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From expected to actual barriers and facilitators when implementing a new screening tool: A qualitative study applying the Theoretical Domains Framework

Helle Vendel Petersen PhD, MPH, RN, Senior Researcher[1] ⓘ | Ditte Maria Sivertsen MSc, RN, PhD, Post doc.[1] | Lillian Mørch Jørgensen MD, Clinical Associate Professor[1,2] | Janne Petersen PhD, Statistician, Associate Professor[1,3] ⓘ | Jeanette Wassar Kirk PhD, MScN (nursing), RN, Senior Researcher, Assistant Professor[1,4] ⓘ

[1]Department of Clinical Research, Copenhagen University Hospital, Hvidovre, Denmark

[2]Department of Emergency, Copenhagen University Hospital, Hvidovre, Denmark

[3]Center for Clinical Research and Prevention, Copenhagen University Hospital, Frederiksberg, Denmark

[4]Research Unit of Nursing and Health Care, Health, Aarhus University, Aarhus, Denmark

Correspondence
Helle Vendel Petersen, Department of Clinical Research, Copenhagen University Hospital, Hvidovre, Denmark.
Email: helle.petersen.02@regionh.dk

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Abstract

Aim and objectives: To identify determinants for using a new screening tool to identify older patients eligible for targeted nurse-led intervention, as perceived by healthcare professionals implementing the tool, and to examine how these perceptions changed over time.

Design: A cross-sectoral longitudinal qualitative study based on semi-structured interviews with healthcare professionals in a Danish hospital and two collaborating municipalities.

Methods: In three focus groups, seven single interviews and a workshop, we examined the healthcare professionals' perceptions of and attitudes towards the new screening tool before, during and after the implementation. The Theoretical Domains Framework was used to identify the healthcare professionals' perception of barriers and facilitators, followed by content analysis. The results were further discussed using the COM-B system as an analytic framework. This qualitative study is reported according to the Consolidated Criteria for Reporting Qualitative Studies (COREQ) checklist.

Results: 'Professional role', 'Goals' and 'Environmental context' were the domains most talked about by the healthcare professionals across the three time points. The content analysis identified four determinants for using the new screening tool:*Making time for the project, External motivation and management, Expectations and reality, and Professional identity*. The healthcare professionals' perception of the determinants changed during the implementation, influencing their behaviour and, consequently, the implementation's sustainability.

Conclusion: Perception of barriers and facilitators to the interventions were time- and context-sensitive. Beliefs and motivational factors changed during the project, which

points out the importance of following implementation processes systematically to understand the outcome of an intervention.

Relevance for clinical practice: Perceptions and attitudes towards a new initiative may change over time, emphasising the importance of following barriers and facilitators during the implementation of an intervention and working with an implementation plan that can be adapted along the way.

KEYWORDS
determinants, implementation, longitudinal, older medical patients, screening tools, theoretical domains framework

1 | INTRODUCTION

Development and implementation of value-based health care to improve patient safety and cost-effectiveness is a growing trend (Elf et al., 2017). Implementing new guidelines and programmes in health care is complex, and the implementation process should be considered when planning an intervention. Barriers to successfully implementing interventions may arise at multiple levels (Damschroder et al., 2009). Different organisational levels, the local context and culture should be addressed as a part of the implementation process (Harrison et al., 2010; Kirk & Nilsen, 2015, 2016). Implementation of interventions depends on behavioural change. Therefore, to understand why an intervention is effective, it is important to capture the range of internal and external determinants involved in the implementation process (Michie et al., 2011). Much research on implementing guidelines in the healthcare system has, as an initial implementation strategy, focused on understanding the determinants that affect the individual practitioner's ability to use research-based knowledge (Powell et al., 2015). Determinants are defined as factors that either facilitate or act as barriers, but little is known about how time may influence barriers and facilitators of various outcomes (Bach-Mortensen & Verboom, 2020). In this study, we followed the implementation of a new screening tool developed to prevent unplanned readmission at three time points.

1.1 | Background

Acutely admitted patients older than 65 years are at risk of readmission within 30 days after early discharge (Stillman et al., 2021). Readmission of older patients shortly after discharge is a burden on both the patients and the healthcare system (Juul-Larsen et al., 2020; Klinge et al., 2020; Soh et al., 2020). Thus, tools and guidelines for identifying patients with an increased risk of functional decline and readmission would be beneficial (Lowthian et al., 2015). However, screening tools have shown to be suboptimal in predicting unplanned readmission (Fortin et al., 2012). Risk scores to predict unplanned readmission present substantial variation across countries, indicating that unplanned hospital admission depends on the healthcare context. These variations highlight the importance of validating risk scores and the need for more discriminative predictors for readmission (Klunder et al., 2021).

> **What does this paper contribute to the wider global community?**
>
> - Determinants for specific interventions are time- and context-sensitive and can be associated with changes in motivational factors.
> - User involvement and high motivation at the beginning of an intervention and a seemingly successful implementation are no guarantees for the sustainability of an intervention over time.
> - Knowledge from this study contributes to implementation science by recommending examining changes in determinants over time and a continuous adaptation of the implementation plan based on such changes.

Based on a national strategy to reduce the number of unplanned readmissions in Denmark, a multidisciplinary research group working on optimising the care and treatment for older medical patients developed an evidence-based screening tool aiming to identify older patients eligible for targeted nurse-led interventions in the municipalities after discharge from the hospital (Kirk et al., 2016). Frailty is associated with readmission in older medical patients (Stillman et al., 2021). Therefore, the new screening tool was designed to identify patients older than 65 years at risk of functional decline and readmission. The screening tool held three validated core elements identified as predictors for the functional decline in older patients: (I) biomarkers of C-reactive protein (Thunø et al., 2009); (II) social questions based on ISAR (McCusker et al., 1999) and (III) a 4-m walking test examining the patient's habitual gait speed (Guralnik et al., 2000). More details on the three elements have previously been reported (Bodilsen et al., 2016; Klausen et al., 2017).

Over 9 months, the tool's implementation took place in an emergency department (ED) at a Danish hospital. The EDs are characterised by a high stress level and a flow culture, and the healthcare professionals' focus is on saving lives and making room for the next patients (Creswick et al., 2009; Kirk & Nilsen, 2015). We have previously shown that screening tools that do not relate to acute care or support the flow of patients are perceived as flow stoppers and thus less likely to be implemented and systematically used in EDs (Kirk & Nilsen, 2016). Subsequently, a geriatric team associated with the ED

was chosen to apply the new screening tool to all patients older than 65 years acutely admitted to the ED.

We acknowledge the possibility of the time sensitivity and assume that barriers and facilitators of healthcare outcomes are unlikely to remain static over time. Hence, the implementation of the new screening tool was followed at three time points before, during and after the implementation to identify and understand the possible change in determinants for behavioural changes that would affect the future use of the screening tool.

2 | METHODS

2.1 | Aim

The study aimed to identify determinants for using a new screening tool to identify older patients eligible for targeted nurse-led intervention, as perceived by healthcare professionals implementing the tool, and to examine how these perceptions changed over time.

2.2 | Study setting

Denmark has a public healthcare system, including hospitals, primary nursing care and home care services. The healthcare system, covering 5.5 million citizens, is tax paid and provides feeless treatment and care for all citizens. Five regions govern the public hospitals, while the responsibility for home care nursing and home care services lies with the municipalities.

The study was conducted at the ED at a large university hospital in the Capital Region of Denmark and in two collaborating municipalities. A specialised geriatric team was affiliated with the hospital's ED. The participating municipalities were one smaller municipality with approximately 35,000 citizens and one of the 10 administrative healthcare districts in the Municipality of Copenhagen, which covers more than 600,000 citizens.

2.3 | Cross-sectoral procedures

All patients aged 65+ were eligible for the screening tool performed by the geriatric team. The geriatric team consisted of the manager and a physician (both geriatricians), two physiotherapists and a nurse specialising in geriatric care. The participating municipality nurses, five from the smaller municipality and one from the larger, were all experienced home care nurses chosen to perform the interventions by their managers.

When a screening result indicated a patient was at risk of readmission, the result was documented in the patient's record, and an electronic message was sent to the relevant municipality with no further information. No other actions were taken at the hospital. The two municipalities had different work processes and

initiatives for follow-up after discharge. The patients from the smaller municipality were offered three preventive home visits by one of the home care nurses dedicated to the intervention. The purpose of these visits was to provide targeted nurse interventions. In the larger municipality, patients were visited by the project nurse working closely with the general practitioners to coordinate aftercare and treatment. In both municipalities, the visits were executed within the first 2 days after discharge, and the patients were revisited after 14 and 30 days.

2.4 | Study design

We conducted a longitudinal qualitative study using semi-structured interviews to examine the implementation of a new screening tool at three time points. The initial research plan evaluated barriers and facilitators before (Kirk et al., 2016) and after the implementation at the ED (Kirk et al., 2019). However, shortly into the implementation process, feedback from participants suggested changes in how they perceived the screening tool. Thus, to describe changes during the implementation process, we collected data on the participants' perspectives on the screening tool halfway through the implementation.

This study is based on Gadamer's hermeneutics to understand *'die Sache'* and combines a secondary analysis of interview data collected before and after the implementation with data collected for this study. We have applied reflexive analysis using behavioural change theories to interpret and understand the healthcare professionals' perceptions and behaviours (Debesay et al., 2008).

'Prejudice' is an important part of hermeneutics, as understanding includes the 'preunderstanding' in those aiming to understand something (Debesay et al., 2008). The three authors (HVP, DMS and JWK) conducting the interviews and performing the analysis are registered nurses experienced in qualitative research. HVP and JWK are senior researchers, and DMS was a PhD student at the time of the study. One is specialised in implementation science and the working culture at the ED, while the other two had neither working nor research experience from an ED. None of the three authors were involved in the development and execution of the implementation. The last two other authors' background is geriatrician (LMJ) and statistician (JP). They were involved in developing the screening tool for the study but did not conduct any interviews. All authors were female. The study is reported according to the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong et al., 2007) (https://www.equator-network.org/reporting-guidelines/coreq/ (COREQ File S1).

2.5 | Theoretical frameworks

Implementation of evidence-based practice is more effective when based on evidence-based principles of behavioural change. For this study, we used behavioural change theory to describe and understand

the participants' behaviour and perspectives during the implementation (Cane et al., 2012). To examine behaviours, the Theoretical Domains Framework (TDF) was applied. The TDF is a validated theoretical framework developed for investigating implementation problems and providing 'an optical lens through which to view the cognitive, affective, social and environmental influences on behaviours' (Atkins et al., 2017). The TDF consists of 14 domains from 128 constructs from 33 behavioural change theories (Cane et al., 2012). The TDF has been widely used to explore determinants for behavioural change in many different areas and at an individual and organisational level, for example developing patient safety interventions (Taylor et al., 2013), enhancing the use of electronic medication (Debono et al., 2017) and developing interventions to prevent falls (Thomas & Mackintosh, 2014). The TDF guided the data collection and the initial deductive analysis of domains across the data set.

We applied the COM-B system in the discussion to deepen our understanding of the findings related to behavioural change. The COM-B system refers to three main factors for behaviour; capability, opportunity and motivation (Michie et al., 2011). The COM-B system can be used to understand and target specific behaviour when designing interventions to be more likely to be implemented in a clinical setting. The system describes how the three factors interact to generate behaviours and how a person is more prone to enact certain behaviours than others (Michie et al., 2011).

2.6 | Data collection

During 18 months from 2013–2014, the perceptions of determinants towards screening were examined in 15 healthcare professionals, using three group interviews, eight single interviews and one workshop. HVP, DMS and JWK conducted the interviews,

which took place in meeting rooms and offices at the hospital and the municipalities.

The group interviews were chosen to promote discussions and provide the members of already existing groups an opportunity to comment on each other's opinions, experiences and understandings (Halkier, 2010). Using pre-existing groups makes it possible to identify fragments of interactions approximating naturally occurring data. Colleagues well known can link comments to incidents in their shared daily work life and thereby be challenged on inconsistencies between what they ideally believe and how they act in real life (Kitzinger, 1995). A hierarchy may affect group interaction (Halkier, 2010); thus, the managers were interviewed individually.

A purposeful sampling strategy was chosen to include all 15 healthcare professionals participating in implementing the screening tool (Figure 1). The data were collected before, during and after the implementation.

2.6.1 | Data collection before the implementation

A semi-structured interview guide (Table 1) based on the TDF was developed to explore perspectives on barriers and facilitators before the implementation. The interview guide served as a reminder to cover the different domains, and open-ended questions were used to allow for other perspectives and reflections on the issues.

The geriatric team, their manager, the chief nurse and the chief physician from the ED were invited by phone or email for a group or single interview, respectively. All accepted the invitation. The geriatric nurse could not participate in the group interview and was interviewed a few days later. The interviews lasting between 30–60 min were recorded and transcribed verbatim. More information on these interviews has previously been published (Kirk et al., 2016).
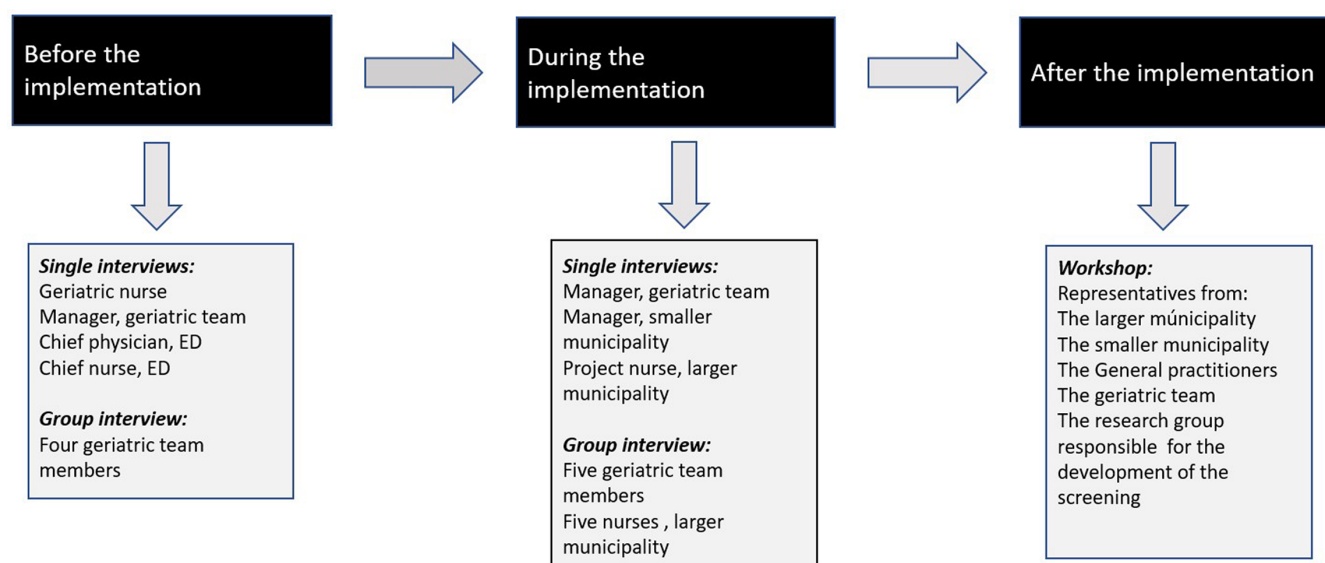

FIGURE 1 Flow chart presenting the data collection

TABLE 1 Examples of questions based on the TDF domains

Domain	Questions
Knowledge	What are your experiences with older patients and readmission at the ED? Have you heard about the new screening tool?
Environmental context and resources	Would it be important to prioritise performing the new screening in a busy schedule?
Social/Professional role and identity	What would it mean to your professional identity as a nurse/doctor/physiotherapist if you should work with the screening tool?
Goals	Do you think it will make any difference to the patients when the municipalities/you get the results of the screening tool?

2.6.2 | Data collection during the implementation

Four months into the implementation process, the geriatric team and the five municipality nurses performing the intervention in the smaller municipality were invited for group interviews through their managers. The project nurse from the larger municipality, the geriatric team manager, the chief physician at the ED and the manager from the smaller municipality were invited by phone or email to participate in single semi-structured interviews. They all accepted the invitation. The participating healthcare professionals had between 2–25 years of experience in their field, and two were male.

The interview guide was further developed to include perspectives from the first interviews and explore changes in perspectives and attitudes. HVP and DMS facilitated the interviews, and JWK observed the group interviews and gave feedback during and after the interview sessions. Reflections of potential changes in the perception of barriers and facilitators were promoted by asking the participants directly about a specific issue, for example 'How has it been since we last spoke?' or 'What are the positive and negative consequences of the intervention?'

Individual interviews were carried out at the managers' offices at the hospital and municipality, respectively, and the group interviews took place in meeting rooms in the municipalities and the hospital. The interviews lasting between 45–90 min were recorded and transcribed verbatim.

2.6.3 | Data collection after the implementation

After the implementation, a three-hour workshop with representatives from both the hospital and the municipalities, and with the general practitioners, was held to explore facilitators and barriers to using the screening tool over time and evaluate whether the screening tool should be permanently implemented as a part of clinical practice (Kirk et al., 2016). The participants were encouraged to tell the 'good story' about the tool as part of the workshop, and these stories and other statements were audiotaped and transcribed verbatim. Only data from those having participated in the interviews before and during the implementation were used for this study.

2.7 | Ethical considerations

To comply with the Helsinki declaration, all participants gave oral informed consent to participate and use data for research purposes. The participants were not compensated for their time as the interviews took place during working hours. The geriatric team was informed about the interviews by their manager. In the municipalities, the managers told the participating nurses about the study after being informed by the authors. No further relationship was established before the study.

Permission to collect the data HVH-2013-039, I-Suite nr: 02448 was obtained from the regional data protection agency. The study was approved by the managers in the ED department and the municipalities. According to Danish law, no formal ethical approval is required when a study does not collect biomedical data. The participants were informed orally and in writing about the purpose of the study and the confidentiality and voluntariness aspects of the study. At any given time, they could withdraw their consent.

3 | DATA ANALYSIS

Data were analysed using an iterative and stepwise process. First, a deductive thematic analysis (Braun & Clarke, 2006) was performed by HVP, DMS and JWK. The interview transcripts were coded separately to distinguish between perceptions of barriers and facilitators in different groups and describe changes over time. Each code was indexed into a matrix using the 14 domains from the TDF as a coding frame (Table 2). The authors discussed the coding and the indexation to clarify and agree on how the different domains should be understood. This approach was used throughout the analysis to strengthen the study's credibility.

The number of codes within the 14 domains was calculated as the percentage of all meaning units for the geriatric team and the municipality nurses, respectively (Table 3). The meaning units that constituted the three domains most often mentioned at the three time points were merged into a new data set (data corpus). This data set was reanalysed using inductive content analysis to deepen the empirical understanding and identify the overarching themes across the three prominent domains (Graneheim & Lundman, 2004). The meaning units were coded and developed into subthemes in the content

TABLE 2 Examples of the initial coding matrix using the TDF

Meaning unit	Coding	Domain
Nurse, smaller municipality: It is important for our motivation that the screening makes a difference.	A positive outcome of the screening is important	Goals
Physiotherapist, geriatric team: A part of the success is that everyone is prioritising the screenings.	Success when everyone prioritises the screening	Goals
Nurse, smaller municipality: It can be difficult to understand how this project can prevent readmission. How do you do it?	The relation between intervention and outcome is not clear to the nurses	Goals
NThe first instructions, right. Where everything was explained, and the screening tool from the hospital. You can say the whole background for the study.	The nurses felt well informed	Knowledge
I think it is because you are a nurse. You already collaborate with the municipalities. The collaboration with the municipalities is more within your expertise than within mine as a physician	The physicians believe that the implementation of the screening tool is more relevant to the nurse than to him	Professional role
Nurse, larger municipality: I am sure I was chosen for the project because of my large network in the municipality. Many knows me and I have helped solving some organizational problems.	Nurse is sure he was chosen because of his professional role and commitment to the organisation	Professional role
Geriatric team member: It became a routine very quickly.	The screenings became a routine	Behavioural regulation
We found out that we had to do the screenings in the morning. We do not have many hours before they (the patients) start leaving the ED. We have to prioritize the screening as the first thing in the morning	The screening must be performed early to 'catch' the patients	Environment context
Nurse, geriatric team: If I can see the patients are asleep or acute in some way, I exclude them from the study. I do not ask first.	Nurse has the professional confidence to exclude patients	Beliefs about capabilities

analysis by HVP, DMS and JWK. In this process, the focus was on changes and similarities while keeping the structure of the three time points. The analytical process was iterative and discussed among all authors. The authors moved between the data set, the codes and sub-themes during the analysis to define and refine the final overarching themes. The paper was drafted and agreed on by all authors.

4 | RESULTS

The initial deductive analysis highlighted the domains most discussed at the three time points: 'Professional role', 'Goals', and 'Environmental context' (Table 3). In the inductive content analysis, we identified four overarching themes across the three domains: *Making time for the project, External motivation and management, Expectations and reality, and Professional identity*. The results from the content analysis provided a deeper understanding of the healthcare professionals' perception of the screening tool and how it changed during the implementation is presented in the following. In the Results section, participant quotations are presented to illustrate the themes.

4.1 | Making time for the project

All informants stated that 'time' understood as a resource was a prerequisite for successfully implementing the screening tool. Both the hospital and the municipality managers supported the project by prioritising and making time for it in daily practice. Before the implementation, the geriatric team and their manager expected the screening tool to be very time-consuming and hinder

more relevant tasks, for example comprehensive evaluations of the older patients.

> It's something a student could do, right? We're not analyzing results. We have some criteria, and then we send an e-message. In my opinion, anyone would be able to do that. So, in that perspective, it's a pity that we are unproductive elsewhere.
>
> (Geriatric team, during implementation)

Although the geriatric team's predictions about less time for other tasks came true, the team's perception of the screening tool changed. Once it was agreed that the geriatric team would participate in the project and perform the screenings, the team and their manager made time for it by reorganising their work and daily routines, for example reallocating different tasks and starting earlier in the morning.

Throughout the project, the geriatric team allocated time to identify patients relevant for the screening and performing it. After the project had been completed, they found the time spent on the screening acceptable. However, they were adamant that the screening tool would never be implemented without extra resources.

> So if there aren't any resources supplied, it won't be feasible. Otherwise, some things won't be done. Well, I mean, we had reorganized our lives when we started the project, but I think there is only so much you can do to reorganize your day.
>
> (Geriatric team manager, after implementation)

TABLE 3 Distribution (percentage) of the meaning units the geriatric team before, during and after the intervention

Domains	Geriatric team			Nurses at the municipality	
	Pre-intervention N = 352%	During intervention N = 370%	After intervention N = 34%	During the intervention N = 352%	After the intervention N = 100%
Professional role and identity[a]	19.9	33.8	14.7	14.2	17
Environmental context and resources[a]	10.8	11.4	35.3	10.2	12
Consequences	4.5	14	14.7	11.1	11
Optimism	10.8	8.6	11.8	12.2	11
Knowledge	3.1	4.9	2.9	6	14
Goals[a]	15.6	19.5	8.8	21.6	15
Reinforcement	4.8	1.4	0	1.7	1
Social influence	5.7	0.5	0	1.7	0
Capabilities	6.3	2.2	0	3.1	3
Skills	3.7	0.8	2.9	7.1	7
Emotion	4.3	0	5.9	3.7	0
Behavioural regulation	5.4	2.7	2.9	0.9	1
Memory/attention	2.8	0.3	0	6.5	7
Intentions	2.3	0	0	0	1

[a]Data comprising the new data set.

Also, the municipality managers made organisational changes during the project to make time for the interventions. In the larger municipality, the project nurse was dedicated to the intervention 2 days a week. The project nurse used an office separated from his colleagues to focus on performing the intervention as planned. In the smaller municipality, the nurses found that visiting the patients three times after discharge was very time-consuming compared with their usual routines. From their perspectives, not all patients identified as being at risk of readmission required the three home visits. They questioned whether spending equal time on all the referred patients was relevant.

> It has to make sense to me. The patient should experience further functional decline that requires our involvement. Then I think it makes sense.
>
> (Nurse from the smaller municipality, during implementation)

After the implementation, the nurses from both municipalities felt that performing the interventions had been worth their time and effort. They described that the project had raised attention to a group of patients previously going 'under their radar' and argued that the interventions in some form should be implemented in their daily practice after the project had ended.

4.2 | External motivation and management

The healthcare professionals' motivation for implementing the tool and the following interventions was conditional on support from their managers and colleagues and the degree to which they had been involved in planning and designing the study.

In both municipalities, the nurses felt well informed and engaged in the design and development of the interventions.

> I think we have been involved [in planning the study]. I believe it has been quite okay, and it has been good being a part of the process. We feel informed and have been able to ask questions, and we have all participated in the planning process.
>
> (Nurse from the smaller municipality, during implementation)

During the implementation, the municipality nurses experienced support and respect from their managers, colleagues and other collaborators, which motivated them to implement the interventions. Their motivation, however, changed over time. The nurses from the smaller municipality had been involved in designing the interventions and were initially highly motivated to participate. They started questioning its effect as the project progressed, and their motivation dropped.

Throughout the project, the manager of the geriatric team was highly motivated and acted as an innovator and role model (Hasson et al., 2014). She had been involved in designing the project and took on the responsibility of making it a success, although she knew that all team members were not equally motivated.

> I think it is a lot of fun doing research. It is not that we all agree on that.
>
> (Manager, geriatric team, during implementation)

The manager made the screening tool a daily priority and led the way, for example by starting to work half an hour earlier than usual to go through the list of new patients. The manager also noticed and commented on the screenings if they were not performed as planned, all of which contributed to the perception of the implementation as being a success.

The geriatric team members' motivation for testing the screening tool was ambivalent. The team members had not been involved in developing the screening tool, and they did not feel informed about the project and did not take ownership of it. As the project progressed, the daily screenings became a routinised task that just had to be completed.

> Somehow, it [screening a certain number of patients each day] has become something we must do. And we just do it. We don't ask too many questions.
> (Geriatric team member, during implementation)

In the larger municipality, the project nurse remained equally motivated during the test period and never questioned the relevance of the study's interventions.

4.3 | Expectations and reality

The screening tool affected how all participants worked. They described how their attitudes towards the screening tool changed over time and how the project against their expectations positively impacted their work.

Before the implementation, the use of the screening tool was perceived as a routinised task by the geriatric team. The team did not expect that screening many patients would improve the quality of their work or benefit their patients. As the project proceeded, these perceptions changed. Before implementation, the team members were confident they could identify all patients needing geriatric assessment without using the new tool. They stated the tool would only make sense to them if it, against their expectations, could identify patients at risk of functional decline. Much to their surprise, the screening tool raised their attention to patients who would normally have gone 'under their radar', making the team reflect on whether their work could benefit from using the screening tool.

> We do find some [fragile patients] because of the screening tool that we may not have identified under normal circumstances.
> (Geriatric team member, during implementation)

The municipality nurses' attitudes towards the screening tool also changed during the test period. The nurses from both municipalities found their interventions to be very useful. The interventions provided them with more time for assessing and planning for patients, and they experienced more vulnerable patients to be identified during the test period.

In the smaller municipality, the nurses described visiting the patients provided new insights into specific problems and care needs. The screening results also raised the municipality nurses' attention to patients referred to rehabilitation elsewhere in the municipality but were unknown to them.

> Some of the new citizens referred to us [due to the screening] are well known elsewhere in the Municipality.
> (Nurse from the smaller municipality, during implementation)

This was insightful to the nurses, and they reflected on the possibilities for closer collaboration with other departments in their municipality.

The project nurse in the larger municipality described how the use of the screening tool had created awareness of patients unknown to the system but in need of care. The healthcare issues identified in most of these unknown patients were less severe, which meant that treatment and care could be completed faster, and deterioration of health could be prevented.

Much like the geriatric team, the municipality nurses made their own goals during the project. They saw the project as an opportunity to develop nursing care for older patients and improve collaboration with the general practitioners. These goals acted as their primary motivators to perform during the implementation.

4.4 | Changes in the professional role

The participating healthcare professionals did not believe in the project's overall aim and questioned whether readmissions of patients with complex care needs were preventable. For example, they were not convinced that patients with chronic obstructive pulmonary disease or other chronic diseases would benefit from the interventions. Despite being in support of the screening helping patients, this was not what motivated them to perform it.

The perception of barriers and facilitators for the screening tool was sensitive to the context in which the different healthcare professionals were working. Understanding their professional roles and the qualifications needed to perform the project was not similar in the geriatric team and the municipality nurses. While the municipality nurses perceived themselves as having the right qualifications to execute the planned interventions, the geriatric team at the beginning of the study felt overqualified.

> Screening is not a part of our job, and you could hire 15 high school students to do it. [...] I am just saying, it is not something a highly specialized team should do. [...] It is a total waste of time.
> (Geriatric team member, before implementation)

The geriatric team had a reputation in the organisation as a team that performed well in research projects, and they felt motivated by the implementation of the tool as a project and not a daily routine. The team expressed a strong team spirit and described how they always strived to do their best. As such, reaching the acquired number of patients as a part of their commitment to the project remained a motivational factor during the test period for both the geriatric team and their manager, and they felt pride in their accomplishment:

> I think we have all committed to the project and done our best.
> (Geriatric team member, during implementation)

Despite the geriatric team's reservations on the project's success, they followed the protocol loyally and ensured that the municipalities got the relevant screening results. During the test period, the team members described that they used their professional skills to include and exclude patients for screening, but initially, the screening tool did not promote much professional reflection. As the project progressed, their perception of their professional role changed. After the intervention, they expressed a more positive attitude towards the screening tool, and they now believed that their expertise was relevant to the interpretation of the screening result.

The municipality nurses reported having the required competencies and experiences to perform the interventions in the two municipalities. They described how their motivation for participation originated from a professional interest. The nurses believed that the interventions strengthened their professional role. Thus, participating in the project became meaningful for them. The nurses from the smaller municipality described how the project made them reflect on their patients' health competencies and how more issues were identified and dealt with in the patients' homes because of the project. After the test period, the nurses would change their workflow and implement the elements from the intervention that made the most sense to them in their daily practice.

> I don't think we should continue the three visits. Everybody deserves a call after discharge. And then you can ask if they need a visit. Not just those with a poor screening result.
> (Nurse from the smaller municipality, during implementation)

In the larger municipality, the project nurse described how he had been selected for the project because of his qualifications. Based on previous experiences with other implementation projects, he was solely responsible for executing the intervention. The project nurse had been involved in designing the intervention and was highly motivated to perform it. He felt professionally challenged positively, and respected by his colleagues and the general practitioners for his role in the project. These conditions remained stable during the project, and his motivation and perception of his professional role did not change over time.

5 | DISCUSSION

Using the TDF framework (Atkins et al., 2017; Cane et al., 2012; Michie et al., 2005), we have identified determinants important to the healthcare professionals when implementing a new screening tool and shown how perceptions of the tool and the following interventions changed over time. Three domains from the TDF framework, 'Professional role', 'Goals' and 'Environmental context', constituted the issues most talked about by healthcare professionals before, during and after the implementation period. The content analysis identified four themes across the prominent domains: *Making time for the project*, *External motivation and management*, *Expectations and reality*, and *Changes in professional Roles*. The categories were interrelated, and a dynamic implementation process was unfolded. Both internal and external determinants influenced perception and beliefs and reshaped behaviours related to the interventions in the study, demonstrating the importance of the management and cultural context. These findings are in line with a review from 2018, where understanding and addressing the interrelationship between *system*, *staff* and *intervention* is described as crucial to successful implementation (Geerligs et al., 2018).

The four categories we identify as important for implementing the new screening tool were related to how the healthcare professionals acted and responded over time. In the following, we will discuss how the findings can be understood from the perspective of the COM-B system (Michie et al., 2011).

A core concept in behavioural theories is the individual's beliefs about competencies and the capability of performing a certain task (Atkins et al., 2017). The healthcare professionals were selected for participation in this study due to their professional qualifications, and none of them questioned their psychological or physical capability to perform in the project. Indeed, the geriatric team felt overqualified for the task. Mezey et al. (2008) describe how health professionals specialising in geriatrics represent a unique and scarce resource that is critical in shaping the care of older adults. The healthcare and welfare services are under severe financial pressure in Denmark. There is a continuously ongoing process towards more outpatient care, fewer hospital beds and a reduction in days of inpatient care, with a tendency towards inpatient care, concentrating on acute incidents and increasingly leaving the rehabilitation and follow-up care to the primary healthcare services (Garåsen & Hendriksen, 2009). These trends have led to the closure of geriatric departments and the introduction of geriatric teams. The feeling of being overqualified in the geriatric team can be seen in the light of this tendency understood as a culturally embedded understanding in the geriatric team as having a distinct role in the organisation as an expert team. Before

the implementation, the geriatric team believed their professional competencies exceeded the capabilities needed for the intervention, which decreased their motivation for performing the screening. The initial lack of motivation, described by the geriatric team members, was related to this aspect and the assumption that the screening tool would neither benefit the patients nor their reputation as a specialised team. However, this initial lack of motivation was not a barrier to how the geriatric team performed during the project. Instead, participating in research became their main motivational factor. Strong group identity and self-conception as a team always performing to their highest ability added to their motivation. Professional self-concept refers to the skills, values, knowledge, beliefs and motivations formed and changed through various experiences and interactions with others (Yu et al., 2019). The geriatric team's self-concept was formed by their expert skills and knowledge of the targeted patient group. Creating meaning of the project, combined with support from their manager and external acknowledgment, made it possible for the geriatric team to meet their reputation as a team performing well in research projects, all of which added significantly to their reflective and automatic motivation (Michie et al., 2011).

As the study progressed, the geriatric team constructed coherence through individual and collective sensemaking. An important element of sensemaking work is understanding how a set of practices, in this case, the new screening tool, differs from the usual practice (May et al., 2009). The geriatric team acted on this by including the screening results in their assessment of the patients. They engaged in a more reflective process and evaluated the screening tool's effect on the patients and themselves as a specialised team. Once the team recognised that their work could benefit from the screening process, their perception of being overqualified changed. They now found that the requirements needed to implement the tool would better match their capabilities. As a result, their professional identity, role and reflective motivation were strengthened (Mook, 1995).

According to Mook, motivation is defined as brain processes that energise and direct behaviour, not only goals and conscious decision-making. Habitual processes, emotional responses and analytical decision-making are included in motivation (Mook, 1995). Motivation is divided between reflective processes such as evaluation and plans and automatic processes involving emotions and impulses arising from learning (Strack & Deutsch, 2004). In the case of the geriatric team, they were able to turn their initial emotional response of feeling overqualified into a reflective process, where they could see themselves benefiting from participating in the implementation of the tool.

A feeling of having the capabilities and abilities to perform and make sense of something is an important motivational factor for engagement (May et al., 2009). Despite not believing in the screening tool, the municipality nurses made sense of the project by creating their own agenda and goals. Weick (2012) describes sensemaking as a social process of searching for answers and meaning, which drives people's actions and develops through verbal discourses. The healthcare professionals in this study experienced and discussed how their professional roles were strengthened during the project, and therefore, the interventions became meaningful for them to perform. These factors created a group of initially highly motivated nurses. Thus, all components of importance to a specific behaviour, *opportunity*, *capability* and *motivation* were present in the municipality nurses before the implementation. Their motivation was a reflective process where they continuously evaluated the impact of their behaviour (Michie et al., 2011).

As the implementation progressed, the nurses in the smaller municipality found it increasingly difficult to make sense of the whole project, and their motivation to perform the intervention dropped. Their continuous reflection and evaluation led them to realise that their hard work and efforts did not make a difference to *all* patients. This decrease contrasted with the geriatric team, where the motivation increased over time.

The concept of opportunity is divided between physical and social opportunity and includes all the factors outside the individual to make a behaviour possible (Atkins et al., 2017). Physical opportunity is afforded by the environment, whereas social opportunity is afforded by the cultural milieu that forms the way people think and act (Strack & Deutsch, 2004). The geriatric team changed how they worked to find the required time during the implementation. Their manager served as a role model and demonstrated clear leadership, for example by start working half an hour earlier to make lists of patients eligible for the study. The manager created the physical opportunity for the geriatric team members to perform the screenings and set the standards. Based on trust, duty and loyalty to their manager, the team committed to the project. Thus, the manager can be characterised as a charismatic leader who enhances followers' identification with their task or role by stimulating their self-worth and self-perceptions (Dvir et al., 2002).

The project was a social opportunity for the geriatric team to confirm their self-understanding as a team performing well in research projects (Michie et al., 2011). This opportunity would disappear if the screening became a daily routine rather than a research project. Likewise, the physical opportunity would not be present in the future unless more resources were added to their team. Consequently, despite the seemingly successful implementation of screening tools, the lack of perceived physical and social opportunity decreased the geriatric team's motivation for continued implementation and future use of the tool.

Being directly involved in the development of the intervention provided the municipality nurses with a physical and social opportunity to develop interventions. Based on their professional qualifications and experiences (Michie et al., 2011), they expected the intervention to benefit their patients, adding to their motivation. Recognising the importance of engaging stakeholders in developing healthcare interventions is not a new finding, despite a lack of rigorous evaluation of the effectiveness and cost-effectiveness of codesigned interventions and policies (J. Kirk et al., 2021). The municipality nurses understood their manager's support for the project, and they experienced sufficient time to perform the planned interventions. The municipality nurses experienced support from

colleagues and acceptance of the time required for the project, demonstrating social and physical opportunity. Time is a frequently described determinant in TDF and COM-B studies, and lack of time is reported as a barrier (Rosário et al., 2021). Sufficient time was perceived as a facilitator for implementing the screening tool. The managers supported the nurses in spending the time required for the interventions during the implementation.

Implementation of screening, guidelines and other changes in clinical practice can be based on a detailed implementation blueprint adapted to determinants found initially and evaluated at the end of an implementation process (Powell et al., 2015). When the implementation process is followed closely over time, both managers and researchers will have the opportunity to continuously adjust and tailor implementation strategies to support the newly found determinants, such as contextual barriers and facilitators (Powell et al., 2015). This study shows that determinants such as capabilities, motivation and opportunity can change over time, requiring a closely monitored implementation process and an adaptable implementation plan.

6 | STRENGTHS AND LIMITATIONS

Data were collected at three time points, one in the hospital and two in the municipalities. The uneven data collection is a limitation to the study, and other aspects might have been identified had data also been collected from the municipality nurses before the interventions. Whether data saturation was reached in this study can be discussed, since only a limited number of participants were eligible for the study. The data representing perspectives before and after the implementation were originally not collected for the current study. Regardless, we find patterns and trends across the data that can be understood and described using current behavioural theories (Atkins et al., 2017; Michie et al., 2011), which support our results.

Another limitation is that only the participants' self-reported data in the form of interviews are included. Observational data might have provided a more comprehensive understanding of the implementation processes and validated the findings.

It can be discussed whether counting the numbers of meaning units to identify issues of importance to the participants is relevant in qualitative research. Using data solely based on their occurrence in the interviews may overlook relevant matters and exclude important knowledge. Nevertheless, the results from this study can highlight areas of importance when planning an implementation process. Including data on all 14 domains provide a more comprehensive and diverse understanding of the topic of interest; however, empirical boundaries had to be drawn. An important strength of the study is the systematic use of a theoretical framework. Applying the Theoretical Domains Framework (Atkins et al., 2017) to describe determinants for using the tool and how they interact and change over time has proven beneficial. The COM-B system provides a comprehensive insight into the findings and discussion, emphasising

the importance of examining the nurses' and other healthcare professionals' perceptions, motivations and attitudes regarding new interventions to address and generate strategies for a successful implementation. The TDF can identify determinants for behaviours and processes involved in health behavioural change. For this study, we have further used inductive content analysis to ensure that non-TDF-related factors that add to a more nuanced and contextual analysis are not lost (McGowan et al., 2020).

Another strength of the study is investigator triangulation. The three authors analysed all data separately, and results were discussed among all authors to establish dependability. The diversity in authors' 'preunderstanding' added to the study's credibility (Thomas & Magilvy, 2011).

7 | CONCLUSION

Determinants of specific interventions are time- and context-sensitive and can be associated with changes in perception over time. Beliefs and motivational factors may change during a project, highlighting the importance of following implementation processes closely both in clinical practice and in research throughout the entire process. This study demonstrates how involvement and high motivation at the beginning of an intervention and a seemingly successful implementation is no guarantee for sustainability over time. Such results contribute to the research-based knowledge of how determinants change over time. Therefore, understanding the healthcare professionals' perceptions, motivations and attitudes regarding new interventions is important to address and develop an adaptable implementation plan to support a successful implementation. Furthermore, knowledge from this study contributes to clinical practice where a focus on systematic selection strategies to overcome barriers and support facilitators can be strengthened. (J. W. Kirk et al., 2022).

8 | RELEVANCE FOR CLINICAL PRACTICE

This paper demonstrates how implementation is a process that develops and changes over time. New screening tools must make sense to the healthcare professionals to engage in the process, and implementation plans must be tailored to different contexts and staff. Thus, from a management perspective, it is important to identify and understand which determinants are important to those implementing new interventions (Hasson et al., 2014). Perceptions and attitudes towards a new initiative may change over time, and the intervention can mediate or facilitate more or something different from what it was developed for.

Determinants of importance to implementation, for example motivation and the perception of the professional role, are time- and context-sensitive, which emphasise the importance of following barriers and facilitators during the implementation and adjusting the communication actively to avoid alternate interpretations and logic.

ORCID

Helle Vendel Petersen https://orcid.org/0000-0003-4569-1434
Janne Petersen https://orcid.org/0000-0001-7323-2548
Jeanette Wassar Kirk https://orcid.org/0000-0002-7142-0470

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