TITLE

A Contextual Analysis to Explore Barriers and Facilitators of Pain Management in Swiss Nursing Homes

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Abstract

Purpose: As part of a contextual analysis, this study aimed to generate a comprehensive understanding of barriers and facilitators to pain management in nursing homes to identify potential leverage points for future implementation studies.

Design: An explanatory sequential mixed-methods study embedded in a cross-sectional study in 20 Swiss nursing homes (data collection: July- December 2016)

Methods: Quantitative data were collected via care worker questionnaire surveys comprising 20 items assessing perceptions of barriers to pain management. Descriptive statistics were computed. In the subsequent qualitative strand we conducted four focus group discussions with care workers (registered nurses, licensed practical nurses and nursing aides) using a knowledge-mapping approach. Findings of both strands were merged and mapped onto domains of the COM-B system, a model for behavior, to identify determinants for behavior change.

Findings: Data from 343 completed care worker surveys (response rate 67.3%) and four focus groups with care workers were analyzed. Items rated most problematic were: Lacking availability (60.9%) and application of non-pharmacological treatment (53.6%); reluctance of residents to report pain (51.1%) and lack of time for a comprehensive pain assessment (50.5%). Focus groups partly corroborated quantitative findings and complemented them with facilitators, such as close collaboration with physicians and further barriers, e.g. organizational factors, such as high turnover and a lack of established routines in pain management.

Conclusions: Our approach using a behavioral model highlighted a need for implementation strategies that improve pain management knowledge and focus on motivational aspects to establish new routines and habits related to pain management among care workers.

Clinical Relevance: Our findings suggest that future approaches to improve pain management in nursing homes should go beyond provision of education and training. To establish new practices or adapt existing ones, a more complex approach e.g., introduction of external or internal facilitators, is necessary to influence motivation and ultimately change behavior.

Keywords: COM-B, Mixed-methods, Nursing home, Pain management

Background

The prevalence of untreated and undertreated pain in nursing home (NH) residents is high: 40–85% of residents report pain (Takai, Yamamoto-Mitani, Okamoto, Koyama, & Honda, 2010). Poorly treated pain impacts quality of life, increases depressive symptoms and limits functional capabilities, leading to higher care demands (Smith et al., 2016). In recent decades, international expert panels have developed evidence-based guidelines for pain management in older people (Abdulla et al., 2013; American Geriatric Society Panel on Persistent Pain in Older Persons, 2009). However, passive dissemination of guidelines alone does not result in practice changes of pain management (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012). To overcome the gap between recommended and actual practice, a comprehensive approach, using implementation strategies that target behavior change of health professionals, is recommended (Powell et al., 2017).

Previous studies have identified a range of barriers to pain management: At the organizational level, a lack of pain management policies and high proportions of unqualified care workers can impede effective pain management (Kaasalainen et al., 2010). Further, negatively biased attitudes or misconceptions about pain and pain management in older people among care workers and residents are known factors to hinder appropriate pain management (Kaasalainen et al., 2010; Veal et al., 2018).

Despite high relevance of adequate pain management for residents' quality of life, related research suffers from a general paucity of rigorous and effective intervention studies. Current literature reviews criticize the lacking theoretical underpinning of interventions and insufficient rigor of evaluations (Herman, Johnson, Ritchie, & Parmelee, 2009; Knopp-Sihota, Patel, & Estabrooks, 2016). One approach for overcoming these gaps, is the use of behavioral theory in the development of strategies to identify factors hindering and facilitating pain management in the specific context (Michie, Johnston, Francis, Hardeman, & Eccles, 2008).

This study is embedded in the ProQuaS (Identification and Development of Interfaces and Processes to improve Quality of Life of Nursing home residents) project, a mixed-method project aiming to develop and test an implementation intervention to improve pain management in Swiss nursing homes. As part of a preparatory contextual analysis, this study is guided by the COM-B model, the Capability, Opportunity and Motivation determine Behavior system (Michie, van Stralen, & West, 2011). The COM-B model has been derived from existing behavior change models by a team of behavioral researchers (Michie et al., 2011). It represents the idea that changing a specific behavior requires changing at least one of the models components: capability, opportunity and motivation with regard to the specific behavior or competing and supporting behaviors (Michie, Atkins, & West, 2014). In this context, capability is understood as the psychological and physical capacity of an individual to perform a specific behavior or activity; Opportunity comprises social and physical factors which hinder, enable or elicit the specific behavior externally. Motivation on the other hand, incorporates automatic processes, involving emotions and impulses and reflective processes, such as making plans and evaluations (Michie et al., 2011, p.4).

The overall aim of this study is to inform the development and selection of contextually adapted implementation strategies in the context of the larger ProQuaS study, to ultimately improve pain management in nursing homes. This study has three specific aims: (1) to assess care workers' perceptions regarding specific barriers to pain management; (2) to explore barriers and facilitators of pain management in depth by focus groups with care workers; and (3) to map the merged results of the quantitative and qualitative strand onto components of the COM- B model and to discuss implications for potential strategies.

Methods

This study encompasses an explanatory sequential mixed- methods design (quan →

QUAL) using a cross-sectional care workers' survey in 20 Swiss NHs, followed by focus group

discussions with care workers (Creswell & Plano Clark, 2018). Ethical approval for this study

has been obtained from the responsible ethics committee (EKNZ 2017-01466).

Quantitative Strand

　　　　Sampling and data collection. This study is embedded in a convenience sample of 20

NHs belonging to Senevita AG, a privately-owned NH group, at the time of the survey. The

questionnaire survey was conducted in July and August 2016. Eligible respondents included care

workers from all educational backgrounds (registered nurses (RNs), licensed practical nurses

(LPNs) and nursing aides (NAs)) who worked in direct resident care, had been employed for at

least one month and were sufficiently fluent of German to understand the survey questions.

Questionnaires were distributed by local coordinators (e.g., director of nursing); participation was

voluntary and anonymous. To ensure confidentiality, a pre-stamped envelope was provided with

each questionnaire. Informed consent was implied by returning the questionnaire. In addition, to

provide organizational information about each NH, NH administrators filled out a facility

questionnaire.

　　　　Variables and measurement. To assess care workers' perceptions of barriers towards pain

management, we adapted a list of items used in a previous study (Jones et al., 2004). The items

were adapted to the Swiss-German context via a forward–backward translation process and cross-

cultural adjustments in accordance with accepted scientific guidelines (Maneesriwongul & Dixon,

2004). Based on a literature review, we then added 11 items about non-pharmacological treatment,

reactions to residents' pain, physician availability and inter-professional communication. Content

validity of the adapted version's final 20 single items was rated good to excellent by seven geriatric

experts (Item- content validity index (I-CVI): 0.93). Items were rated on a 4-point Likert-type scale ranging from "no problem" to "major problem." For the analysis we calculated the proportion of "moderate problem" and "major problem" responses in relation to the other answer options. These barrier items were optional for NAs; therefore, few NAs have been included in the related analysis. In additional items, we assessed sociodemographic factors including age, sex, years of work experience, educational background and working percentages.

In the facility questionnaire, NH administrators were asked to provide information on organizational factors (e.g. number of beds, staffing). Further, three self-developed items assessed readiness for implementation and availability of resources regarding a pain management project, e.g., "How do you rate the readiness and capacity of your NH to participate in a project about pain management concerning staff resources". Items were rated on a 5-point Likert-type scale ranging from "not good at all" to "very good".

Data analysis. Descriptive statistics were computed, including means, medians, distributions and confidence intervals. All analyses were carried out using R statistical computing software (R Development Core Team, 2018).

Qualitative Strand

Focus group interviews. For the care worker focus groups, a purposeful sample of three NHs was assembled based on their high ratings of the three items assessing readiness for implementation pertaining to the facility questionnaire. Since these NHs were potential intervention sites for the second phase of the overall project, the barriers and facilitators their staff noted were of specific interest regarding this (intervention development) phase.

The local study coordinators recruited a convenience sample of care workers, applying the same inclusion criteria as for the quantitative strand. A written study information package was

provided; participants signed a consent form prior to their interviews. The interview guide was based on the results of this study's quantitative strand.

Each of these interviews began with an open discussion about general difficulties and facilitating factors in pain management; then, participants were probed about the items rated most problematic on the barriers scale. Discussion was moderated by the first author; a facilitator (research assistant) added emerging aspects to a mind map following the approach described by Burgess-Allen and Owen-Smith (2010). Following the discussion on each topic, these aspects were summarized by the moderator and feedback requested from the participants. Discussions were recorded with a digital audio recorder. After data collection was complete, all groups' mind maps were integrated into a meta-map. For this step, aspects of each group's map were summarized and refined according to the content analysis approach described by Mayring (2010). To describe themes, meaningful quotations from the recorded discussions were selected and transcribed verbatim.

Integration

Integration of data occurred in two stages. First, based on analyses of the facility questionnaire items, NHs were sampled for the focus groups. Additionally, development of the focus group interview guide was informed by results of the care worker questionnaire. Secondly, following individual analyses, results of the quantitative and qualitative strands were integrated into a joint display. Findings were organized by their underlying themes, with quantitative and qualitative results displayed side by side to facilitate interpretation (Curry & Nunez- Smith, 2015). In a final step, to identify behavioral determinants regarding the development of future interventions, integrated findings were mapped onto components of the COM-B model.

Results

Results of the quantitative strand

The overall sample of the quantitative strand comprised 343 care workers (response rate 67.3 %) and 20 NH administrators. Sample characteristics of NHs and respondents are listed in Table 1 (below). Overall, 192 care workers responded to the barrier items (RNs: 32.6%, LPNs: 45.1%, NAs: 22.3%). The following items were considered most challenging (moderate/major problem) regarding ward-level pain management: low availability (60.9%, CI: 52.6- 68.7) and application of non-pharmacological treatment options (53.6%, CI: 47.3- 63.6); residents' reluctance to report pain (51.1%, CI: 43.4- 59.8); lack of time for comprehensive pain assessments (50.5%, CI: 44.1- 60.4). Further results are displayed in Table 2 (below).

Table 1 : insert here
Table 2 : insert here

Results of the qualitative strand

Focus groups. In total four focus groups, each including three to five participants (RNs and LPNs, or only NAs) were conducted. Overall, 17 care workers (13 female; mean age 37.6 years (SD= 11); median professional experience 6 years (range: 1–32)) participated. The findings were structured according to the overarching themes of pain assessment and pain management.

Pain assessment.

Attitudes towards pain. Assumptions and preconceptions regarding pain were seen as major barriers to its assessment. In the discussions, participants differentiated between residents' attitudes toward their own pain and those of care workers. Reports indicated that many residents

tended either not to report their pain at all, or to delay reporting it until timely intervention (which would prevent high pain levels) was impossible. However, some care team members' attitudes were also considered hindrances to appropriate pain management. Participants mentioned situations where colleagues dismissed residents' reports of pain as simple attention-seeking behavior.

> *Well, there are differences, some [nurses] say we [always] have to take the residents'*
> *pain [complaints] seriously. But it can also happen that someone says that it is*
> *nothing, the resident only wants attention, and he actually has no pain. It is very*
> *individual how pain is perceived among the nursing staff. (LPN)*

Individuals' life experiences or pain histories were discussed in the groups as potential influences on these attitudes.

> *Conducting an adequate pain assessment.* A common difficulty perceived by the participants was the assessment of pain in residents with communication deficiencies. Particularly in residents with dementia, interpreting behavioral cues and distinguishing them from challenging behavior requires both experience and knowledge of the resident.

> *Some residents cannot express themselves. Of course we can recognize the pain in*
> *their faces but where or how intense the pain is or what kind of pain, they can`t tell*
> *us. This is also difficult for us. (NA)*

Registered nurses also discussed their experiences regarding nursing aides' routine pain assessment. Participants reported often only receiving information on the presence of pain, but no further details on its location or intensity. Reassessment of the resident by a registered nurse was perceived as very time consuming. In addition, participants from various NHs mentioned that their care documentation software contains a form to comprehensively assess and document pain situations. Although the software's format is considered practical and easy to understand, the

assessment forms are not used in daily practice. Participants assumed that this behavior does not result from time issues, but from their care teams' turnover and lack of routine.

Pain management.

Non-pharmacological treatment. Non- pharmacological treatment was seen as one of the care workers' central functions. Care workers of all levels were aware of their options, e.g., distraction with conversations, television or music, application of hot or cold pads, aromatic care or other strategies for resident activation. Nevertheless, time pressure and limited availability of such options were reported as barriers to their application. Although non-pharmacological options were perceived as valuable regarding residents' pain management, participants agreed that they were insufficiently applied in daily practice.

We use…[non-pharmacological treatment] too little. We have not internalized it yet.

We all have ideas or thoughts about it, but the application is not there yet. (RN)

Some participants attributed this paucity to frequent changes in the care teams and lack of stable routines and standards in the NHs.

Collaboration with physicians. Many decisions regarding pain management require interprofessional collaboration. Participants reported that direct communication with a physician is often hindered by lacking availability of the responsible physicians. In particular, general practitioners assigned to small numbers of residents in an NH are difficult to reach, as they rarely participate in regular ward rounds. Participants agreed that assigning one physician to all residents of each NH would facilitate communication processes in pain management and in general.

Results of the integrated data

Barriers that have been frequently reported in the quantitative part were corroborated and amended by the qualitative findings. Furthermore, in the focus group discussions, care workers addressed facilitators of pain management, such as joint ward rounds with physicians and good

knowledge of the residents. The identified pain management barriers and facilitators cover all domains of the COM-B model except 'physical capability' (Table 3 below). Many of the barriers relate to the 'physical opportunity' and 'psychological capability' domain and concern several members of the inter-disciplinary team, e.g. physicians and nursing assistants, as well as organizational factors, such as high turnover. Not all findings could directly be linked with the COM-B model, e.g. reluctance of residents to report pain- these findings will be addressed in the discussion section.

Table 3 : insert here

Discussion

This study aimed to develop a comprehensive understanding of pain management barriers and facilitators in Swiss nursing homes by integrating findings of a care worker survey and focus groups discussions and mapping them onto the COM-B model. Results of the survey suggest barriers mainly at the resident (i.e., reluctance to report pain) and organizational level (e.g., scarcity of resources, particularly non-pharmacological treatment options or time for pain assessments). There are some differences between the NAs' and RNs/LPNs' perception of barriers. In general, nursing assistants are more critical of aspects which are related to the direct care of residents and the communication thereof (e.g. residents' reluctance to take pain medication, non-timely reaction to residents' pain reports, inadequate communication among care workers). We suppose that these findings reflect the NAs' close involvement in the residents' daily care and perceptions of their limited range of influence for the residents' pain management.

Findings of the qualitative strand partly corroborated these results and provided additional comprehensive insights into perceived barriers and facilitators of pain management. However, some qualitative findings diverged from the quantitative part and will be discussed in the

following. Based on the COM-B model we now discuss which factors could be targeted to effect behavior change in pain management, and how these considerations can translate into potential implementation strategies.

Capability

Much current literature on pain management in NHs emphasizes the central role care workers' knowledge and attitudes towards pain play in effective pain management (Kaasalainen et al., 2010; Tarzian & Hoffmann, 2005). Yet, our quantitative data indicate that only about 30% of care workers perceived "care workers' lack of knowledge in pain management" as being problematic. Focus groups' participants on the other hand, emphasized that NAs lack training in pain assessment skills. These findings may support the hypothesis that care workers, particularly RNs and LPNs tend to overestimate their own capabilities and instead focus on the shortcomings of nursing assistants. A lacking understanding of one's own limitations might pose an additional barrier for improving pain management which needs to be considered in the development of implementation strategies. In Switzerland, most NAs receive only a short training on basic care competencies not covering clinical knowledge and skills. However, in Swiss NHs of all care workers, NAs spend by far the most time providing direct care to residents; therefore, they should be closely involved in pain assessment (Liu, 2014). A future NA training curriculum should comprise modules on pain assessment in older people with and without cognitive impairment. To overcome attitudinal barriers, this training should offer a bio-psychosocial perspective on pain (Hadjistavropoulos et al., 2011; Swafford et al., 2014). However, training will only be successful if, rather than simply delegating improvement to NAs, registered and licensed practical nurses commit both to supporting their assessment and reporting skills, and to actively listening and responding to their concerns.

Echoing observations of previous studies, roughly half of the surveyed care workers perceived the "reluctance of residents to report pain" as a major barrier to pain management (Jones et al., 2006; Martin, Williams, Hadjistavropoulos, Hadjistavropoulos, & MacLean, 2005). However, whether this perceived reticence can be attributed solely to the residents is open to discussion. I.e., shortfalls in care workers' communication skills and attitudes might also influence residents' readiness to discuss their pain. The focus group participants also agreed that a trustful relationship facilitates residents' willingness to open up. The importance of genuine interest in the resident`s situation and appreciative communication has previously been described in interview studies with NH residents (Gran, Festvåg, & Landmark, 2010; Gudmannsdottir & Halldorsdottir, 2009). Implementation strategies aiming to improve knowledge and attitudes to pain management might therefore be beneficial to increase care workers' understanding and awareness towards residents in pain. The enhanced understanding can influence the care workers' beliefs about consequences of their actions which in turn reinforces changes of their pain management practice (Ajzen, 1991).

Opportunity

Findings concerning the physical component of the opportunity domain emphasize organizational factors' influence on daily practice. Care workers stressed the impact of high turnover rates and low staffing resources on quality of care, as they hinder development of a trusting, communicative care worker-resident relationship. Further, a perceived scarcity of time leads to regular implicit rationing, especially in relation to psycho-social, emotional or educational resident needs (Jones, Hamilton, & Murry, 2015). Accordingly, pain management – particularly the application of non-pharmacological interventions and comprehensive pain assessments –is at high risk of being affected by implicit rationing. There is a paucity of evidence that any currently available intervention strategies effectively prevent implicit rationing; however, the authors of the

above-mentioned review recommend that nursing curricula should include implicit rationing in the context of clinical decision making (Jones et al., 2015).

Regarding the social component of the opportunity domain, our findings highlight the importance of close interprofessional collaboration in pain management. Joint physician/care worker ward rounds have been perceived as a major facilitator to approach residents' pain situations. Joint visits to residents enable a shared view of the pain situation, thereby promoting interprofessional communication and decision making. The advantages of physicians' nursing home visits have been previously described (Fleischmann et al., 2016).

Our findings related to the opportunity domain highlight important implications regarding the development of implementation strategies. Firstly, strategies have to take account of high turnover of care workers, leading to fluctuating pain management knowledge. Secondly, to facilitate the adoption of new pain management practices, close collaboration with responsible physicians should be considered to ensure their buy-in and support to improve uptake.

Motivation

More than half of the participating care workers perceived that "inadequate time to assess pain comprehensively" hinders optimal pain management on their wards. Worse yet, focus group participants reported that, largely due to the constant influx of new care workers, many of their wards had not yet established routines concerning pain assessment. The absence of organizational pain management guidelines and routine procedures has serious implications regarding the reflective and automatic motivation of care workers to carry out pain assessments. To motivate the care workers to change, it is essential that they perceive regular pain assessment not only as a core component of their professional role, but an essential step in ensuring each resident's well-being. A similar rationale has been discussed regarding the application of non-pharmacological pain treatments. With regard to the development of implementation strategies, one approach to

motivating care workers to adopt new routines could be modelling. Previous studies have shown that enlisting opinion leaders or champions to act as role models, i.e., exemplifying daily evidence-based pain management practice, can effectively encourage care workers to emulate target behaviors (Flodgren et al., 2011).

Strengths and limitations

A key strength of the present study was the rich data derived from survey questionnaires, and focus group discussions. The explanatory sequential design facilitated discussion of findings from different perspectives thereby providing depth to our understanding. The application of the COM-B model helped to structure barriers and facilitators in a constructive way, highlighting the most promising approaches to develop strategies to facilitate change in pain management. Nonetheless, this study was also subject to several limitations. First, its scope was limited in terms of sampling, as only NHs associated with one Swiss NH group were included. Furthermore, we included NHs that indicated high readiness for implementation, discussions with care workers from less implementation-ready NHs might have yielded different insights. However, the exemplary approach of identifying leverage points for behavior change in pain management can easily be translated to other NHs. Furthermore, qualitative findings regarding care workers might be limited by the tendency to perceive fewer barriers/ facilitators in relation to matters of less personal interest, leading to non-exhaustive reporting.

Conclusions and implications

The aim of this study was to generate a comprehensive understanding of barriers and facilitators of pain management in nursing homes with regard to developing implementation strategies. The findings of this study emphasize two central implications: First, strengthening pain management knowledge and communication skills is key to enabling practice change. A particular

focus should be training for nursing assistants, enabling them to get actively involved in pain assessment and management. In view of the high turnover in NHs, a sustainable educational structure, providing continuous training opportunities for new staff needs to be established.

Secondly, to achieve sustainable behavior change, motivational aspects need to be considered, too. It is crucial that NHs establish pain management policies based on current pain management guidelines within their organization to provide a basis for care workers to develop pain management routines in their team. Furthermore, to support the adoption and maintenance of new routines, external or internal facilitators, e.g., champions, opinion leaders should be identified and trained.

Clinical resources

- Resources and tools for quality pain care: https://geriatricpain.org/
- A practical guide for implementing change in long term care: https://www.nhqualitycampaign.org/files/Implementation_Manual_Part_1_Attachments_1_and_2.pdf

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Table 1: Characteristics of participating nursing homes and respondents

Nursing home characteristics (n=20)	Mean (SD)	N (%)
Number of beds: Long term care	46.3 (35)	
Time since opening (years)	10.5 (9.5)	
Readiness and capacity (scale 1-5):		
- staffing resources	2.8 (0.89)	
- time resources	2.6 (0.79)	
- perceived willingness of the care workers	3.6 (0.88)	
Care worker characteristics (n= 343)		
Age (years)	38.6 (13.6)	
Gender (female)		296 (89.2)
Registered nurses		61 (18.2)
Licensed practical nurses		94 (28.1)
Nursing aides		180 (53.7)
Years of work experience in nursing care	11.4 (11.1)	

Table 2: Results of the barrier items: proportions of answers indicating moderate or major problem by educational background

Barrier items	RN & LPNs		Nursing assistants		All *	
	N	%	N	%	N	%
Lacking availability of non-pharmacological treatment	141	63.1	36	50.0	184	60.9
Lacking application of non-pharmacological treatment	140	56.4	36	47.2	183	53.6
Reluctance of residents to report pain	141	51.1	35	45.7	184	51.1
Inadequate time to assess pain comprehensively	141	50.4	36	52.8	184	50.5
Insecurity of care workers regarding pain assessment in residents with communication difficulties	142	43.7	37	48.6	187	48.3
Inadequate availability of physicians	138	38.4	35	51.4	180	41.1
Inadequate flow of information among the care workers	141	34.0	34	44.1	182	36.4
Resident reluctance to take pain medication	139	32.4	35	51.4	182	37.4
Inadequate care worker knowledge	142	28.2	35	37.1	179	31.1
Inadequate flow of information between care workers and therapists	140	25.0	33	45.5	179	29.1
Inadequate communication between care workers and physicians	142	26.8	34	41.2	182	29.1
Resident fear of side effects	141	25.5	34	29.4	183	28.5
Family concerns about side effects (n=185)	141	28.4	36	27.8	185	28.5
Physician reluctance to prescribe	140	29.3	33	27.3	178	28.5
Residents' pain is not taken seriously	143	19.6	38	34.2	189	25.2
Availability of drugs	142	21.8	35	34.3	188	23.8
Slow (non-timely) reaction to residents' pain reports	142	19.7	38	31.6	188	22.5
Lacking PRN prescription for pain medication	141	19.1	36	27.8	185	21.2
Lacking qualification of care workers to administer pain medication (e.g., at night or on weekends)	143	16.1	35	37.1	186	17.9
Nurses' concern about side effects	140	12.9	36	5.6	184	11.4

*eight missing observations for the level of educational background

Table 3: Summary of barriers and facilitators assigned to COM-B domains

COM-B domains		Barriers & facilitators
Capability	Psychological	- Attitudes towards pain in older people - Difficulties to interpret behavior in residents with dementia - Need for training of nursing assistants in pain assessment
	Physical	
Opportunity	Social	- Joint ward rounds of physicians and nurses ↑
	Physical	- Time constraints for the application of non-pharmacological treatment - High turnover - Limited availability of non-pharmacological options - Inadequate availability of physicians - Single physician who is responsible for all residents↑
Motivation	Reflective	- Perceived lack of time for pain assessment - Little intentions to assess pain comprehensively on a regular base
	Automatic	- No established routines regarding (a) pain assessment and (b) application of non- pharmacological treatment