part-time job. The time administrators were in charge of implementing TIME, and were given three additional hours of training. One specialist registered nurse from the education and training team in the project

attended and supervised the TIME administrators' first case conference in their nursing home. For the remaining intervention period, the TIME administrators and the staff carried out the intervention independently without support.

Sample and settings

The sample consists of 32 staff members: 10 registered nurses, 12 auxiliary nurses, seven leading ward registered nurses, and three nursing home physicians (Table 3). Five focus groups were composed as follows: two staff groups with eighth and six informants consisting of staff members, registered nurses and auxiliary nurses (where two staff members together in each group came from the same nursing home); one TIME-administrator group with eight registered nurses and auxiliary nurses; one leader group with seven registered leading ward nurses and one physician group with three nursing home physicians (one participant from each nursing home in this these last three groups).

Table 2. Agenda and time-frame for the guided reflection meeting (case conference).

Agenda for guided reflection meeting (case conference) 1.5 h				
Activity	Preparation: Convene a meeting and prepare a meeting room with a blackboard or similar facilities (projector, if available). Check that a flip pad and markers are available		TIME administrators: One is the chairman for the meeting. One takes notes on the whiteboard. One writes the minutes on the 5-column sheet.	Responsible
	1. Status Report: Personal history and main points from the patient's medical record are presented.	10–15 min	Decide in advance who should prepare and present the patient's personal history and the main points from the medical record.	
	2. Create a problem list	10 min	Staff (as many as possible should attend the conference) The leading registered nurse and the nursing home physician should attend the conference, if possible.	
	3. Prioritise problems from the list			
	4. Draw a 5-column sheet on the whiteboard: facts – interpretations (thoughts)—emotions – actions – evaluation	60 min		
	5. Describe facts from the registration and assessment phase: one problem at a time			
	6. Suggest interpretations – guided discovery – discuss and reflect on them			
	7. Describe any emotions experienced by the staff – with interpretations by the staff			
	8. Suggest SMART¹ actions – based on the interpretations – decide how and when to perform an evaluation of the actions			
9. Summarise interpretations and actions – close the meeting	5–10 min	TIME-administrator (chairman)		

Notes: ¹SMART (Specific, Measurable, Actual, Realistic, Time-framed) (David, 2006)

Table 3. Background characteristics of the participants ($n = 32$) and the wards ($n = 12$).

Background characteristics	Number (%)
Age (years)	
20–29	5 (16)
30–49	14 (44)
≥ 50	13 (40)
Sex	
Female	29 (91)
Male	3 (9)
Working experience in years	
0–4	5 (16)
5–9	4 (12)
10–19	7 (22)
20–29	7 (22)
≥30	9 (28)
Profession	
Auxiliary nurse	12 (38)
Registered nurse	10 (31)
Leading ward registered nurse	7 (22)
Physician	3 (9)
Wards	
Regular ward	2 (17)
Special care unit	10 (83)
Residents per ward, Mean (SD)	21,8 (9,6)
Staff per ward on day shift, Mean (SD)	7,9 (3,3)
Staff per ward on evening shift, Mean (SD)	6,6 (2,8)
Hours per resident per week for nursing home physician, Mean (SD)	0,36(0,15)

Notes: Values are numbers and percentages in parenthesis, unless otherwise specified. SD; Standard deviation. Participants came from 11 nursing homes with one nursing home represented with two wards.

We used purposeful sampling of the participants, with homogenous groups (Malterud, 2001). Homogenous groups make it possible to discover any differences between groups, and ensure that the participants feel more comfortable. To ensure what Patton calls information-rich cases, we let the leading ward registered nurse in each nursing home appoint who of the staff would attend the focus groups (Patton, 2015). The leaders were instructed to select participants that were familiar with TIME, and whom they judged would be able to promote views in a group context, disregarding profession. Since the selection of participants were performed by the leading ward nurse, we do not have data on how many initially asked refused to participate. One of the nursing homes did not have the possibility (due to lack of time) to send two staff members to participate. For the same reason, one other nursing home could not send a leader to participate in the focus group for leaders. To minimize selection bias in selecting the nursing homes that would be represented in the groups, we selected them randomly from the pool of 17 nursing homes which had received the intervention with TIME (Krueger & Casey, 2015a). After a preliminary analysis of

the interviews from the initial five groups, we concluded that we had sufficient rich material to address the aim of the study. In this preliminary analysis, when no obvious new meanings units or new sub-themes occurred in the last analysed interview, we considered having met saturation of the data (Malterud, 2001).

Interviews

All five focus interviews took place in a meeting room in a hotel. Each group met once for a 90 min interview. The moderator was BL for three of the interviews and JM for two of the interviews, and they were both present either as moderator or facilitator for all five interviews. The third author AG participated in three interviews, and served as a co-facilitator. She posed follow-up questions towards the end of each interview. The interviews were based on a semi-structured interview guide where the informants were asked to reflect on two main themes (Kvale & Brinkmann, 2009), 1) the effects that the TIME model has on learning and 2) staff members' experience of coping in their approach to residents with dementia and neuropsychiatric symptoms (Table 4). These main questions were followed up with open-ended and exploratory questions. When other key themes emerged spontaneously during the interviews, time was allotted to elaborate these themes. At the end of each interview, the facilitator summarised the key main explicit content and key findings of the interview, and asked the participants to verify or amend the summary. The interview guide was the same for all five groups. The interviews were recorded and transcribed verbatim by the first and second author and cross-checked by listening to the recorded interviews.

Analysis

For the analysis, thematic content analysis was used. Thematic content analysis is a method with the purpose to identify, analyse, and report patterns and themes in qualitative data (Braun & Clarke, 2006; Vaismoradi, Turunen, & Bondas, 2013). The aim is to provide a systematic description of both the manifest and latent content of the data, and in the end to evolve new concepts and understanding of phenomena. Accordingly, our analysis consisted of four steps: (1) an overall impression obtained from repeated reading of the transcribed text; (2) identification of meaning units using coding and condensation of these meaning units. Coding was effected by labelling related text elements, excised from the original text, and reassembled as meaning units in a new document; (3)

Table 4. The interview guide.

Themes	Questions used in the interviews
1. Coping and learning in working with residents with dementia and NPS	What are your thoughts/views about your own knowledge in your work with residents with dementia and neuropsychiatric symptoms? Same question as above posed for attitudes, skills, and coping. Same questions as above, but now their thoughts/views concerning the rest of the staff. Has using TIME affected your own knowledge in your work with residents with dementia and neuropsychiatric symptoms? If so, in what way? Same question posed for attitudes, skills, and coping. Same questions as above: but now their thoughts/views concerning the rest of the staff.
2. Implementation and sustainability of the intervention	Which conditions are of significance to adopt a model like TIME in your ward? What promotes and what inhibits the adoption of such a model? Conditions in the ward? Conditions concerning the education and training program for the model? Conditions concerning the model itself? Which conditions are of significance to continue to use a model like TIME in your ward? Conditions in the ward? Conditions concerning the education and training program for the model?

Notes: The results from theme 2 in this interview guide will be reported in a subsequent paper from a mixed-method study of a process evaluation of the TIME intervention.

Table 5. Excerpt from the development of the theme: A systematic structured reflection method enhanced learning at work.

Sub-theme	Code	Condensed meaning unit	Meaning unit
Systematic learning in the working environment	Learning by assessing the context	The detailed analysis of challenges beginning with the patients' personal background story, raises awareness in the interaction with the patient	'So, I think people are getting more aware about their actions, how they present themselves in front of the patient. When we have analysed this in so much detail. And we always begin with: this is the patient; this is the person.' (Staff)
	The case conference gives raise to learning	The systematic method for the analysis of challenges starts, and is learned in the case conference. It is then transferred to the interaction with the patient and to other patients	'Yes, it's like the thought process is initiated, and I think you also bring this with you when you return to the patient. And it doesn't stop there, it continues. Your thoughts continue, I think' (Staff)
Shared understanding and commitment	Everyone participated	Everyone is encouraged to contribute and everyone has something to contribute – enhance loyalty	'I must say that the fact that TIME is interdisciplinary is very, very important. Because then everyone feels, and me to, that we are being listened to, even if you do not have any formal education. Everyone has some experiences, and everyone has something to contribute' (TIME-administrator) 'It is the process in which we are agreed that we're doing it this way, and then it is not imposed on them. They have participated in the case conference and learned both what is done and why – and then there is more ownership towards it' (Physician).
			(3). 'In my view, it (TIME) is both very systematic and structured, I appreciate it that much. And so, it is very comprehensive and embraces so much. We learn a lot that we can use to base our decisions on, it brings up a lot of information and suggestions' (TIME-administrator)
The significance of formal knowledge	A holistic biopsychosocial approach	A comprehensive model – systematic and structured	(3) 'I do feel confident in the way I perform my job. But at work, we have for example assistants who have no education about dementia. Especially in the summer there a lot of temporary workers hired at the nursing homes without any formal education or training for this group of patients. So, then it is difficult to apply the measures that you would like to implement' (TIME-administrator)
	Formal learning	Formal knowledge is the basis for learning at work	

abstraction of these units by grouping them into subthemes and then the subthemes into main themes; and (4) a summation of these subthemes and themes seen in the context of our research questions, existing theory or new theoretical formulations, if necessary (Braun & Clarke, 2006). Our approach to the coding process was mainly inductive and data-driven, and we therefore coded the entire data set (Braun & Clarke, 2006).

Findings

Characteristics of the participants and the wards represented in this study are presented in Table 3. Of the staff members, 91 per cent were females, 84 per cent were aged 30 years or more, and 72 per cent had a working experience of more

than 10 years. Mainly special care units (ten of twelve wards) were represented.

The analyses yielded two main themes:

1. A systematic reflection method enhanced learning at work.
2. The structure in the TIME helped the staff to cope with NPS.

These findings are elaborated in the text below. There were no significant differences in emphasis of these themes across the five focus groups. Examples of how the main themes were developed from a selection of the meaning units (quotations) through coding and subthemes are shown in Tables 5 and 6.

Table 6. Excerpt from the development of the theme: The structure in the approach was important for the staff to cope with NPS.

Codes	Condensed meaning units	Meaning units
Structure in everyday work	The approach helped create structure and security in everyday work	(3). 'I mean the TIME model works well because we have succeeded to put things in order, about how we should approach these patients. Though we all knew the measures to take, we have now a system that tells us how we should adopt these measures' (TIME-administrator)
The importance of using the 24 h observation form	The 24 h observation form structured the observation of patients, and facilitated cooperation and communication	(2). 'So, about the 24 h observation form, as many already have mentioned – when one person is responsible for filling the form, then you can discover who is at work on which days, and perhaps they managed the care situation for the patient in a better way, then you can go back and discover that Kari well managed the care situation, and she may have some experiences to share with you' (Staff)
Structure in the case conference	The fixed structure (agenda) of the case conference contributed to increased efficiency and focus	(3). 'And with us, we spent less time. Because many in the meetings, just talk about their issues. We constantly repeat ourselves. But when it is written on the blackboard, you don't have to repeat it anymore, you know, because it is written there, then I don't have to say it myself... In this way, the meeting is more constructively because the agenda is systematic – it is better focused' (TIME-administrator)

A systematic reflection method enhanced learning at work

A recurring theme in the groups was the importance of using the resident's biographical information (personal history) as a starting point for problem-solving in the case conferences and for the staff's daily interactions with the residents. The participants emphasized that working systematically with the personal history of the residents in the case conference was crucial both to understand their symptoms and to be able to tailor the treatments to the residents' needs. The fact that the residents' stories were always presented and discussed in detail at the beginning of the case conference created an awareness that the staff kept in mind during everyday interactions with the residents.

The participants pointed out that learning to divide each NPS into the concepts of facts, interpretations, emotions, and actions was a simple and structured method. Visualising this way of analysing problems using a column technique on a shared display at a whiteboard or with a display projector made the method easier to comprehend. The participants emphasized that this systematic and structured way of approaching NPS initiated a thought process that they learned by using this process repeatedly. They said they learned a simple way of analysing NPS that they could also use in other settings outside the case conferences. Additionally, they noticed that their understanding of the NPS, and their suggestions for solutions became more diverse than before.

Many of the participants expressed that they appreciated that this method of analysing NPS also includes the concept of emotions and their own reactions. This was important for the staff, because they could share these reactions with each other. They felt valued because their reactions as staff were regarded as important:

It is important that everyone can tell how they feel...It is not only for the patients, but there is a focus on us, we, who works with them (staff).

It helps to hear that also your colleagues perceive a situation as difficult and challenging, that it is not about believing that you are not clever enough. That there is free rein, and you can bring up your despair and feeling of being powerless, and share them, and find a way out together (physician).

The importance of training the entire staff in the model, and that as many as possible attended the case conferences, was highlighted. The staff felt that each of them was listened -to regardless of their profession, and that their views mattered. This was judged to be important because they thought that everyone who worked with the residents in the ward had something to contribute. This also contributed to a shared understanding of the patients and their NPS. They believed that it led to more loyalty and commitment towards the actions they agreed upon.

When asked about their formal knowledge, the overall impression both for the participants and for their staff members, was that they judged this as sufficient and good. However, this was nuanced concerning temporary staff in summer and weekends who often lacked formal education about dementia. Many participants stressed that lack of formal education including knowledge about biological, psychological, and social factors that contribute to NPS, makes it difficult to apply tailored measures for the patients. The participants

judged it important that the model embraces these factors, and that they learned to base their treatment measures on a comprehensive assessment.

The structure in the approach helped the staff to cope with NPS in residents with dementia

The participants emphasized that one of the main assets with TIME was that it gave them a structure in their work with residents with NPS. They now knew where to start, and how to work through the different phases from the assessment of the patient, to the case conference, and to the trial of the treatment measures. Previously, they often knew what kind of treatment measures were possible to use, but they often felt they lacked the 'how' to do it.

The participants described how the rigorous use of the 24 h observation form for the observation of behaviors or symptoms helped them in a simple way to structure the assessment. This gave the staff a sense of coping because they saw that this helped them to make better decisions about treatment measures in the subsequent case conference. They also used this form to obtain a more objective and continuous description of NPS, and for mutual communication in the staff group.

The most important part of the intervention with TIME, as viewed by the participants, was the case conference. This was highlighted in all the five focus groups. The structure and the concepts from CBT used in the case conference were mostly new to them. In addition to the learning aspect discussed in the previous section, they judged these conferences as an efficient way of solving complicated problems. The column technique was judged important for the structure of the meeting. The shared display using a whiteboard or a display projector made it easier to see that everyone was heard, and reduced the need to continually repeat arguments.

Discussion

Our findings show that TIME is a feasible model that can enhance learning at work, problem-solving and coping in the approach to NPS in nursing homes. The overall impression is that these coping experiences the staff refer to, are mainly based on what Lazarus labelled the problem-focused coping process (Lazarus, 1991). These findings relate to the two main factors involved in coping strategies according to Lazarus, namely knowledge and learning. Here, we discuss these findings in the light of the complex nature of NPS, and how theories from complexity science (Cilliers, 1998; Haynes, 2015) and developmental and adaptive learning could explain how and why this approach to NPS is fruitful (Ellström, 2001, 2006).

The complexity of NPS and the need for a biopsychosocial approach, was clearly expressed in our findings. The participants emphasized that TIME integrated learning about biopsychosocial factors and contextual factors such as the resident's personal history. Holle D et al. also highlighted in a similar study using case conferences for the analysis and management of NPS, the importance of considering the biographical knowledge about the residents (Holle et al., 2015). In addition to the complexity of the symptoms, there is a dual complexity because nursing homes can be regarded as complex systems mainly because they consist of different stakeholders such as professionals, leaders, patients and their relatives in constant interactions (Anderson, Issel, & McDaniel,

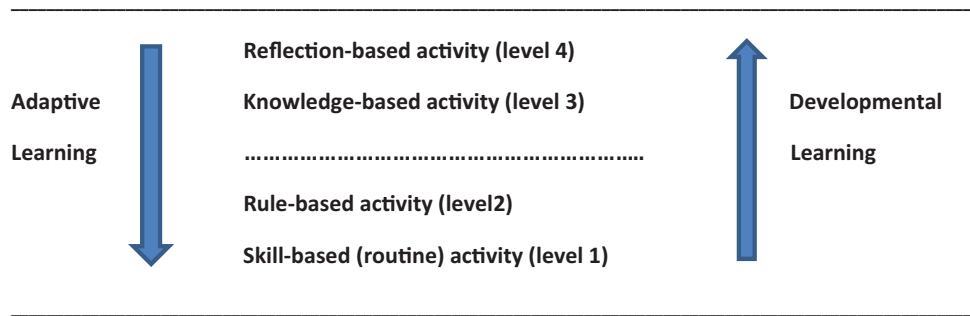


Figure 1. Typology for adaptive and developmental learning according to Ellström (Ellström, 2006).

2003; Haynes, 2015; Shiell, Hawe, & Gold, 2008). According to complexity theory, a complex system is one that is adaptive to internal and external changes, and its behavior is non-linear and dynamic, with various degrees of instability. There is a constant need for work to be done to maintain a certain order. In our context, this means that complex problems like NPS can pose great strain on the staff and the organisation in an already complex system like the nursing home. The participants highlighted that TIME both gave them a new approach for learning about NPS for the individual patient and a method for problem solving. In addition, the structure in this approach was regarded as important for their shared understanding and coping with these symptoms. In view of complexity theory, these two findings can be regarded as added attractors to the system, i.e. norms of behavior or logics of operation (Haynes, 2015; Stevens & Hassett, 2007). Attractors contribute to a more stable system, facilitate more order, and make the organisation more able to fulfil its goals. How they contribute as attractors will be discussed below.

A systematic reflection method enhanced learning at work

Formal learning or what Ellström calls adaptive learning is a necessary learning activity, but not sufficient in the approach to complex problems (Ellström, 2001). There is also a need for what he describes as developmental learning. Developmental learning is based on systematic reflection both on actions and context. These conceptions of learning are closely related to the ideas and theories of situated learning introduced by Lave and Wenger, and reflection in action by Schön (Lave & Wenger, 1991; Schon, 2008).

Ellström has provided a typology in which activity in practice takes place at four different levels involving these two main different forms of learning (Figure 1) (Ellström, 2006). These are: 1) skill-based (routine) activity; 2) rule-based activity; 3) knowledge-based activity; and 4) reflection-based activity. The daily routines in a nursing home involve activity at levels 1 and 2, but if a resident's NPS persist over a period, this will lead to a need for activity at level 3 and often at level 4. All the levels of activity specified here involve some degree of reflection, although most at level 4. Using TIME, levels 3 and 4 are given dedicated space and time in the case conferences. This is where developmental learning can be focused and developed.

There are several conditions that need to be fulfilled to allow for developmental learning at work. One condition is what Ellström calls readiness to learn or a mental model for interpreting experiences. To share this kind of knowledge,

this mental model must be explicit, not tacit (Ellström, 2001; Schon, 2008). That is, to succeed in applying this form of learning activity, the staff must first learn how to learn. They must adopt an awareness and a method of learning. The participants in our study found the principles for analysing NPS from CBT easy to adapt and to learn. They highlighted the column technique from CBT as an easy and simple way to understand and analyse NPS. They added that they also used this method outside the case conferences, in the daily interactions with the residents. It is possible that this method made a considerable contribution to their readiness to learn. The use of a shared display using a projector or a whiteboard for the analyses makes this method visible for everyone. Conklin describes the use of a shared interactive display as an essential condition to achieve a shared understanding and commitment in meetings when working with complex problems (Conklin, 2006).

The structure in TIME helped the staff to cope with NPS

The structure in TIME was regarded as a factor that created security and coping for the staff in their work. Severe NPS in patients with dementia sometimes created a sense of hopelessness and a feeling of being powerless among the staff. Leaning on a structure that is adopted in the organisation could have contributed to a sense of coping. This effect of structure at the organisation level corresponds to the same effect as when using CBT at an individual level for problem solving (Hawton & Kirk, 2002). The structure permeates the model and the way of working, and can be regarded as an attractor in an unstable, complex system both at an individual and at the organisational levels. Structure may also facilitate creativity. Developmental learning as discussed in the section above, is supposed to increase creativity in problem-solution, and is therefore also labelled creative or innovative learning (Ellström, 2006). Problem-solving in CBT favours the importance of discussing alternative and more appropriate interpretations and solutions (Hawton & Kirk, 2002). It is possible that the sense of security felt and expressed by the staff also increased their creativity. Structure and creativity might intuitively be perceived as contradictory concepts. However, evidence shows that organisations that find the balance between too much and too little structure also are more open to innovation and change (Alharbi, Ekman, Olsson, Dudas, & Carlstrom, 2012; Stacey, 1996).

To summarise, TIME seems to contribute with several attractors to the complex systems in the nursing homes (e.g. NPS, residents, different stakeholders like professionals and relatives). These attractors, here represented by structure and

a new developmental learning process, will then reduce the inherent instability in these complex systems (Haynes, 2015; Stevens & Hassett, 2007). Better coping for the staff in their approach to NPS and the reductions of NPS are benefits from the intervention with TIME that affects the whole set of complex systems.

Methodological considerations: strengths and limitations

One of the advantages of using qualitative methods alongside a randomized controlled trial is that the results from the qualitative study contribute to in-depth knowledge, making it possible to explain some of the results from the prior trial (Moore et al., 2013). We chose focus groups as our data collection method because they are suitable to explore experiences and views on health programs and interventions (Kvale & Brinkmann, 2009; Tong et al., 2007). The advantage of focus groups is that they can generate useful group dynamics. In our groups, the participants commented upon and discussed each other's contributions, and this led to information and views that might not have emerged in individual interviews. Focus groups can on occasion be dominated by participants, who determine the agenda, or some participants may withhold information to avoid friction in the group. In this manner, focus groups tend to develop consensus (Krueger & Casey, 2015b). Based on our observations, we believe that these situations did not manifest in our five groups.

Our purposeful sample consisted of leaders, auxiliary nurses, registered nurses, and physicians selected from a random sample of 11 of the 17 nursing homes. This gave us rich data on the experiences and challenges perceived by informants from all the professional groups in a non-biased selection of the nursing homes that took part in the trial. There were no substantial differences in the findings from the thematic analyses between groups. We believe that our study findings have a high degree of transferability to staff in other nursing homes dealing with NPS in residents with dementia.

The inclusion criteria for the nursing-home residents in the TIME-trial were that they had dementia and a moderate to high degree of agitation (Lichtwarck et al., 2016). This means that the staff experiences explored in this study are mainly based on their use of TIME for residents with agitation. However, the residents included in the TIME-trial also displayed other significant NPS, and the results showed significant reductions in depressive symptoms, disinhibition and delusions (secondary outcomes) (Lichtwarck et al., 2018). In the training program for the trial, TIME was introduced as a model to be used for a variety of NPS. However, since we do not have data on to which extent the staff used the model for other NPS than agitation, this limits the transferability of their experiences.

The researchers' gender, professional background, and experiences, and their relationship with the participants might influence both data collection and analyses. In exploring health interventions, the researchers' preconceptions and involvement in the intervention might create a bias in the research process (Malterud, 2001; Mays & Pope, 2000). The two main interviewers, BL and JM, are a physician and a nurse, respectively, as well as researchers, and both took part in the teaching and training of the staff at the start of the intervention in one-third of the participating nursing homes. BL was part of the group that developed the intervention. Both have

worked several years in nursing homes, but none of these nursing homes took part in the trial. The close involvement with the intervention and the context has both advantages and disadvantages. We could discover a variety of aspects of the participants' experiences by posing follow-up in-depth questions that might not have been possible without this detailed knowledge of both the intervention and the context. However, our involvement might have influenced the participants to display a more positive view about the intervention. We also shared the preconception that a biopsychosocial approach is necessary when working with residents who present NPS, and that a structural manual-based approach would ease the staff's knowledge transfer into action. To counterbalance this possible bias, the third author, AG, participated in three of the five interviews, and did the primary analysis alone before discussing her results with the rest of the authors. She did not have any involvement with the intervention or with the participating nursing homes. She posed follow-up questions towards the end of the interviews. Finally, her analyses did not differ substantially from the analysis done by BL and JM. The other authors were not involved with the nursing homes, or the development or implementation of the intervention.

Conclusion

TIME shifts the way of learning for the staff from a traditional to a more innovative and reflection-based learning through a process of learning how to learn at work. The staff's experienced increased coping when approaching complex problems. TIME is a feasible and effective model for dealing with the complexity of NPS. Our results emphasise the importance of a structured and biopsychosocial approach to NPS in clinical practice. Future research should explore and test different models for integrating situated learning as a part of daily routines in nursing homes.

Ethical approval and consent to participate

The Norwegian Centre for Research Data (NSD) and The Regional Committee for Medical and Health Research Ethics in eastern Norway (REC South East) approved the trial on 19 October 2015 (Project No.: 2015/1549). No resident was directly involved in the part of the study that used focus group interviews. All the participants were provided with written information about the study. They gave written consent to conduct interviews and for the use of the transcribed interviews.

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ORCID

Bjørn Lichtwarck  <http://orcid.org/0000-0002-3763-8134>

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