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Goal Setting and Goal Management for Chronic Conditions: Intervention and Implementation Strategies

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ABSTRACT OF THE DISSERTATION

Adults with chronic conditions experience limited participation in personally meaningful activities and roles. Chronic conditions can present challenges across personal factors such as cognitive, psychological, physiological, or neurobehavioral functions. These personal factors then dynamically interact with environmental factors, occupation, and performance, ultimately hindering adults with chronic conditions in achieving their goals to fully participate in meaningful activities and roles.

Goal setting and goal management has evolved from diverse theories including Social Cognitive Theory, Self-Determination Theory, and The Theory of Intentional Action Control. These theories emphasize the importance of addressing influential theoretical constructs such as self-efficacy and outcome expectancy but also the active engagement of the person to promote the individual's goal achievement. Hence, theory-based, client-engaged goal setting and goal management is suggested as necessary for adults with chronic conditions to effectively guide them to improve or manage their personal and environmental factors, and ultimately achieve their personally meaningful goals in everyday life contexts.

However, theory-based, client-engaged goal setting and goal management is not yet widely implemented in community-based rehabilitation. There have been calls for developing comprehensive and engaging goal setting and goal management approaches and translating them into practice to improve participation and health among adults with chronic conditions.

This dissertation addresses this important research and clinical priority by developing, examining, and refining a theory-based, client-engaged goal setting and goal management system along with implementation strategies for occupational therapists (OTs) to support

effective implementation in community-based rehabilitation practice. The process was guided by Intervention Mapping and Implementation Mapping in collaboration with clients and OTs.

The aims of this dissertation were to (1) develop a new goal setting and goal management system, (2) develop and evaluate the feasibility of implementation strategies for OTs to support delivery of this goal setting and goal management system for adults with chronic conditions in community-based rehabilitation, (3) evaluate the feasibility of the goal setting and goal management system in adults with chronic conditions.

This dissertation developed a new theory-based goal setting and goal management system, MyGoals, and its implementation strategies with clearly defined mechanisms of action. OTs perceived MyGoals and its implementation strategies as feasible and promising for use with adults with chronic conditions in community-based rehabilitation settings. Adults with chronic conditions also viewed MyGoals as feasible, engaging, and person-centered.

Taken together, these dissertation studies establish a rigorous foundation for theory-based, client-engaged goal setting and goal management for adults with chronic conditions in community-based rehabilitation. In using a rigorous, implementation science approach, this work may bridge a major research-practice gap in the field and improve rehabilitation practice, goal achievement, participation, and health for this population. Future studies should explore the efficacy and effectiveness of this new theory-based, client-engaged goal setting and goal management system and its implementation strategies.

Chapter 1: Introduction

1.1 Chronic conditions are prevalent, expensive, and disabling

Chronic conditions are highly prevalent and expensive.[1,2] Six in 10 adults in the USA have at least one chronic condition, and four in 10 have two or more chronic conditions.[1] The prevalence of chronic conditions has been increasing as the population ages.[1,3] Chronic condition-related expenditure has also been continuously increasing. Almost $3.7 trillion in healthcare expenditures in the USA were used for people with chronic conditions.[4,5] If we take into consideration indirect costs such as lost social productivity and individuals' financial burdens, the detrimental financial impact of chronic conditions is even more significant.[2]

Many adults with chronic conditions experience various functional impairments and participation restrictions, or not being able to fully engage in personally meaningful activities or roles across life domains such as activities of daily living, social life, health management, work, and leisure[4,6,7] Participation is an important health outcome that can influence and be influenced by an individual's personal factors, environmental factors, health conditions, body functions & structure, and activities. By participating in life activities or roles, people learn skills, feel fulfillment and satisfaction, gain autonomy, become independent, and gain better health.[6–9] However, adults with chronic conditions frequently experience participation restriction and reduced life satisfaction. We need effective rehabilitation to enable adults with chronic conditions to engage in their personally meaningful activities and roles, and thus improve their participation and health.[10]

1.2 Goal setting and goal management to improve participation and health

Identifying personally meaningful goals is the first fundamental step for adults with chronic conditions to achieve better participation and health.[11–13] Without knowing what they want to

achieve, the client cannot determine what aspects of their health they may need to manage, what environmental factors or occupations they can adapt, or what actions to take to improve their participation in their meaningful activities and roles. The process of making personally meaningful goals allows adults with chronic conditions to clarify the specific activities and roles in which they want to engage and also to uncover the intrinsic motivation behind their goals.[14,15] As a result, they become more likely to actively engage in goal-striving behaviors in both daily life and rehabilitation contexts and ultimately achieve their goals and better participation. This is why rehabilitation, especially occupational therapy, advocates identifying the client's personally meaningful and intrinsically motivating goals through a collaborative goal setting process with the clinician as a prerequisite for effective care.[16]

Knowing what needs to be done through the goal *setting* process is necessary but not sufficient to achieve one's goal. Continuously monitoring and *managing* one's goals by developing and carrying out personalized action and coping planns, reviewing goal progress, and adjusting goals and plans is what ultimately allows the client to achieve their goals.[17,18] In addition, supporting these goal management processes allows the clinician to provide ongoing client-centered care tailored to the person's goals, situation, needs, and preferences and enhances the likelihood of goal achievement and better participation.[19,20]

Goal setting and goal management is defined as a complex and iterative process that involves developing goals, making action and coping plans to reach the goals, executing action and coping plans, reviewing goal progress, and adjusting goals and plans.[21] As a fundamental occupational therapy and rehabilitation practice, goal setting and goal management is used to improve the participation and health of clients by enhancing their motivation to achieve their goals, their engagement in the intervention, and their goal-striving behaviors.[20]

Goal setting and goal management has shown promise for improving participation and health in adults with chronic conditions.[19,22,23] Regardless of the client's goal achievement, people who have goal setting sessions are more likely to have better participation satisfaction, health management, mental health, quality of life, self-efficacy, and satisfaction with their care.[22] Additionally, clients who are actively engaged in their goal setting have better goal satisfaction, goal attainment, and functional improvement.[24] Having specific plans to help bridge goal intention and action is also found helpful for the client to achieve their goals.[18,25] Even experiencing failure or setbacks during goal pursuit can have a beneficial effect, as it can guide adults with chronic conditions to better understand their health and functional capacities and accept the current self.[26,27] Such feedback and appraisal processes can help the client make informed decisions about adjusting their goals so that they are realistic, relevant and achievable.[26,27] Lastly, goal achievement relates positively to participation, quality of life, self-management, health status, self-efficacy, and satisfaction with therapy.[22,28] Thus, goal setting and goal management is a vital aspect of rehabilitation to improve participation and health.

1.3 History and evolution of goal setting and goal management

Goal setting and goal management research started to emerge in the 1960s even though it always had been an inherently important aspect of occupational therapy practice.[29,30] Since Kiresuk and Sherman (1968) developed Goal Attainment Scaling (GAS), it has been used to guide the evaluation of clients' rehabilitation goal achievement but also goal development in various rehabilitation contexts including occupational therapy.[29] GAS made an important contribution to early goal setting and goal management practice by introducing a systematic way to evaluate clients' individualized rehabilitation goals and intervention effectiveness. However, the early

works of GAS did not yet fully emphasize the importance of active client engagement in process of setting and managing goals.

In the 1970s, research started to emphasize the importance of client engagement during goal setting and goal management to enable clients to more actively participate in goal striving behaviors and enhance their rehabilitation outcomes.[31] Especially, in occupational therapy, promoting active client engagement in goal setting and goal management and providing goal-oriented care gained a lot of attention and were strongly advocated for as important practice guidelines.[9,32,33] However, there was no widely used systematic approach to guide such goal setting and goal management practice in occupational therapy. A systematic approach to guide occupational therapists to implement client-centered goal setting and goal management in practice was suggested, but had not yet been developed.[32,33]

During the 1990s, several measures and interventions to support goal setting and goal management in occupational therapy were developed, evaluated, and established. One of the earliest occupational therapy articles on GAS was published and described GAS as *a procedure to set goals and evaluate the effectiveness of occupational therapy interventions*.[34] The Canadian Occupational Performance Measure (COPM) is another of the earliest and most widely used goal setting and goal management measures in occupational therapy.[35] The COPM was developed to facilitate client-centered practice by supporting OTs to identify and evaluate personalized client outcomes using self-rated goal satisfaction and performance scales.[35] The Cognitive Orientation to Daily Occupational Performance (CO-OP) Approach is an important established occupational therapy intervention that builds on the goals set with the COPM and uses a general cognitive strategy (goal-plan-do-check) to guide clients through the process of problem solving and managing and achieving their chosen goals.[36–39] Later, more occupational therapy-related

measures and interventions to promote better goal setting and goal management practice were developed (e.g., Goal Management Training, Identity Oriented Goal Training, etc.).[40,41] However, it was noted that none of these methods fully incorporated all essential theory-based goal setting and goal management intervention components that had been established from an evolving body of psychological literature.[42]

From the 2000s to until now, the use of theories has been strongly advocated as an important approach to aid in the synthesizing of existing goal setting and goal management evidence and methods to identify essential intervention components and establish high-quality evidence-based practice.[42,43] Various theories such as Social Cognitive Theory, Self-Determination Theory, and The Theory of Intentional Control have been used to guide this process and describe the theoretical mechanisms of goal setting and goal management.[42–45] Through a review of multiple theories used to inform goal setting and goal management practice, Scobbie et al. (2009) suggested that self-efficacy, outcome expectancies, planning, goal intention, and goal appraisal are the key goal setting and goal management theoretical constructs relevant to rehabilitation.[42] A discussion about how these theories and constructs inform goal setting and goal management are provided in the below section.

1.4 Theories and mechanisms of goal setting and goal management

Social Cognitive Theory and Self-Determination Theory emphasize the importance of intrinsically motivating and personally meaningful goals to achieve desired participation and health outcomes.[14,15,46–48] This is because intrinsic motivation, or doing something for inherent satisfaction, can drive people to initiate, persist, and achieve their goals.[15] To better guide the development of personally meaningful goals, Social Cognitive Theory suggests that we need to

address the client's goal-specific self-efficacy and outcome expectancies.[46–48] When the client has a potential goal they want to achieve, they also have a related level of confidence to achieve it (i.e., self-efficacy) and construct potential positive and negative impacts of achieving it (i.e., positive or negative outcome expectancies).[46–48] When self-efficacy to achieve the goal and positive outcome expectancy of achieving the goal are both high enough, the client is more likely to develop high goal intention and act on goal striving behaviors.[18,47] Therefore, rehabilitation goal setting should leverage these theoretical constructs – self-efficacy and outcome expectancy – to guide the client to develop personally meaningful goals. However, goal intention alone is oftentimes not sufficient to cause the initiation of action to achieve goals.[18,49] This is where having an effective bridge to connect goal intention with action becomes beneficial.[49–51]

The Theory of Intentional Action Control and Health Action Process Approach suggest that planning is a key theoretical construct that can help the client initiate their goal-striving behavior by bridging the gap between goal intention and action.[18,25,49–51] According to the Theory of Intentional Action Control and Health Action Process Approach, there are two essential types of planning: action planning and coping planning.[18,25,49–51]Action planning is about clarifying what, how, and when the client will do a certain behavior, whereas coping planning specifies how they would cope if they experience a setback.[18] Both action and coping planning can support the client in taking action, or executing the behaviors necessary, to achieve the goal.[18] Thus, goal setting and goal management should involve supporting the client in determining specific actions they can take and identifying facilitators and barriers to those actions and/or goal achievement, so that they can formulate realistic and effective plans that spur the initiation of goal striving behaviors.[18,25,49–51] Even after initiating the action, in many cases, the client requires

sustained effort to achieve their desired goals.[18] This is where goal management becomes particularly important.

Social Cognitive Theory describes the importance of goal progress feedback and the client's appraisal about their progress to optimize their goal management and achievement.[17] Feedback provides the client with the opportunity to appraise their past goal-striving behaviors and achievement.[17,46,50] It allows them to appreciate their goal progress and any broader improvements (e.g., in participation) as a result of reaching goals and to develop maintenance self-efficacy to continue to pursue their goals and ultimately achieve better health.[17,46,50] On the other hand, if feedback and appraisal reveal that previous goals and plans were unrealistic or no longer desired, the client can adjust their goals and plans to enhance the likelihood of meaningful goal achievement.[26] Moreover, if the client realizes that they are capable of reaching more challenging goals, they can develop more difficult goals to motivate higher achievement.[26] These theories provide foundational knowledge to identify essential goal setting and goal management intervention components, as described in the section below.

1.5 Theory-based goal setting and goal management intervention components

Lenzen et al. (2017) conducted a scoping review of existing self-management goal setting and goal management approaches and provided an overview of intervention phases and components used in practice.[45] In the *preparation* phase, people prepare to set goals and action plans by engaging in *education, reflection,* and *identification of topics for setting goals.*[45] In the *formulation of goals* and *formulation of action plan* phases, people make explicit goals and action plans.[45] In the *coping planning* phase, people develop explicit coping plans by engaging in

goal barrier identification, goal facilitator identification, coping plan formulation, and *assessment of confidence about carrying out the goals and action plans*. In the *follow-up* phase, people monitor their goal progress by engaging in *self-evaluation of goal progress* and *evaluation of goal progress*.[45]

Lenzen et al.'s[45] review provides a foundation to decompose and examine individual goal setting and goal management intervention components, rather than viewing goal setting and goal management as a unitary entity.[45] A more precise understanding of each intervention component can then help researchers and clinicians better develop and implement goal setting and goal management interventions tailored to the needs of different individuals, populations, and settings, as well as identify critical active components and their mechanisms of action. However, since Lenzen et al's[45] review was focused on self-management, it cannot be directly generalized to a broader rehabilitation context.[45] There may be other unexplored but important or irrelevant components when applied in different contexts. More research is needed to understand and identify goal setting and goal management intervention components and examine their implementation in rehabilitation practice to develop a more comprehensive theory-based intervention.

1.6 Active client engagement in goal setting and goal management

Client engagement is another critical aspect of goal setting and goal management.[16,52–54] Active client engagement during the intervention is associated with better outcomes.[22,44,55] Indeed, clients generally desire to and are capable of actively engaging in the process of making and managing their goals, even in the presence of mild to moderate cognitive and communication impairment.[56–58] However, in current practice, not all clients are actively engaged in their goal setting and goal management.[55,59] In a survey study of the rehabilitation care provider, only 40%

of participants responded that clients fully participate in their goal setting and goal management.[36] These findings are reinforced by studies of clinicians who report feeling less confident in collaborating with clients during goal setting, fail to enable clients to become active in goal conversations, do not sufficiently explore clients' perspectives, wrongly assume that clients are incapable of developing goals, and view their intervention delivery as more person-centered than it actually is.[60,61] Studies also have shown that failure to actively engage in one's goal setting and goal management process is associated with poor rehabilitation outcomes.[62] To ensure high-quality goal setting and goal management implementation, active client engagement should be facilitated across all intervention components.[54,60,63] However, there is still limited knowledge on how client engagement is promoted in rehabilitation goal setting and goal management.

1.7 Research-practice gaps

To address these gaps in goal setting and goal management, Kang et al. (2022) conducted a systematic review to (1) determine the use of theory-informed essential intervention components and (2) the level of client engagement in each component. To do so, Kang et al. (2022) first synthesized the existing literature on goal setting and goal management intervention components and found that Lenzen's review did not include *goal and plan adjustment*, even though it is known as an important component of goal setting and goal management. Social Cognitive Theory suggests that the client should be encouraged to refine their goals and plans based on goal progress feedback and appraisal to optimize goal achievement.[17] Further, goal and plan adjustment is an inherent rehabilitation practice to provide effective care.[26,27] Thus, Kang et al. (2022) identified the following twelve essential intervention components for rehabilitation goal

setting and goal management: *education, reflection, goal topic identification, goal formulation, goal barrier identification, goal facilitator identification, action plan formulation, assessment of confidence about carrying out the goals and action plans, coping plan formulation, self-evaluation of goal progress, evaluation of goal progress,* and *goal and plan adjustment*.[44,45,64]

- *Education* is about guiding the client to understand the importance of goal setting and goal management and active client engagement to achieve their goals and better outcomes.
- *Reflection* guides the client to reflect on their desired and current participation as preparation for brainstorming for their goal identification.
- *Goal topic identification* guides the client to identify potential goal topics.
- *Goal formulation* guides the client to develop concrete rehabilitation goals.
- *Goal barrier and facilitator identification* guides the client to identify potential barriers and facilitators to achieve their goals.
- *Action and coping plan formulation* guides the client to develop action and coping plans by using the identified barriers and facilitators.
- *Assessment of confidence about carrying out the goals and action plans* guides the client to self-rated their confidence to achieve the developed goals and plans to ensure that the developed goals and plans have the right difficulty levels.
- *Self-evaluation of goal progress* guides the client to self-examine their progress in reaching their goals.

- *Evaluation of goal progress* involves the occupational therapist evaluating the client's goal progress.

- *Goal and plan adjustment* guides the client to adjust their goals and plans to optimize their goal achievement if necessary.

Then, Kang et al. (2022)'s systematic review evaluated the presence of these intervention components and the level of active client engagement in each component within existing person-centered goal setting and goal management approaches.[44] 28,294 records were screened and 22 studies were included in the review. [44]

None of the included interventions used all of the twelve essential goal setting and goal management intervention components.[44] Most interventions used between 4 and 11 (M = 6.59, SD = 2.89, range = 1 - 11).[44] The least used components were *assessment of confidence about carrying out the goals and action plans* (14%), *goal facilitator identification plans* (23%), and *goal and action plan adjustment* (27%).[44] The most frequently used components were *goal formulation* (91%), *action plan formulation* (82%), and *education* (82%).[44] Therefore, our results indicate that while components related to the initial setting of goals and forming plans to achieve them are comparatively well implemented, activities that support thorough planning for execution, continuous monitoring of appropriateness and progress, and evaluation of achievement are infrequently used.[44]

Additionally, active client engagement was not always promoted in current goal setting and goal management.[44] In particular, *education* and *action plan formulation* involved comparatively poor client engagement.[44] For example, some interventions simply provided education to clients or informed them of their action plans and sought agreement without

encouraging them to engage, collaborate, or lead these components.[44] Poor engagement in education can lead to a lack of understanding about one's body function, healthy behaviors, etc., resulting in having unachievable health expectations and hindering informed goal setting decision-making.[44,54,65] Poor engagement in developing action plans can deprive the clients of the opportunities for communication about rehabilitation planning with clinicians.[44,66] In fact, action plan formulation may be one of the components that requires the greatest level of engagement for better rehabilitation outcomes since it helps establish the bridge for people to connect their goal intention to action to move toward goal achievement.[44,66] Thus, improved engagement by the client during the overall goal setting and goal management should be promoted to implement high-quality practice and better goal achievement and participation of the clients.[44]

To summarize, Kang et al (2022)'s systematic review found two major research-practice gaps in goal setting and goal management.[44] First, existing interventions do not implement comprehensive theory-based intervention components.[44] Second, active client engagement is not always promoted during the intervention.[44] Thus, Kang et al. (2022)'s systematic review echoed the need for a new effective goal setting and goal management system with an emphasis on implementing comprehensive theory-based intervention components and promoting active client engagement during the intervention.[44]

The need for a structured goal setting and goal management system along with clinician support and education to improve practice quality is well-recognized in the rehabilitation literature.[44,61,67–71] There are currently no widely used evidence-based person-centered goal setting and goal management approaches that involve all essential theory-based intervention components and that effectively encourage active client engagement in the process.[70,72] The

existing interventions or tools do not span all goal setting and goal management intervention components.[70] For instance, the COPM is one of the most commonly used tools, but it has been noted that it only focuses on *Goal negotiation* and *Appraisal & Feedback* and cannot be used for *Goal Setting* and *Planning*.[72] In fact, it appears that there is no system or tool that explicitly guides the *Planning* phase.[72] Since each existing tool only addresses a portion of the entire goal setting and goal management process, clinicians must piece together multiple systems to conduct comprehensive goal setting and goal management, which can add clinical burden and reduce the likelihood of implementation. Furthermore, many clinicians do not even use structured or standardized systems to guide their practice.[73] When or if they do, they report difficulties promoting active client engagement using the existing systems and a lack of confidence in delivering high-quality goal setting and goal management intervention.[60,61] These findings indicate that it is necessary to develop a system that supports comprehensive and engaging goal setting and goal management.[71]

To address these two major gaps, this dissertation aims to develop a new goal setting and goal management system that involves comprehensive theory-based intervention components and promotes active client engagement during the intervention. This system is designed to guide occupational therapists to deliver individualized goal setting and goal management for adults with chronic conditions in community-based rehabilitation such as outpatient or self-management settings. It is important to note that it does not prescribe specific interventions, treatments, or action plans to clinicians, but rather provides a general structure to the goal setting and goal management process and explicitly supports theory-based intervention component implementation and active client-engagement in that process. The ultimate goal of this system is to improve the participation and health of adults with chronic conditions by providing high-

quality goal setting and goal management as a foundation for client-engaged and client-centered care.

1.8 Using implementation science to develop theory-based, client-engaged goal setting and goal management

To guide the development of such a system and promote its translation into practice, the use of a systematic and collaborative approach is necessary.[74,75] A lack of clarity on intervention components and their mechanisms of action, the so-called "black box" of rehabilitation, has prevented us from producing generalizable knowledge and establishing evidence-based occupational therapy interventions.[76,77] Using systematic approaches in developing rehabilitation interventions can help us improve the theoretical rigor of interventions as well as their implementation in real-world clinical practice.[78] Collaboration with stakeholders should be a part of this process, as it provides insights into the end users' perspectives and develops a more ecologically valid intervention, further enhancing the likelihood of successful translation into clinical practice.[78,74] Intervention Mapping in collaboration with stakeholders has been recommended for the development, evaluation, and refinement of effective rehabilitation goal setting and goal management intervention and thus was used in this dissertation.[71]

Intervention Mapping provides six iterative steps to guide rigorous development, evaluation, and refinement of complex theory-based interventions through the identification of behavior determinants, mechanisms of action, active intervention ingredients, intervention strategies, and implementation strategies for clinicians to support the intervention delivery.[74] The first Intervention Mapping step involves the development of a logic model of the problem through needs assessment using a literature review or focus group interviews with stakeholders.

The second step involves the development of a logic model of change based on the findings from the first task and the clarification of desired behavior outcomes, intervention targets, and intervention objectives (or what the client is expected to achieve by completing the intervention activity). The third step involves reviewing theories, identifying guiding intervention theories, and specifying in what theoretical mechanism the client is expected to achieve the intervention objectives (or mechanisms of action). The fourth step involves producing an intervention draft, pilot testing, and refinement. The fifth step involves five sub-tasks, which are called Implementation Mapping to guide the development of implementation strategies to support clinicians to deliver the intervention in practice. Lastly, the sixth Intervention Mapping step involves the evaluation of the developed intervention.

The fifth step, or Implementation Mapping, is particularly important because it recognizes that intervention implementation, or translation to practice, requires a systematic effort.[75] Failures, or significant delays, in translating evidence-based interventions into clinical practice is a widely known critical issue in clinical research in general that is also prevalent in occupational therapy, perhaps due to a lack of attention paid to implementation aspects.[79,80] To promote timely and effective translation of occupational therapy interventions, it is necessary to develop implementation strategies in the early stage of intervention development, and collaboration with the end users can promote effective implementation strategy development.[75,79]

The use of this rigorous, systematic Intervention Mapping approach in collaboration with relevant stakeholders should allow us to develop an effective and ecologically valid goal setting and goal management intervention along with implementation strategies to support eventual successful translation to clinical practice. Therefore, this dissertation was designed to complete all Intervention Mapping steps, and the planning team including adults with chronic conditions

and occupatinal therapists were involved in the entire process. The completion of all Intervention Mapping steps will allow us to establish a foundation for high-quality goal setting and goal management practice to promote client-centered occupational therapy and advance participation and health among adults with chronic conditions. The specific aims of the dissertation are described below.

1.9 Specific aims of the dissertation

As an initial step toward achieving the goal of developing a theory-based, client-engaged goal setting and goal management system with high potential for translation to community-based rehabilitation with adults with chronic conditions, this dissertation involved the following specific aims: (1) Develop a new goal setting and goal management system, (2) Develop implementation strategies to support implementation of the system in community-based rehabilitation with adults with chronic conditions, (3) Evaluate the implementation strategies in OTs, (4) Evaluate the intervention system in adults with chronic conditions. The first aim addresses Intervention Mapping steps 1-4, the second and third aims address Intervention Mapping step 5 (i.e., Implementation Mapping), and the fourth aim addresses Intervention Mapping step 6. A brief overview of the aims are below.

Aim 1 (Chapter 2) focuses on the initial development of the goal setting and goal management system by completing Intervention Mapping steps 1: development of a logic model of the problem, 2: development of a logic model of change, 3: intervention design, and 4: intervention production in collaboration with clients and OTs to develop an initial draft of the intervention. To complete Intervention Mapping step 1, a planning team with two adults with chronic conditions and OTs were first established. The planning team developed a logic model of

the problem through literature review, discussions, and a needs assessment. Informed by this logic model of the problem, in step 2, the planning team created a logic model of change, which specifies the intervention targets and objectives (or desired changes of the client as a result of intervention). In step 3, the planning team reviewed theories and clarified what theoretical mechanisms can be used during the intervention to lead to the desired changes in the client (i.e., mechanisms of action). In step 4, the planning team produced a draft of the sytem, which named **MyGoals**, and conducted early pilot-testing and refinement.

Aim 2 (Chapter 3) involves the development of MyGoals implementation strategies by completing Intervention Mapping step 5 (i.e., Implementation Mapping) tasks 1. Develop a logic model of the problem, 2. Develop a logic of change, 3. Design the MyGoals implementation strateiges, and 4. Produce the MyGoals implementation strategies. To complete Implementation Mapping task 1, the planning team completed a needs assessment and developed a logic model of the problem. In task 2, the planning team identified desired implementation outcomes and objectives. In task 3, the planning team defined theory-based mechanisms of change. In task 4, the planning team produced MyGoals implementation strategies.

Aim 3 (Chapter 4) evaluates the MyGoals implementation strategies (Implementation Mapping task 5) in OTs and uses a case-series mixed-methods study with OTs. This aim explores the implementation aspect of MyGoals and to what extent the hypothesized mechanisms of action would be operationalized in practice. Specifically, OT participants evaluated (1) the acceptability, appropriateness, and feasibility of the MyGoals implementation strategies, (2) to what extent OTs achieve the change objectives of the strategies, and (3) OTs' fidelity in delivering MyGoals.

Aim 4 (Chapter 5) evaluates the MyGoals intervention in adults with chronic conditions and is addressed in a case-series mixed-methods study of adults with chronic conditions. This aim explores adults with chronic conditions' perspectives on MyGoals and to what extent the hypothesized mechanisms of action would be operationalized in practice. Specifically, participants evaluated (1) the credibility, expectancy, satisfaction, client engagement, and person-centeredness of MyGoals and (2) to what extent they can achieve its change objectives.

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Chapter 2: Aim 1: Develop a new goal setting and goal management system

This chapter is under-review:

Kang E, Foster ER. Development of a Goal Setting and Goal Management Intervention System for Adults with Chronic Conditions: Intervention Mapping with Community-Based Participatory Research. Under-review. 2022.

2.1 Abstract

This study used Intervention Mapping (IM) with community-based participatory research (CBPR) to develop a theory-based system, called MyGoals, to guide occupational therapists to implement the high-quality practice in community-based rehabilitation for adults with chronic conditions. In a collaboration with clients and occupational therapists, we identified MyGoals intervention targets, active ingredients, and mechanisms of action. We pilot-tested and revised MyGoals. Pilot testing indicated that MyGoals is feasible for occupational therapists and clients. MyGoals may improve goal setting and goal management quality and health in adults with chronic conditions. Our work can inform other theory-based occupational therapy intervention development.

2.2 Introduction

Goal setting and goal management is a fundamental and iterative rehabilitation process in which adults with chronic conditions and clinicians collaboratively establish goals, develop plans, evaluate goal achievement, and adjust goals and plans.[1-3] Throughout goal setting and goal management, clients and clinicians develop an understanding of client-related factors (e.g., clients' needs, health conditions, and environment), enhance their working relationship, and make shared goals and plans.[2,4-6] The established goals and plans provide clients and clinicians with mutual direction, and thus can promote person-centered rehabilitation implementation.[4]

Current goal setting and goal management in rehabilitation practice is suboptimal, mainly due to two major practice gaps: limited implementation of theory-based intervention components and poor client engagement in the intervention.[7] Most interventions do not fully incorporate all essential theory-based goal setting and goal management intervention components.[7] Intervention

components related to coping planning, goal monitoring, goal evaluation, and goal adjustment are particularly under-utilized in current practice even though they are likely as important as other frequently used components such as goal formulation.[7]

Achieving active client engagement in goal setting and goal management is another major challenge in practice.[7-9] Active client engagement in goal setting and goal management promotes a sense of ownership of rehabilitation care and can result in better outcomes.[4,10] However, current practice does not facilitate active client engagement.[7] Clinicians often fail to enable clients to actively participate in goal setting and goal management.[11,12] This is not because clinicians do not have the knowledge, but rather they cannot translate their knowledge into practice.[11] We need a new practical and effective system to address these research-practice gaps by guiding clinicians to implement high-quality goal setting and goal management.[7,12-14]

Developing new interventions and establishing their effectiveness requires a systematic approach that includes a review of literature and theories, data collection, collaboration with stakeholders, efficacy testing, intervention adaptation, effectiveness trials, etc.[15] In rehabilitation, a lack of clear identification and description of intervention components and mechanisms has been a major barrier to establishing evidence-based interventions.[16,17] This so-called "black box" of rehabilitation makes it difficult to understand active intervention ingredients and their contexts, and thus can hinder implementation.[16,17] In turn, these challenges can interfere with the ability to conduct reliable efficacy and effectiveness trials, identify the effective intervention components, and optimize interventions.[16,17] Therefore, it is necessary to take a systematic, theory-based approach to developing goal setting and goal management interventions and establishing them as evidence-based practice.[17,18]

To meet these needs, we used Intervention Mapping with community-based participatory research (CBPR) principles to develop a new goal setting and goal management system called MyGoals.[15,19] Intervention Mapping is a set of iterative step-by-step tasks to guide the identification of behavior determinants, mechanisms of actions, intervention strategies, active intervention ingredients, and outcomes to develop effective interventions.[15] Intervention Mapping has been recommended to develop an effective rehabilitation goal setting and goal management intervention.[18]

Intervention Mapping emphasizes the importance of CBPR principles to promote equitable research and develop effective interventions.[15,19] CBPR involves engaging and collaborating with stakeholders such as clients, clinicians, policymakers, etc. throughout the research process, with emphasis on the community partners' active participation and co-learning with them.[19] CBPR can facilitate synergy between academic and real-world knowledge, and as a result, it can help us better understand complex intervention contexts and develop ecologically valid and effective interventions.[19,20]

This paper describes the development of MyGoals using Intervention Mapping with CBPR. The findings from this study elucidate key determinants to enable clients to make and manage personally meaningful goals, theory-based mechanisms to address these determinants, and active intervention ingredients to enhance goal achievement and health. This study will also provide insights on how to use Intervention Mapping with CBPR to begin to unpack the black box of rehabilitation and inform effective theory-based rehabilitation intervention development.

2.3 Methods

Overall study design

This study undertook Intervention Mapping Step1: Develop a logic model of the problem, Step 2: Determine intervention outcomes and logic model of change, Step 3: Design MyGoals, and Step 4: Produce MyGoals as parts of the MyGoals development and optimization processes. For details, see Figure 2.1 below.

Study context

This study describes Intervention Mapping steps 1 to 4, which were completed as part of a larger project to develop and optimize MyGoals and its implementation strategies. Two adults with chronic conditions (clients) and two occupational therapists participated as planning team members. They were involved in applicable mapping steps during a total of 10 videoconferences and in-person meetings at a research-based university in the Midwestern United States.

Before the meetings, the research team provided the occupational therapists and client members with literature and materials to help them understand the relevant topics. During the meetings, the research team provided a clear meeting agenda and easy-to-understand meeting materials to promote the active participation of all members. The research team summarized and facilitated discussions by explicitly asking all members their perspectives and opinion to reach a consensus for each mapping step. When the members had inconsistent opinions, we solved these through an interactive discussion.

Currently, the research team is conducting other trials to evaluate the feasibility of MyGoals and its implementation strategies in adults with chronic conditions and occupational

therapists as a part of Intervention Mapping steps 5 and 6. The findings from Intervention Mapping step 5 (Implementation mapping) are published elsewhere. [21]

Planning team member eligibility and recruitment

Our planning team included two researchers, two clients, and two occupational therapists. The university's institutional review board approved this project. All participants provided their consent upon enrollment.

Client members

Two client members were involved in the Intervention Mapping tasks 1-4. We recruited client members who 1) are older than 18 years old, 2) speak English, 3) have one or more chronic conditions. We excluded individuals who have 1) severe cognitive impairment or dementia, operationally defined as a total Montreal Cognitive Assessment score[22] ≤ 21, or 2) have other conditions that may interfere with their research participation. Client members were recruited using snowball sampling methods and a research registry. Clients self-reported their age, race, ethnicity, education level, annual income, health benefits, and health conditions. Client members received remuneration.

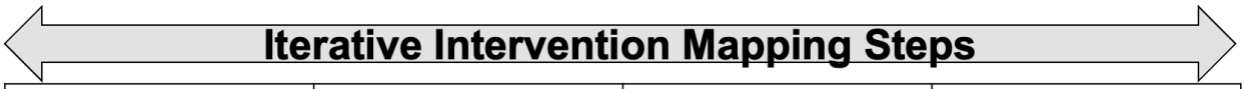
Occupational therapist members

Two occupational therapist members were involved in the Intervention Mapping tasks 1-4. We recruited occupational therapist members who 1) are older than 18 years old, 2) speak English, 3) are licensed occupational therapists, and 4) have at least one-year clinical experience with goal setting and goal management with adults with chronic conditions in community-based rehabilitation. We excluded occupational therapists who have no access to the REDCap survey, e-mail, or internet. We recruited occupational therapist members using snowball sampling methods. Occupational therapist members self-reported their race, ethnicity, education level, years of professional working experience, and professional working environment. Occupational therapist members received remuneration.

Intervention Mapping

Intervention Mapping guides effective intervention development, production, and evaluation.[15] It provides six iterative steps including 1) developing a logic model of the problem, 2) developing a logic model of change, 3) designing the intervention, 4) producing the intervention, 5) planning intervention implementation, and 6) evaluating the intervention.[15] The working conceptual model of MyGoals Intervention Mapping is described in Figure 2.1 and the below paragraphs.

Figure 2.1 The working conceptual model of MyGoals Intervention Mapping



1. Develop logic model of the problem	2. Determine intervention outcomes and logic model of change	3. Design MyGoals	4. Produce MyGoals
• Establish a planning team • Develop logic model of the problem using a needs assessment • Determine MyGoals' context, target population, setting, and intervention goals	• Specify the expected and desired outcomes, performance objectives, determinants, and change objectives • Develop logic model of change • Develop the matrices of change	• Generate the intervention components, scope, and sequence • Identify the theory- and evidence-based change methods to target the identified determinants • Design MyGoals	• Draft MyGoals • Pilot test MyGoals • Refine MyGoals

Intervention Mapping Step 1:

The first step involves establishing a planning team, developing a logic model of the problem, and identifying the MyGoals' context, target clients, settings, and intervention goals.[15] We established the planning team with two clients and two occupational therapists using the above-described eligibility and recruitment strategies. To develop a logic model of the problem, we conducted the needs assessment using the systematic review of current goal setting and goal management practice[7] and the planning team meeting.

In the systematic review, we reviewed what goal setting and goal management intervention components are used in current practice, to what extent each component is designed to facilitate active client engagement in the component, and what theories were used in developing the interventions.[7]

In the planning team meetings, we first reviewed the aforementioned systematic review and literature and then conducted a need assessment in an informal discussion format to identify the impacts of poor goal achievement on quality of life, priority health problems related to poor goal achievement, behavioral and environmental factors that can impact goal achievement, and personal determinants that can hinder adults with chronic conditions from achieving their goals. Based on the findings from the needs assessments, we developed the logic model of the problem and determined MyGoals' context, target clients, settings, and overall intervention goals.

Intervention Mapping Step 2:

The second step involves developing the logic model of change with the expected behavior outcomes, performance objectives, personal determinants, and matrices of change objectives.[15] We determined the desired outcomes and then developed performance objectives to clarify what behavior or action needs to be performed to achieve the desired outcome by using the guided questions suggested by Intervention Mapping. The example questions we used during the need assessment included "What do clients need to do to achieve their personally meaningful goals?", "What do clients need to do to make their personally relevant plans?", etc.[15] We drafted performance objectives and compared them with essential goal setting and goal management intervention components that we identified from the aforementioned systematic review[7] to determine how these objectives can be incorporated into the intervention. Then we reviewed literature, brainstormed potential determinants, and selected key determinants for each performance objective. We also developed change objectives to define desired changes at the

determinant level. Combining all findings from the second step, we developed the MyGoals Logic Model of Change and the matrices of change objectives.

Intervention Mapping Step 3:

The third step involves generating the intervention components, scope, and sequence, selecting theory- and evidence-based behavior change methods, and designing a practical intervention that satisfies the parameters of effectiveness.[15] Based on the findings from steps 1 and 2, we determined the intervention components, scope, and sequence. We then determined theory- and evidence-based change methods to target the identified determinants using the taxonomy of behaviour change methods.[23] Using the identified determinants, we first reviewed all potential change methods suggested by the taxonomy of behaviour change methods and then determined the change methods that are deemed applicable and effective to achieve each selected change objective in the MyGoals context.[23]

Intervention Mapping Step 4:

The fourth step involves MyGoals production, pilot-testing, and refinement.[15] We first drafted MyGoals instructions, scripts, and materials, and then conducted two rounds of pilot-testing as an in-person, client-occupational therapist dyad format among the client and occupational therapist team members. The pilot-testing included two weekly visits (1.5 hours and 0.5 hours). After the two rounds of pilot-testing, all team members completed the feasibility survey individually and then completed a group meeting to discuss and identify areas to improve. Based

on the results of pilot-testing, we refined MyGoals and the overall research process. To provide a clear description of MyGoals and improve its replicability, we reported the Template for Intervention Description and Replication (TIDieR) in Appendix A.

2.4 Results

The planning team members

Given the small number of planning team members, we decide not to report detailed demographic information to prevent identifying each individual. The median age of client participants was 73.5 years old (SD=10.6). All planning team members self-identified as non-Hispanic or Latino and Asian, Black or African American, and White. All members had at least a high school degree. Client members had diverse financial circumstances in terms of annual income and health benefits. The diagnosis of client members included Parkinson's disease, cancer, and diabetes. Occupational therapist members worked in community-based practice. The median years of professional working experience of the occupational therapists was 10 (SD=4.2).

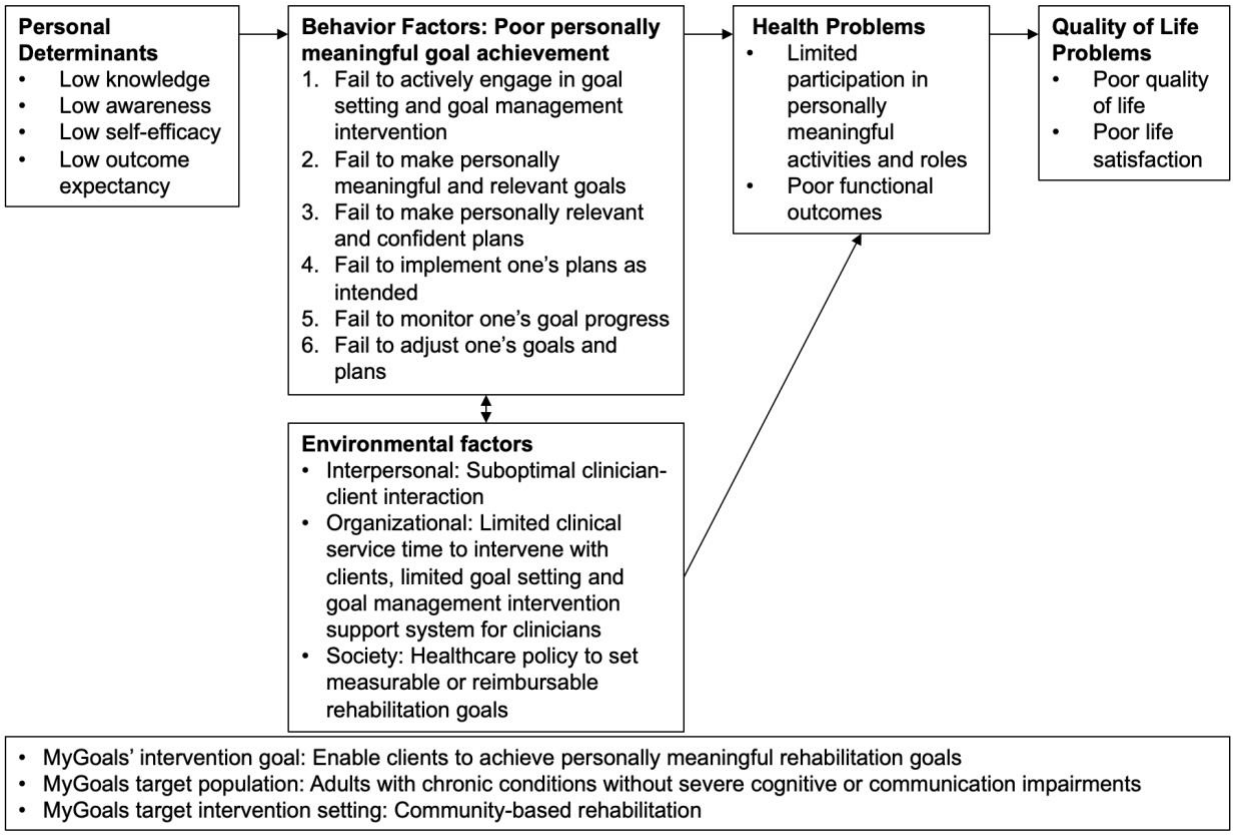
Intervention Mapping step 1

Based on the needs assessment findings, we developed the logic model of the problem and clarification of MyGoals intervention context, target population, setting, and intervention goals as outlined in Figure 2.2. The overall goal of the MyGoals intervention was identified as *enabling clients to achieve personally meaningful rehabilitation goals*. The target population and setting of MyGoals intervention were adults with chronic conditions without severe cognitive and communication impairment and community-based rehabilitation, respectively. Quality of life

problems that the target population can experience due to poor goal achievement included poor quality of life and life satisfaction. The health problems that can be caused by poor goal achievement included limited participation in personally meaningful activities and roles and poor functional outcomes. Several behavioral and environmental factors that can contribute to poor goal achievement were identified (e.g., poor client engagement in goal setting and goal management, suboptimal clinician-client interaction) (Figure 2.2).[4,11]

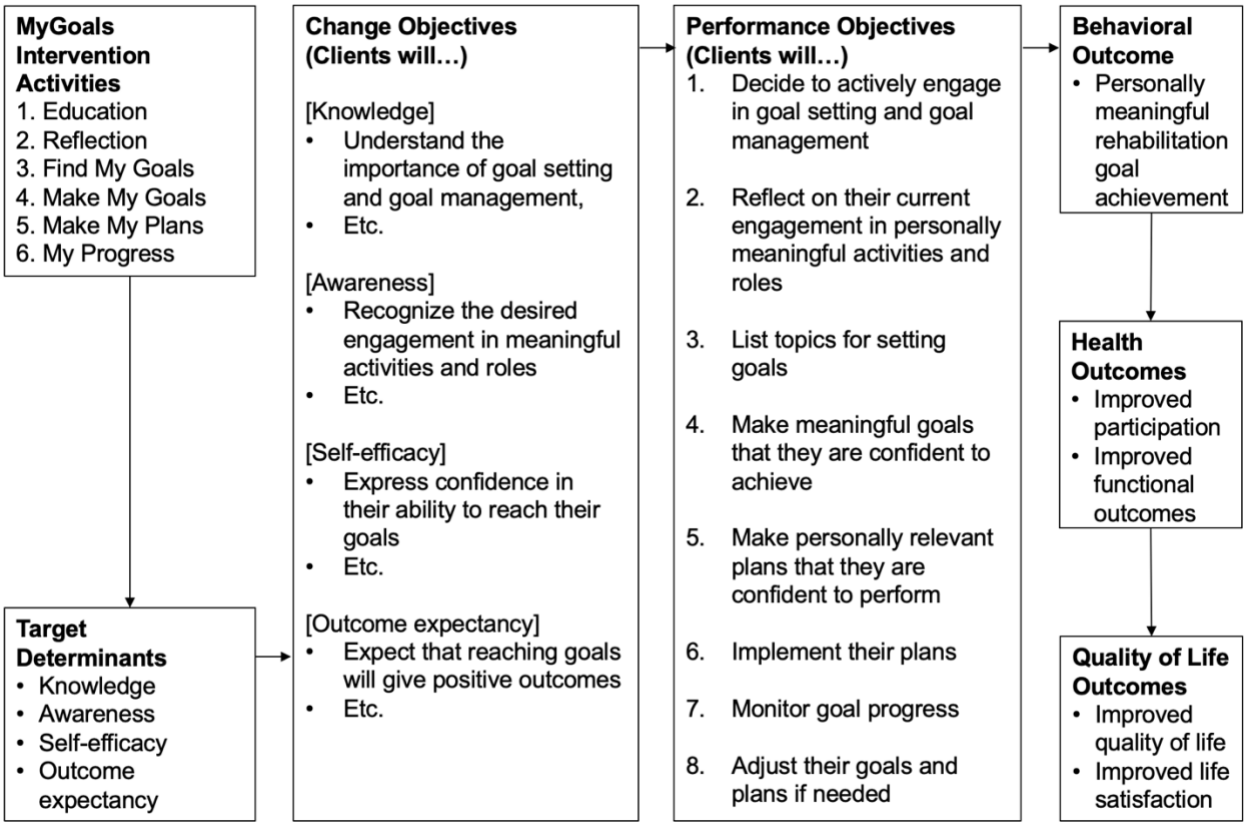
We identified the following personal determinants that have shown associations with poor goal achievement in adults with chronic conditions: low self-efficacy, low levels of knowledge, low awareness, and low outcome expectancy (Figure 2.2). Self-efficacy is a key determinant that has shown positive associations with goal-directed behavior.[24,25] People with lower self-efficacy are less likely to actively commit and persist in their goals.[26-28] Outcome expectancy is another important determinant that can drive goal-directed behavior. [29-31] People evaluate the potential positive and negative outcomes of their goals and then develop an intention to act or not to act on their goals.[29-31] Thus, when people do not have an adequate level of positive outcome expectancy for their goals, they are less likely to take goal-directed behavior.[32,33] Inadequate knowledge of goal setting and goal management concepts and expected roles of oneself during the intervention can lead to poor engagement in the intervention or goal-directed behaviors, which can lead to poor goal achievement.[34] Lastly, poor awareness about oneself can hinder the development of personally meaningful goals and clients to achieve their goals.[35-37]

Figure 2.2 MyGoals Logic Model of the Problem



Intervention Mapping step 2

Figure 2.3 MyGoals Logic Model of Change



The second step resulted in the development of the logic model of change (Figure 2.3) and matrices of change objectives (Table 2.1). The desired behavior outcome of MyGoals is *personally meaningful rehabilitation goal achievement*. We identified eight performance objectives as described in Table 2.1 (e.g., listing topics for setting goals and making goals that they feel meaningful and confident to achieve). We further specified essential determinants and change objectives in Table 2.1 (i.e., what determinant-level changes clients need to make to achieve a performance objective). For instance, to achieve the performance objectives for Activity 1. Education: Decide to actively engage in goal setting and goal management, clients need to gain knowledge (i.e., determinant). Specifically, clients need to achieve two change

objectives including *understanding the importance of goal setting and goal management* and *understanding one's expected role during goal setting and goal management*. By achieving these two change objectives, clients become more likely to achieve the performance objective for Activity 1. To achieve the performance objective for Activity 1, clients do not necessarily need other determinants such as awareness. Therefore, only directly applicable determinants were selected for each performance objective. Table 2.1 describes all of the MyGoals performance and change objectives.

Table 2.1 MyGoals matrices of change objectives

MyGoals activities	Performance objectives (Client will…)	Change objectives (Client will…)			
		Knowledge	**Awareness**	**Self-efficacy**	**Outcome expectancy**
1. Education	**Decide to actively engage in goal setting and goal management**	1.1. Understand the importance of goal setting and goal management 1.2. Understand one's expected role during goal setting and goal management	NA	NA	NA
	Mechanisms of action	Discussion, Individualization, Participation	NA	NA	NA
2. Reflection	**Reflect on their current engagement in personally meaningful activities and roles**	NA	2.1. Recognize their current engagement in meaningful daily activities and roles, health, and environment	NA	NA
	Mechanisms of action	NA	Individualization, Participation, Self-reevaluation	NA	NA
3. Find My Goals	**List topics for setting goals**	NA	3.1. Recognize their desired engagement in meaningful activities and roles	NA	NA
	Mechanisms of action	NA	Individualization, Participation, Self-reevaluation	NA	NA
4. Make My Goals	**Make goals that they feel meaningful and confident to achieve**	4.1. Understand the concepts of life goal, goal, and building block goal	4.2. Recognize their life goal, goals, and building block goals	4.3. Express confidence in their ability to reach their goals	4.4. Expect that reaching their goals will give positive outcomes

	Mechanisms of action	Advance organizers, Discussion, Elaboration, Individualization, Participation	Participation, Individualization	Goal setting, Individualization, Participation, Public commitment, Set graded tasks	Elaboration, Individualization, Participation, Self-reevaluation
5. Make My Plans	**Make plans that they feel personally relevant and confident to perform**	5.1. Understand the if-then plan concept 5.2. Understand the concepts of barriers and facilitators 5.3. Understand the concept of planned action	5.4. Recognize their barriers and facilitators to reaching goals 5.5. Recognize their planned action	5.6. Express confidence in their ability to perform plans	5.7. Expect that reaching plans will give positive outcomes
	Mechanisms of action	Discussion, Individualization, Participation	Individualization, Participation, Self-reevaluation	Goal setting, Implementation intention, Individualization, Participation, Planning coping responses, Public commitment, Set graded tasks, Verbal persuasion	Elaboration, Individualization, Participation, Self-reevaluation
6. My Progress	**Implement their plans**	6.1. List their plans	6.2. Recognize their current situation and plans	6.3. Express confidence in their ability to perform plans	6.4. Expect that reaching goals or plans will give positive outcomes
	Mechanisms of action	Participation	Participation	Participation	Participation, Self-reevaluation
	Monitor goal progress	6.5. Understand their expected roles during goal management	6.6. Recognize their goal progress	6.7. Express confidence in their ability to monitor goals and plans	NA

	Mechanisms of action	Discussion, Individualization, Participation	Individualization, Participation, Self-reevaluation	Enactive mastery experiences, Feedback, Improving physical and emotional states, Individualization, Participation, Self-monitoring of behavior,	NA
	Adjust their goals and plans if needed	6.8. Understand that they can adjust goals and plans if needed	6.9. Recognize their current situation, goal, and plans	6.10. Express confidence in their ability to adjust goals and plans	6. 11. Expect that adjusting goals or plans will give positive outcomes
	Mechanisms of action	Discussion, Individualization, Participation	Individualization, Participation, Self-reevaluation	Feedback, Goal setting, Individualization, Participation, Verbal persuasion	Individualization, Participation, Self-reevaluation

Intervention Mapping step 3

The third step resulted in the overall design of MyGoals. MyGoals is a theory-based intervention system. Theories such as social cognitive theory[27,28,30,31], self-determination theory[38,39], the theory of intentional action control[40-42], and the taxonomy of behaviour change methods[23] were used to inform the overall MyGoals design including the structured manual for occupational therapists and client worksheets. The manual includes an introduction to the objectives of MyGoals and its intervention components, instructions, scripts, supplements, and tips for therapists. Appendix B includes MyGoals sample. MyGoals materials are available upon request from the authors. The instructions and scripts provide occupational therapists with practical guidance on how to implement MyGoals intervention activities. Occupationaltherapists can use the structured scripts, client worksheets, and supplements to implement MyGoals intervention in their clinical practice without significant modifications.

MyGoals was designed to be delivered via in-person and/or telemedicine in an individual format by occupational therapists or other therapists. In the current research, we delivered MyGoals activities 1 to 5 in the first session (1.5 hours) and MyGoals activity 6 in the last session (0.5 hours) to thoroughly evaluate all activities. However, in real clinical practice, occupational therapists may deliver MyGoals intervention more flexibly in terms of how much time they allocate for each MyGoals activity, how they streamline MyGoals intervention activities, and so on depending on their practice settings, clients, etc.

We also designed the following four MyGoals approaches: 1) comprehensive intervention component approach, 2) person-centered approach, 3) goal hierarchy approach, and 4) empowerment-based approach.

First, the comprehensive intervention component approach involves using the 12 essential goal setting and goal management intervention components identified in the aforementioned systematic review.[7] Using these 12 components, we designed six MyGoals activities as described in Table 2.2. Some MyGoals activities are designed to address one intervention component (e.g., activity 1), and others address multiple components (e.g., activity 5). Because MyGoals activities are designed to address all essential theory-based goal setting and goal management intervention components, the use of MyGoals activities can enable occupational therapists to easily implement all key components in the practice. Table 2.2 describes the details of the six MyGoals intervention activities, what goal setting and goal management intervention components are incorporated in each activity, and the objectives of each intervention activity.

Table 2.2 MyGoals intervention activities, incorporated intervention components, and activity objectives

MyGoals intervention activities (Incorporated intervention components*)	**MyGoals intervention activity objectives**
Activity 1. Education (Education)	• Educate the basic concepts of goal setting and goal management • Educate on clients' expected roles during the intervention
Activity 2. Reflection (Reflection)	• Guide reflection on one's current engagement in personally meaningful activities and roles, health status, or behaviors
Activity 3. Find My Goals (Identification of topics for setting goals)	• Guide identification of goals that clients want to start, learn, do more easily or efficiently, etc.
Activity 4. Make My Goals (Goal formulation)	• Guide life goal, goal, building block goal formulation • Guide evaluation of self-efficacy and outcome expectancy levels of the developed goals • Educate and discuss the benefits of using life goals, goals, building block goals • Educate and discuss clients' health conditions using a person-centered approach
Activity 5. Make My Plans (Action plan formulation, Identification of barriers to carrying out the goals and plans, Identification of facilitators for carrying out the goals and plans, Assessment of confidence about carrying out the goals and plans, Coping plan formulation)	• Guide barrier, facilitator, and planned behavior identification to make if (when) - then plans • Guide if (when) – then plan formulation • Guide self-efficacy evaluation for the formulated plans
Activity 6. My Progress (Self-evaluation of goal progress, Professional goal progress evaluation, Goal and plan adjustment)	• Educate on client's expected roles during goal management • Guide self-evaluation of goal progress and satisfaction • Discuss goal progress and goal/plan adjustment

*These goal setting and goal management intervention components were identified from our systematic review (Kang et al. 2021) and existing literature (Lenzen et al., 2017)

Second, the person-centered approach involves taking into consideration clients' participation, activity, health condition, body functions & structures, environmental factors, and personal factors altogether as suggested by the World Health Organization's International Classification of Functioning, Disability and Health.[43] MyGoals was designed to initiate the goal discussion with a focus on participation. Rather than solely focusing on activity, health condition, and body functions & structures, MyGoals nudges occupational therapists to guide their conversation with clients around participation and then explore other domains including activities, health conditions, body functions & structures, environmental factors, and personal factors.

Specifically, MyGoals activities 2-4 are designed to enable occupational therapists to guide clients to first develop goals that address participation and then make goals related to activity, health conditions, and body functions & structures. MyGoals activity 5 is designed to help occupational therapists guide clients to identify their facilitators and barriers such as activity, health condition, and body functions & structures, environmental and personal factors to make personally relevant plans. Based on the identified factors, clients are guided to develop if-then plans informed by the theory of intentional action control.[40-42] By using this person-centered approach in MyGoals, we aim to enable clients to develop personally meaningful goals and relevant plans and promote person-centered rehabilitation care.

Third, the goal hierarchy approach involves using goals with different hierarchies including life goals and rehabilitation goals (goals and building block goals). These goal types were developed based on the review of literature about goal hierarchy, which suggests that using

goals with different hierarchies is a promising goal setting and goal management strategy. [37,44-47] When life and rehabilitation goals are aligned, clients can be intrinsically motivated to actively engage in their rehabilitation and goal-directed behaviors, and thus, it can improve client engagement and their health outcomes.[44,48]

In MyGoals, a life goal is defined as a state that a person wants to reach in their life. Examples of life goals include *living independently, being a supportive parent, being self-sufficient, enjoying a calm life, etc.* MyGoals does not intend to achieve life goals as a result of rehabilitation care in a short period. Rather, in MyGoals, life goals are designed to help clients understand how rehabilitation goals are congruent with their overall life values and priorities and how working towards rehabilitation goals can help them to reach their life goals in the long term. Therefore, a life goal is used as a means to intrinsically motivate clients to achieve their goals and building block goals in MyGoals.

A goal is defined as a desired activity and role that a person wants to reach as a result of therapy. Examples of goals include *independently preparing my lunch, walking for 10 minutes every morning and evening, picking up my daughter after her school on Wednesdays, etc*. The goal can help clients specify what activities and roles they want to engage in and understand how rehabilitation care helps them achieve better participation.

A building block goal is defined as a desired skill or function that a person wants to reach as a result of therapy. Targets of building block goals are activities, health conditions, and body functions & structures of clients. Examples of building block goals include *improving planning skills, strengthening my knee, being better at recognizing my anxiety, learning how to use a*

phone reminder, etc. Building block goals can guide clients to understand what skills and functions are necessary to enable them to achieve their desired participation.

Lastly, the empowerment-based approach involves using client-friendly communication strategies to facilitate active client engagement throughout MyGoals activities. Objectives of the empowerment-based approach include 1) supporting and facilitating clients to make self-directed decisions and actions to reach self-determined goals, 2) supporting clients to feel more control over their goal setting and goal management, 3) encouraging clients to actively engage in goal setting and goal management, and 4) using client's expressed opinion guide the practice, based on a collaborative partnership with occupational therapists. To achieve these objectives, MyGoals encourages therapists to use the following five communication strategies: 1) active listening, 2) explicitly asking clients about their needs, preferences, perspectives, or desires, 3) using open-ended questions, 4) using plain language, and 5) not forcing clients to change their responses to questions, goals, or plans.

Importantly, to better incorporate the above four approaches into MyGoals intervention, we identified applicable theory- and evidence-based mechanisms of action for each MyGoals change objective using the taxonomy of behavior change methods.[23] Table 2.3 describes all mechanisms of action in MyGoals and their adapted definitions. Most commonly included MyGoals mechanisms of action included *participation, discussion,* and *individualization.*[23]

Table 2.3 MyGoals mechanisms of action

Mechanisms of action	Mechanisms of action definition adapted in MyGoals*
Advance organizers	Provide an overview of the intervention material that can enable clients to activate correct schemas to facilitate their understanding of intervention contents
Discussion	Encourage clients to engage in an open informal conversation with clinicians
Elaboration	Stimulate clients to add meaning to the information delivered in the intervention
Enactive mastery experiences	Encourage clients to work on increasingly challenging goals and plans with feedback to serve as indicators of clients' capability
Feedback	Provide clients information regarding their goal progress or the extent to which their progress is having an impact on them
Goal setting	Guide clients to define what behaviors, actions, or roles they want to achieve and goal-directed behaviors they will execute
Implementation intention	Guide clients to develop if-then plans to link situational or environmental cues with goal-directed behaviors that are effective in achieving their goals
Improving physical and emotional states	Guide clients to interpret their improvement of physiological and affective states to evaluate their capabilities
Individualization	Provide clients with opportunities to have personal questions and instructions
Participation	Assure a high level of client engagement throughout the intervention
Planning coping responses	Guide clients to identify potential barriers and responses or actions to overcome these
Public commitment	Encourage clients to promise themselves to perform their goals and/or plans and announce these to clinicians and/or others
Self-monitoring of behavior	Guide clients to keep track of their goal progress
Self-reevaluation	Encourage clients to combine both cognitive and affective assessments of one's image with and without a desired activity/behavior
Set graded tasks	Guide clients to develop goals and plans with the right challenge

	levels and gradually increase the difficulty levels of those
Verbal persuasion	Suggest clients that they can reach their plans

*These definitions are adapted from Kok et al. 2016

We further took into consideration the parameters for effectiveness based on Kok et al. 2016[23] to activate the identified mechanisms of action in MyGoals. For instance, *participation* is known as an effective mechanism of action when clients want to and have the ability to participate in interventions and clinicians are willing to collaborate with clients as co-partners. [23] Thus, we designed MyGoals to be client-engaging and dynamic by using lay language so that clients can easily participate in these activities. We also incorporated various strategies that nudge clinicians to encourage active client engagement in MyGoals activities such as asking open-ended questions, having clients write down their goals and plans, reading aloud, etc. In addition, throughout MyGoals clinician education, we educated occupational therapists on the importance of active client engagement in MyGoals intervention and encouraged them to accept clients as partners. As such, to better activate the chosen mechanisms of action, we took into consideration the parameters for effectiveness in designing MyGoals. Table 2.4 describes example parameters used in MyGoals. Appendix C. includes all parameters for effectiveness.

Table 2.4 Example mechanisms of action and parameters for effectiveness incorporated in MyGoals

Mechanisms of action (Applied parameters of effectiveness)	How this parameter is incorporated in MyGoals (MyGoals activity number(s) or occupational therapist education)
Participation (Clinicians' willingness to accept clients as active partners in their care; clients with motivation and skills)	• Educate clinicians about the importance of active client engagement (occupational therapist education) • Ask open-ended questions and develop easy to participate activities using lay language (1-6) • Encourage clients to actively participate in MyGoals activities using verbal education and read out loud the MyGoals summary sheet (1,6) • Guide clients to reflect on their current engagement in activities and their health and environment and share their reflections (2) • Guide clients to come up with and write down activities and roles they want to work on using the Find My Goals Sheet (3) • Guide clients to come up with and write down personally meaningful goals with high confidence and positive outcome expectancy using the Make My Goals Sheet and guide them to realize potential positive outcomes of the developed goals (4) • Guide clients to come up with and write down their facilitators, barriers, and planned actions using My Plan and Progress Sheet, Guide clients to develop personally relevant and confident plans, with high positive outcome expectancy, and guide clients to realize potential positive outcomes of the developed plans (5) • Guide clients to monitor their goal progress using the My Plan and Progress Sheet, guide clients to adjust their goals and/or plans to develop personally meaningful goals and relevant plans with high positive outcome expectancy (6)

Intervention Mapping step 4

In step 4, we drafted MyGoals instructions, scripts, supplements, and client worksheets. We completed two rounds of pilot-testing of MyGoals with the planning team members, identified areas to improve, and then revised the developed materials. We found that most parts of MyGoals seemed feasible from both clients' and occupational therapists' perspectives.

We made several minor revisions. We added detailed explanations about different goal types (life goal, goal, building block goal) for clients to better help them formulate the goals. We also included a written summary about basic goal setting and goal management concepts and clients' expected roles during the intervention. We made minor revisions to the scripts and instructions on the client worksheets to ensure that MyGoals uses lay language to facilitate the interactive client-occupational therapist conversation and client engagement throughout the MyGoals intervention.

2.5 Discussion

We aimed to develop a new theory-based system to guide occupational therapists to implement comprehensive and client-engaging goal setting and goal management in adults with chronic conditions. To this end, we used Intervention Mapping, theories, and CBPR principles to develop and optimize the system, which we call MyGoals. Our work provides insight into how to systematically develop and report theory-based interventions and, therefore, can contribute to more reliable and effective rehabilitation research and practice. In addition, due to its rigorous development, MyGoals should effectively support high-quality goal setting and goal management intervention implementation in community-based rehabilitation. Thus, this work will ultimately promote person-centered rehabilitation and enhance health in adults with chronic conditions.

We used a theory-based developmental process to enhance MyGoals' theoretical rigor. Although the use of theories is strongly encouraged, [49] goal setting and goal management interventions are not always developed with a theoretical background. We used social cognitive theory[27,28,30,31], self-determination theory[38,39], and the theory of intentional action control[40-42] as

key guiding intervention theories. We incorporated key theoretical constructs such as self-efficacy and outcome expectancy into MyGoals so that clinicians can easily target these constructs during the intervention.

We further specified how each MyGoals incorporated theory-based mechanisms of action and parameters for effectiveness. For instance, to activate the participation mechanism of action, we educated occupational therapists about the importance of therapeutic alliance with clients and the necessary skills to do so. As a result, occupational therapists can become more willing to accept clients as active partners in the MyGoals intervention and provide client-engaging activities. When such conditions are met, clients can actively participate in MyGoals. Incorporating the mechanisms of action and parameters is feasible when developing a new theory-based intervention. Given that theory-based mechanisms of action and parameters are generalizable across contexts, the findings from future MyGoals trials can provide insight into developing other theory-based interventions.

The use of CBPR principles enhanced the ecological validity of MyGoals. We synthesized evidence from the literature and stakeholders' real-life knowledge to identify ecologically valid MyGoals intervention targets (determinants). The stakeholders' real-life knowledge was aligned with the literature, echoing the importance of the identified intervention determinants such as clients' self-efficacy in goal setting and goal management. Identifying these targets allowed us to tailor-make MyGoals for clients to attain the change and performance objectives and support their rehabilitation goal achievement. Although it is thought to support ecologically valid rehabilitation intervention development, community-engaged research is not yet common practice in rehabilitation. We have demonstrated that collaboration with stakeholders to develop a new intervention is feasible.

Each MyGoals activity is tailor-made to achieve specific change and performance objectives, which can serve as stepping-stones to reach the ultimate MyGoals intervention goal. Rehabilitation interventions often do not specify the processes or steps that enable clients to achieve the desired intervention outcomes.[17] Such practice hinders the understanding, evaluation, and replication of rehabilitation interventions and their mechanisms.[16,17] In MyGoals, we specified the hypothesized processes by which MyGoals intervention enables clients to achieve the change and performance objectives to reach the ultimate MyGoals intervention goal. For instance, we hypothesized that clients are more likely to achieve their rehabilitation goals (i.e., MyGoals intervention ultimate goal) when they make personally relevant and confident plans to perform (i.e., performance objective for MyGoals activity 5) and know barriers and facilitators to reach one's goals (i.e., change objective for MyGoals activity 5). The specification of the processes of how and why MyGoals intervention works helped us to establish a rationale for each intervention activity.

The specified change and performance objectives of MyGoals will allow us to evaluate how each MyGoals activity works at the determinant-, performance-, or activity levels, not simply how MyGoals intervention works as a whole. Future MyGoals evaluations will provide insights on the efficacy and effectiveness of individual MyGoals activities in achieving the change and performance objectives. It will allow us to optimize each activity to improve the overall efficacy and effectiveness of MyGoals intervention. Evaluating each MyGoals intervention activity can also prevent the wasting of research resources because it will enable optimization of MyGoals activities before conducting larger resource-intensive trials.

Limitations

The occupational therapist and client team members only had limited time to work on this research. Therefore, we needed to streamline the overall research process. To do so, the research team designed the research and prepared all meeting materials such as discussion questions, educational materials, review articles, logic model drafts, etc. However, using the above-described meeting strategies, we facilitated the active engagement of the team members.

We had a comparatively small planning team with less diverse ethnic and educational backgrounds. All team members self-identified as Not-Hispanic or Latino individuals, so more studies can be beneficial to generalize these findings in Hispanic or Latino communities. As all team members had at least a high school education, our perspectives may not be the same as people with less than high school education. However, our team members had somewhat diverse racial and financial backgrounds.

Future studies need to collaborate with more people from various demographic, socioeconomic, and cultural backgrounds and provide them with additional protected time and resources. This can allow the stakeholders to take far more active roles in research. At the same time, it is necessary to develop effective strategies to promote community-engaged research in rehabilitation given that not all research studies can have extensive resources.

2.6 Conclusion

We developed a new system, MyGoals, to support occupational therapists in implementing high-quality theory-based goal setting and goal management intervention using Intervention Mapping with CBPR. Intervention Mapping successfully guided us to develop MyGoals through collaboration with clients and clinicians. Our systematic and detailed intervention development

and reporting will help other scientists and clinicians critically examine whether and how our work can inform or be translated into their research and practice. In addition, our work provides insights on how to uncover the black box of rehabilitation interventions, which remains a problem in the field. We are currently conducting a study to evaluate and optimize the feasibility of MyGoals. Future studies will evaluate MyGoals' effectiveness in supporting goal setting and goal management to promote person-centered rehabilitation and improve health in adults with chronic conditions.

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Chapter 3: Aim 2: Develop implementation strategies to support implementation of the system in community-based rehabilitation with adults with chronic conditions

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3.1 Abstract

Aims: This study aims to identify implementation determinants, mechanisms of action, implementation strategies, and implementation outcome evaluation plans for a new theory-based rehabilitation goal setting and goal management intervention system, called MyGoals, using Implementation Mapping with community-based participatory research principles. Methods: We completed Implementation Mapping tasks 1 to 4 as a planning team consisting of MyGoals target implementers (occupational therapists), MyGoals intervention target clients (adults with chronic conditions), and the research team. We are currently conducting mapping task 5. These processes were guided by the Consolidated Framework for Implementation Research, social cognitive theory, the taxonomy of behaviour change methods, and Proctor's implementation research framework. Results: We identified intervention-level determinants (*MyGoals' evidence strength & quality, relative advantages*) and occupational therapist-level determinants (*knowledge, awareness, skills, self-efficacy, outcome expectancy)*. We selected the MyGoals implementation outcome (*occupational therapists will deliver MyGoals completely and competently*), outcome variables (*acceptability, appropriateness, feasibility, fidelity),* and process outcomes. We also determined three performance objectives (e.g., *occupational therapists will deliver all MyGoals intervention components)* and 15 change objectives (e.g., *occupational therapists will demonstrate skills for delivering all MyGoals intervention components).* Based on the identified outcomes, objectives, and determinants, we specified the mechanisms of change (e.g., *active learning)*. To address these determinants and achieve the implementation outcomes, we produced two tailored MyGoals implementation strategies: *MyGoals Clinician Education* and *MyGoals Clinician Feedback Session*. We developed evaluation plans to explore and evaluate how these two MyGoals implementation strategies perform using a mixed-methods study of occupational therapist-client dyads. Conclusion: We produced tailored implementation strategies

for a rehabilitation goal setting and goal management intervention by using Implementation Mapping with community-based participatory research principles. The MyGoals implementation strategies may help occupational therapists implement high-quality goal setting and goal management practice and thus contribute to bridging current research-practice gaps. Our findings can provide insight on how to apply implementation science in rehabilitation to improve the development and translation of evidence-based interventions to enhance health in adults with chronic conditions.

3.2 Introduction

Goal setting and goal management is a core routine rehabilitation practice that can determine overall care planning, quality of care, and health outcomes.[1-5] Evidence indicates that the implementation of theory-based, client-engaging goal setting and goal management can help clinicians build a better understanding of clients' goals, daily life performance, environment, etc., so they can provide quality person-centered rehabilitation to enhance clients' health.[6,7] Despite such evidence, theory-based, client-engaging goal setting and goal management is not well implemented in current community-based rehabilitation.[8]

Two major research-practice gaps in current goal setting and goal management include limited use of theory-based intervention components and poor client engagement throughout the intervention.[8] Current practice often focuses on intervention components related to making goals and plans and does not sufficiently address the monitoring and adjustment of goals and plans.[8] In addition, clients are often passive recipients of their rehabilitation goals, and clinicians express difficulties facilitating active client engagement during goal setting and goal management.[9,10] To address these research-practice gaps, it has been suggested that the development of a new

practical and effective system that guides clinicians through the process of theory-based, client-engaging goal setting and goal management is needed.[8,10,11]

To address this need, we developed a new system, called MyGoals, to guide occupational therapists to implement comprehensive theory-based, client-engaging goal setting and goal management for adults with chronic conditions in community-based rehabilitation. We developed MyGoals using Intervention Mapping combined with community-based participatory research (CBPR).[12-15] MyGoals ultimately aims to enable clients to achieve personally meaningful rehabilitation goals by supporting occupational therapists in providing a high-quality and person-centered goal setting and goal management intervention. To do so, MyGoals provides occupational therapists with instructions, scripts, and materials for a sequence of six structured goal setting and goal management activities (*Education, Reflection, Find My Goals, Make My Goals, Make My Plans,* and *My Progress)* that they can directly apply in their practice without considerable modifications. To facilitate active client engagement, MyGoals guides occupational therapists to use an empowerment-based approach that involves supporting clients to make self-determined decisions and actions.[16] These two MyGoals approaches can help occupational therapists deliver a theory-based, client-engaging goal setting and goal management intervention completely and competently.

Complex interventions like MyGoals require tailored and effective strategies to enhance their implementation.[17,18] If MyGoals cannot be implemented by occupational therapists in practice as intended, it will not be efficacious nor effective in a real-life context. Therefore, it is recommended to explore and develop implementation strategies as a part of intervention development.[17] This process can be rigorously navigated using an implementation science approach. Although it is not yet widely adopted in occupational therapy and rehabilitation, the

use of implementation science has been identified by scholars in those fields as critical in facilitating the translation of evidence-based interventions into practice.[12,18,19]

Implementation Mapping is an innovative implementation science approach that provides a set of systematic iterative tasks to guide implementation strategy development and evaluation.[12] Implementation Mapping emphasizes the importance of using CBPR principles throughout the overall tasks.[12] CBPR principles involve engaging and collaborating with community partners such as clients, clinicians, researchers, organizational representatives, policymakers, etc. to better understand the complex intervention context and facilitate the integration of real-world and academic knowledge, thus enhancing the likely effectiveness of interventions and their implementation strategies. Implementation Mapping with CBPR principles or collaboration with community partners has shown benefits in other fields, but it has yet to be widely adopted in developing implementation strategies for rehabilitation interventions.[12,20,21] Given its promising effects, Implementation Mapping may inform the development of effective MyGoals implementation strategies.

The purpose of this study was to use Implementation Mapping to identify MyGoals implementation determinants, mechanisms of action, implementation strategies, and outcome evaluation plans. The results from this study will provide insight into factors that influence the implementation of quality goal setting and goal management in community-based rehabilitation with adults with chronic conditions and how to address these factors to enhance its implementation. This study will also inform future efforts to apply implementation science and collaborate with community partners to develop and optimize rehabilitation interventions.

3.3 Methods

Overall study design

This is a mixed-methods study involving five Implementation Mapping tasks as a part of the MyGoals implementation strategy development and optimization process.

Research context and planning team members

The paper reports the Implementation Mapping tasks that were completed as a part of the larger MyGoals development project. In the larger MyGoals development project, we established a planning team consisting of two occupational therapists, two adults with chronic conditions, and the research team to develop MyGoals using Intervention Mapping and to develop the MyGoals implementation strategy using Implementation Mapping.[12-13]

We conducted a total of 10 virtual meetings using video-conference calls and in-person meetings at a research-based university in the Midwest, United States. The planning team members were asked to join the meetings when the mapping tasks and meeting agenda were directly applicable to them. The occupational therapists planning team members participated in all Intervention Mapping and Implementation Mapping tasks. The client members joined in all Intervention Mapping and Implementation Mapping tasks 4-5. Because our study first aims to create and optimize MyGoals and its implementation strategy for community-based rehabilitation generally before targeting a specific site, we did not address the adoption and maintenance of MyGoals. The MyGoals Intervention Mapping process will be published elsewhere.

Planning team eligibility and recruitment

Occupational therapists

Two occupational therapists who met the following inclusion criteria participated as planning team members: 1) aged > 18 years old, 2) English speakers, 3) licensed occupational therapists, 4) experience working in community-based rehabilitation settings with adult clients, 4) at least one-year professional clinical experience relevant to goal setting and goal management with adults with chronic conditions. The exclusion criteria were 1) no access to the REDCap survey, e-mail, or internet and 2) less than one year of professional clinical experience relevant to goal setting and goal management with adults with chronic conditions to prevent a lack of clinical experience interfering with MyGoals' feasibility evaluation. The occupational therapists were recruited by word of mouth.

Clients

Two clients who met the following inclusion criteria participated as planning team members: 1) aged > 18 years old, 2) English speakers, 3) have one or more chronic conditions. The exclusion criteria were 1) severe cognitive impairment or dementia defined as a total Montreal Cognitive Assessment[22] score < 21 and 2) any other condition that may interfere with research participation (e.g., blindness). Client participants were recruited using a research participant registry and word of mouth.

Theories, frameworks, and models for MyGoals implementation

In implementation science, theories, models, and frameworks can be used to guide 1) the implementation process, 2) implementation determinant identification and strategy development, and 3) implementation outcome evaluation.[23] In this study, we used Implementation Mapping[12], Consolidated Framework for Implementation Research (CFIR) [24], social cognitive theory[25], the taxonomy of behaviour change methods suggested by Intervention Mapping[26], and Proctor's implementation research framework.[27]

We used Implementation Mappingto guide the overall process of identifying and optimizing implementation determinants, mechanisms of action, implementation strategies, and implementation outcome evaluation plans for MyGoals. Implementation Mapping provides five iterative tasks including 1) conducting the implementation needs assessment, 2) identifying implementation outcomes and the matrices of change, 3) selecting implementation strategies, 4) making implementation materials, and 5) evaluating implementation outcomes.[12]

We used the CFIR[24] to identify MyGoals implementation determinants and guide implementation strategy development. The use of CFIR allowed us to explore and identify influential implementation contextual factors across domains. The CFIR includes intervention, individuals involved, inner setting, outer setting, and process domains.[24] As mentioned above, because this study targeted community-based rehabilitation generally, not a specific site, we did not evaluate inner setting determinants. In addition, we used the CFIR-Expert Recommendations for Implementing Change (ERIC) Matching tool.[28] The CFIR-ERIC Matching tool provides a list of recommended implementation strategies to address each CFIR-based determinant.[28] Thus, the CFIR-ERIC matching tool provided us with potential sets of strategies to start with. To develop

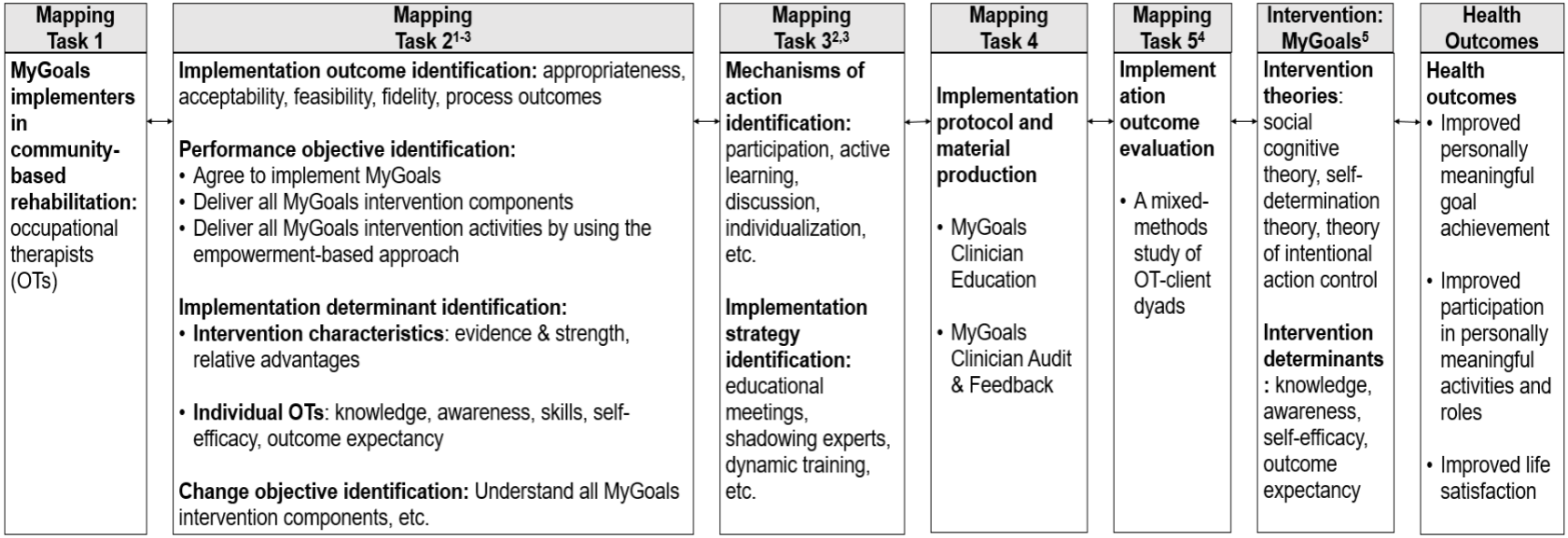
implementation change objectives and mechanisms of action, we used social cognitive theory[25] and the taxonomy of behaviour change methods.[26]

Lastly, we used Proctor's implementation research framework[27] to determine the MyGoals implementation outcomes. In this study, we evaluated the appropriateness, acceptability, and feasibility of MyGoals and MyGoals implementation strategies.[27] We also evaluated the fidelity of MyGoals.

Implementation Mapping tasks

All Implementation Mapping tasks were completed through the planning team meetings. Throughout the meetings, we had a different agenda for each mapping task but used the same principles to maximize client and occupational therapists team members' participation in the tasks. Before the meetings, the research team prepared easy-to-understand and eye-catching meeting readings, presentations, drafts, etc. to facilitate all team members' understandings of topics and brainstorming. During the meetings, the research team reflected, summarized, and facilitated interactive discussions. The research team ensured that all members participated in discussions by explicitly asking individual members' opinions to reach a consensus for each task. After meetings, if the research team found any inconsistent content, they brought these points back and double-checked with planning team members to reach a consensus. Figure 3.1 describes the working conceptual model for MyGoals implementation strategy development and evaluation.

Figure 3.1 The working conceptual model for MyGoals implementation strategy development and evaluation.



Guiding theories, models, and frameworks: (1) Social cognitive theory, (2) A taxonomy of behavior change methods, (3) CFIR, (4) Proctor's implementation research framework, (5) Intervention Mapping.

In the first task, we conducted a needs assessment through informal discussions to identify who implements MyGoals (i.e., implementers) using the following question: "Who will implement MyGoals in community-based rehabilitation settings?" In the second task, we determined implementation outcomes, performance objectives (what specific step or action MyGoals implementers need to perform to achieve the implementation outcomes), change objectives (what and how determinant needs to be changed to achieve the performance objectives), and implementation determinants. We choose all applicable implementation outcomes from Proctor's implementation research framework.[27] To identify the performance objectives, we used the following question: "What do the MyGoals implementers need to do to deliver MyGoals completely and competently?" The implementation determinants were identified using the CFIR[24] and social cognitive theory[25]. We used the CFIR Interview Guide Tool to determine MyGoals implementation determinants for each performance objective.[29] We used all questions from the CFIR Interview Guide Tool that are designed to explore intervention, individuals involved, and process domains.[29] For the outer setting domain, we only explored one determinant, *Patient Needs & Resources*, because other constructs such as *External Policies & Incentives* can vary considerably across occupational therapists inner work settings. Based on the identified determinants, we developed the change objectives and the matrices of change.

In the third task, we selected mechanisms of action and implementation strategies that are deemed applicable and effective in targeting the MyGoals implementation determinants to achieve the change and performance objectives. To choose theory- and evidence-based mechanisms of action, we first reviewed all the taxonomy of behaviour change methods that are suggested effective in targeting the identified determinants and then identified ones that are applicable with the chosen implementation strategies.[26] To determine the MyGoals

implementation strategy, we first chose potential strategies that have shown at least 20% of experts' endorsement from the Expert Recommendations for Implementing Change (ERIC) [28] to address the MyGoals implementation determinants. We then selected and optimized final strategies that are most applicable in the current stage of MyGoals and community-based rehabilitation generally. We took into consideration the parameters for effectiveness suggested by the taxonomy of behaviour change methods to translate the chosen implementation strategies more effectively and practically.[26] It is important to note that the processes of identifying change methods and implementation strategies and designing these strategies based on the parameters for effectiveness were completed iteratively. As we completed these series of iterative steps to reinforce the connections among determinants, change and performance objectives, implementation strategies, and the parameters of effectiveness, we were able to design the MyGoals implementation strategies to align with the chosen determinants, the objectives, and the parameters.

In the fourth task, we produced *MyGoals Clinician Education* and *MyGoals Clinician Feedback Session*. We first drafted the *MyGoals Clinician Education* content. Then we optimized the *MyGoals Clinician Education* content and delivery based on the developed matrices of action and chosen implementation strategies. After the initial development of *MyGoals Clinician Education*, we conducted pilot-testing with a new occupational therapist-client dyad (identified using the same eligibility criteria and methods described above for planning team members) to optimize *MyGoals Clinician Education*. The occupational therapist completed the following tasks in order: 1) two virtual *MyGoals Clinician Education* sessions, 2) deliver MyGoals activities 1 – 5 to a client, 3) *MyGoals Clinician Feedback Session*, 4) deliver MyGoals activity 6 to the client, and 5) implementation outcome evaluations. Based on the

findings from this pilot-testing, we refined *MyGoals Clinician Education, MyGoals Clinician Feedback Session,* and MyGoals.

In the fifth task, we specified the process evaluation question items, outcome indicators and measures, and the study design to evaluate MyGoals implementation outcomes. We are currently conducting the MyGoals implementation strategy evaluation using a mixed-methods study of occupational therapist-client dyads.

3.4 Results

Mapping task 1: We identified that the MyGoals implementers are *occupational therapists*.

Mapping task 2: We determined the MyGoals implementation outcome, *occupational therapists will deliver MyGoals completely and competently,* and outcome variables including *acceptability, appropriateness,* and *feasibility* of MyGoals implementation strategies and *acceptability, appropriateness, feasibility,* and *fidelity* of MyGoals. Due to the early nature of our research, other implementation outcomes suggested by Proctor's implementation research framework[27] such as penetration, sustainability, uptake, and costs of implementation strategies were not explored in this research. We also identified three performance objectives: *1) Agree to implement MyGoals, 2) Deliver all MyGoals intervention components,* and *3) Deliver all MyGoals intervention activities by using the empowerment-based approach*.

We then explored MyGoals implementation determinants using all CFIR domains except the inner setting and found that intervention- and individual-level determinants are key determinants. The identified intervention-level determinants are MyGoals' *evidence & strength* and *relative advantages*. This is because MyGoals is new, so occupational therapists are not yet

aware of its evidence and benefits over other existing systems. Thus, to facilitate MyGoals implementation, it will be crucial that occupational therapists understand its evidence and its advantages over other existing systems. The occupational therapist-level determinants are their *knowledge, awareness, skills, self-efficacy,* and *outcome expectancy*. To target these occupational therapist-level determinants, we specified change objectives for each chosen determinant. Table 3.1 shows the matrices of change which illustrates determinant, change objectives, and performance objectives. No outer setting- and process-level determinants were found to be critical in this research.

Table 3.1 MyGoals matrices of change

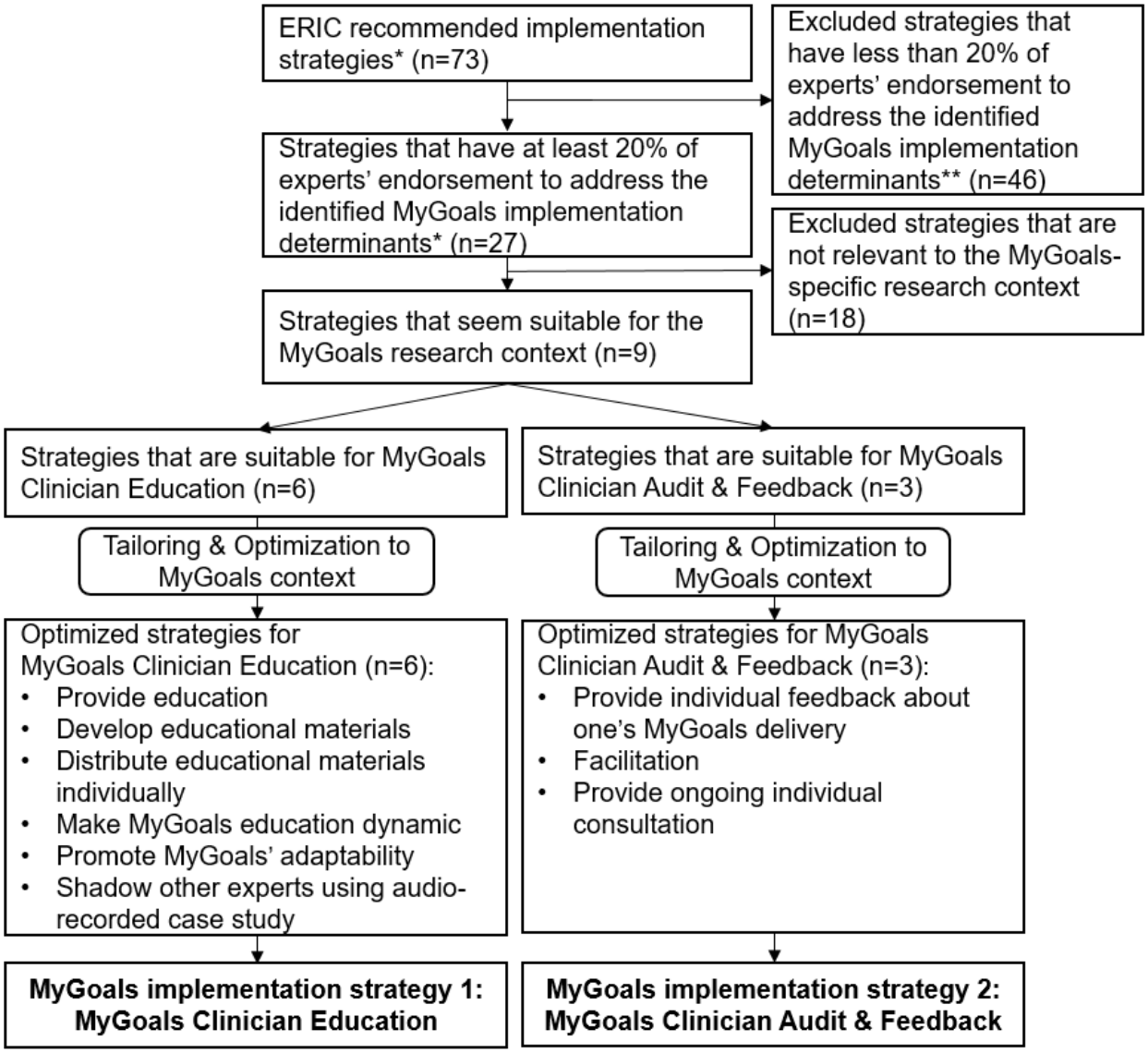
Performance objectives **(Occupational therapist will…)**	**Change objectives (occupational therapist will…)**				
	Knowledge	**Awareness**	**Skills**	**Outcome expectancy**	**Self-efficacy**
1. Agree to implement MyGoals as intended	1.1. Understand goal setting and goal management practice concepts and its importance 1.2. Understand evidence of MyGoals	1.3. Acknowledge that current goal setting and goal management practice is not optimal 1.4. Acknowledge that MyGoals is acceptable 1.5. Acknowledge that MyGoals is appropriate 1.6. Acknowledge that MyGoals is feasible	NA	1.7. Expect delivering MyGoals will improve personally meaningful goal achievement in clients	NA
Mechanisms of action	Participation, active learning, individualization, advance organizers, discussion, elaboration	Participation, active learning, individualization, consciousness raising, self-evaluation	NA	Participation, active learning, individualization, self-reevaluation, shifting perspective, elaboration	NA
2. Deliver all MyGoals intervention	2.1. Understand all MyGoals intervention	NA	2.2. Demonstrate skills for delivering all MyGoals intervention	2.3. Expect delivering all MyGoals intervention	2.4. Express confidence in one's ability to deliver all

components	components		components completely	components will improve personally meaningful goal achievement in clients	MyGoals intervention components
Mechanisms of action	Participation, active learning, individualization, advance organizers, discussion, elaboration	NA	Participation, active learning, individualization, guided practice	Participation, active learning, individualization, self-reevaluation, shifting perspective, elaboration	Participation, active learning, individualization, guided practice
3. Deliver all MyGoals intervention activities by using the empowerment-based approach	3.1. Understand 4 MyGoals communication strategies	NA	3.2. Demonstrate skills for delivering all activities by using 4 MyGoals communication strategies	3.3. Expect using 4 MyGoals communication strategies will improve personally meaningful goal achievement in clients	3.4. Express confidence in one's ability to deliver all activities by using 4 MyGoals communication strategies
Mechanisms of action	Participation, active learning, individualization, advance organizers, discussion, elaboration	NA	Participation, active learning, individualization, guided practice	Participation, active learning, individualization, self-reevaluation, shifting perspective, elaboration	Participation, active learning, individualization, guided practice

Mapping task 3: Based on the identified change objectives, we selected the mechanisms of change using the taxonomy of behaviour change methods.[26] All selected mechanisms of change are outlined in Table 3.1. For a detailed description of each mechanism and parameters for effectiveness, refer to Kok et al. 2016[26]

To develop MyGoals implementation strategies, we first selected 27 potential ERIC-recommended strategies that can address the MyGoals implementation determinants. Then we selected nine ERIC-recommended implementation strategies that can inform the development of MyGoals implementation strategies. Based on these nine strategies, we developed two MyGoals implementation strategies: *MyGoals Clinician Education* and *MyGoals Clinician Feedback Session*. These strategies were further enhanced by incorporating the parameters for effectiveness suggested by the taxonomy of behavior change methods.[26] For instance, one of the common mechanisms of change used in this project included individualization. According to the taxonomy of behavior change methods, providing personal communication tailored to a person's needs is an essential parameter to activate the individualization change method.[26] Thus, we incorporated personal communication in developing MyGoals implementation strategies by being more intentional and explicit to ask and respond to the individual occupational therapist's needs to improve the likely effectiveness of MyGoals implementation strategies. Figure 3.2 describes the MyGoals implementation strategy selection and optimization process.

Figure 3.2 MyGoals implementation strategy selection and optimization process



*Powell et al. (28). **The identified determination determinates included MyGoals' evidence strength and quality, MyGoals' relative advantage, and occupational therapist's knowledge, awareness, skills, self-efficacy and outcome expectancy.

We developed *MyGoals Clinician Education* based on the following six ERIC-recommended strategies: *conducting educational meetings, developing educational materials, distributing educational materials, making training dynamic, promoting adaptability,* and

shadowing other experts.[28] The remaining three strategies, *auditing and providing feedback, facilitation,* and *providing ongoing consultation*, were used to inform *MyGoals Clinician Feedback Session*.[28] We describe two MyGoals implementation strategies based on the reporting guideline for implementation strategies by Proctor et al. 2013[30] in Table 3.2.

Table 3.2 MyGoals implementation strategies specification

	MyGoals Clinician Education	**MyGoals Clinician Audit & Feedback**
Actors	The research team	The research team
Actions	• Provide MyGoals Clinician Education to introduce concepts, importance, and current limitations of goal setting and goal management, and MyGoals • Develop easy-to-use MyGoals instructions, script, and materials to enhance the quality of MyGoals and facilitate learning • Develop eye-catching PowerPoint for MyGoals Clinician Education to facilitate learning • Distribute MyGoals by email to provide the opportunity to thoroughly review MyGoals evidence during the self-study session • Role-play with the clinician trainee to boost confidence and perceive the potential benefits of using MyGoals • Promote MyGoals' flexible activity steps that can be tailored to each client • Provide audit and active discussion on the audio-recording of the experienced occupational therapist's MyGoals sessions to learn ideal MyGoals practice and boost	• Provide feedback about occupational therapists's MyGoals delivery based on direct observation of the MyGoals session to boost one's confidence for the next MyGoals delivery • Facilitate occupational therapists's reflection on areas that they performed well and areas that can be improved to reinforce the perceived benefits of using MyGoals and to support better MyGoals delivery • Provide ongoing consultation about occupational therapists's MyGoals delivery based on direct observation of the session to boost one's confidence about MyGoals delivery

	one's confidence to deliver MyGoals	
Action target	Newly trained occupational therapist's knowledge, self-awareness, skills, outcome expectancy, and self-efficacy	Newly trained occupational therapist's knowledge, self-awareness, skills, outcome expectancy, and self-efficacy
Temporality	Two education sessions will be provided before any client visit	Audit & Feedback will be provided before the second visit with each client
Dose	2 sessions (2 hours each)	1 session for each client (0.5 hours)
Implementation outcomes affected	Appropriateness, acceptability, feasibility, process outcomes	Appropriateness, acceptability, feasibility, process outcomes
Justification	The six integrated ERIC recommended implementation strategies are deemed promising to address the MyGoals determinants	• The three integrated ERIC recommended implementation strategies are deemed promising to address the MyGoals determinants • Providing post-training to clinicians shows promise for enhancing the quality of intervention implementation[32]
Incorporated ERIC recommended implementation strategies (Target determinants*)	• Provide education (Intervention's evidence strength & quality, intervention's relative advantage, occupational therapist's knowledge) • Develop educational materials (Evidence strength & quality, occupational therapist's knowledge) • Distribute educational materials individually (Intervention's evidence strength & quality) • Make MyGoals education dynamic (occupational therapist's self-efficacy) • Promote MyGoals' adaptability (Intervention's relative advantage) • Shadow other experts using an audio-recorded case study (occupational therapists's self-	• Provide individual feedback about one's MyGoals delivery (occupational therapist's self-efficacy) • Facilitate (Intervention's relative advantage, occupational therapist's knowledge) • Provide ongoing individual consultation (occupational therapist's self-efficacy)

	efficacy)	

*We listed MyGoals determinants that have shown at least 20 percent of experts' endorsement from the ERIC study[28].

Mapping task 4: Based on the identified strategies and matrices of action, we drafted the *MyGoals Clinician Education* and *MyGoals Clinician Feedback Session* and completed pilot-testing. The results from the pilot-testing indicated that most of the developed implementation strategies seem feasible. We made minor revisions to scripts, wording, and sequence of presentation contents to streamline *MyGoals Clinician Education.* We edited the audio recordings of the experienced occupational therapist's MyGoals sessions provided as a part of *MyGoals Clinician Education* to more efficiently deliver key messages from the case examples. After the pilot-testing, we also added options for occupational therapists to choose when and how they want to complete the *MyGoals Clinician Feedback Session.* In the pilot-testing, we delivered an in-person *MyGoals Clinician Feedback Session* right before the occupational therapist sees the client for their second visit. We found that it can be more beneficial to provide individual occupational therapist with options for when (e.g., right after their 1st client session, between sessions, etc.) and how (e.g., virtual or in-person) they want to complete the *MyGoals Clinician Feedback Session*. This revision was allows us to tailor the *MyGoals Clinician Feedback Session* to the individual occupational therapist's learning style and preferences. We also extended *MyGoals Clinician Feedback Session* from 15-minutes to 30-minutes to provide enough time for the occupational therapist to discuss their feedback, concerns, questions, etc.

Table 3.2 describes the details of the *MyGoals Clinician Education* and *MyGoals Clinician Feedback Session*. The first education session aims to educate on overall goal setting and goal management concepts, practice, and application and evidence of MyGoals. The second

education session aims to equip occupational therapists to administer MyGoals with a client through role-playing with the research team member. The *MyGoals Clinician Feedback Session* aims to provide occupational therapists with individualized feedback and consultation to enhance their MyGoals implementation.

Table 3.3 Selected outcome variables, measures, respondent, and measurement time point

Outcome variables	**Measures***
MyGoals Clinician Education & *MyGoals Clinician Audit & Feedback*	
Acceptability	Acceptability of Intervention Measure, Qualitative interview
Appropriateness	Intervention Appropriateness Measure, Qualitative interview
Feasibility	Feasibility of Intervention Measure, Qualitative interview
Process outcomes (Change objectives)	Quantitative questions, Qualitative interview
MyGoals	
Acceptability	Acceptability of Intervention Measure, Qualitative interview
Appropriateness	Intervention Appropriateness Measure, Qualitative interview
Feasibility	Feasibility of Intervention Measure, Qualitative interview
Fidelity – Competence, Adherence	Fidelity survey – Competence and Adherence scales, Qualitative interview

*All measures except fidelity will be completed by an occupational therapist after the completion of the last MyGoals session. Fidelity will be measured by both occupational therapists and observer (the research team) right after the completion of each MyGoals session.

Mapping task 5: We identified measures, respondents, and time points to evaluate the selected implementation outcomes described in Table 3.3. We confirmed that all selected measures worked well from the pilot testing. We will explore the preliminary effects of the MyGoals implementation strategies using quantitative measures and explore occupational

therapists' perspectives of how it may be optimized using a qualitative interview (e.g., How can we make *MyGoals Clinician Education* more feasible?)

We also developed quantitative measures to explore how successfully the *MyGoals Clinician Education* and *MyGoals Clinician Feedback Session* help occupational therapists achieve each change objective and qualitative questions to explore how to improve them. The self-report quantitative question items were developed based on the change objectives outlined in Table 3.1 and will be answered by using an 11-point Likert scale (0: strongly disagree – 10: strongly agree). For instance, to evaluate the change objective 1.2, occupational therapists will be asked to rate their agreement with the following item: *I understand the evidence of MyGoals*. Qualitative interview questions will be used to explore occupational therapist's perspectives on the change objectives (e.g., How can we better help understand the evidence of MyGoals?). We are currently undergoing implementation outcome evaluation using a mixed-methods study of occupational therapist-client dyads to explore and optimize MyGoals implementation strategies in preparation for a future larger study.

3.5 Discussion

This study aimed to develop effective strategies to ensure high-quality implementation of a goal setting and goal management intervention called MyGoals in community-based rehabilitation with adults with chronic conditions. To do so, we used Implementation Mapping with CBPR principles to determine MyGoals implementation determinants, mechanisms of action, implementation strategies, and evaluation plans. To our knowledge, this is the first study to use Implementation Mapping with CBPR principles to develop implementation strategies for a community-based rehabilitation goal setting and goal management system. We found that

Implementation Mapping can guide the development and optimization of theory- and evidence-based MyGoals implementation strategies and their evaluation plans. In turn, the developed MyGoals implementation strategies may support occupational therapists in providing better goal setting and goal management in community-based rehabilitation with adults with chronic conditions. These findings can inform future research on how to use implementation science to develop and optimize rehabilitation interventions and their implementation strategies, and thus help bridge research-practice gaps to improve health in adults with chronic conditions.

In our study, we enhanced the theoretical rigor and ecological validity of our research findings by using theories, models, and frameworks combined with CBPR principles. The collaboration and co-learning process with MyGoals implementers and MyGoals intervention target clients helped us (the research team) better understand the complex MyGoals implementation context from the end-users' perspective. If we did not actively collaborate with occupational therapist members throughout this research but merely interviewed them as research subjects, we may have been able to identify key determinants but then developed implementation strategies deemed feasible and effective from the researchers' but not clinicians' perspectives. At the same time, as much as the use of CBPR principles is important, it is critical to develop implementation strategies with theoretical rigor. To do so, we used theories, models, and frameworks as guidance to synergize the real-world and academic knowledge for developing effective MyGoals implementation strategies.

We took a holistic approach to identify determinants that will play important roles in implementing MyGoals in community-based rehabilitation. We found that having the buy-in of individual occupational therapist can be key to facilitating MyGoals implementation. Previous literature suggests that occupational therapists' self-awareness about their interaction with clients

can promote quality goal setting practice.[9] Our findings expand on this by identifying additional implementation determinants. These include occupational therapists' skill, knowledge, self-efficacy, outcome expectancy, and MyGoals' evidence and relative advantages in the context of community-based rehabilitation. Future studies should examine if and how these determinants impact goal setting and goal management in different settings.

We identified MyGoals implementation outcome variables that can contribute to enhancing the quality of MyGoals intervention. We chose *Enabling occupational therapists to deliver MyGoals completely and competently* as the implementation outcome. This outcome was chosen because achieving high levels of MyGoals' completeness and competency can facilitate the comprehensive use of theory-based intervention components and active client engagement. As a result, it can address the abovementioned two major research-practice gaps in community-based goal setting and goal management rehabilitation. In addition, we chose to evaluate MyGoals' and MyGoals implementation strategies' appropriateness, acceptability, feasibility, and fidelity of MyGoals. Good appropriateness, acceptability, feasibility, and fidelity are known prerequisites for high-quality intervention delivery to improve clients' health.[27] Thus, we hypothesized that targeting these selected implementation outcomes will enhance MyGoals intervention quality.

We identified theory- and evidence-based mechanisms of action to facilitate MyGoals implementation and then used them to guide the MyGoals implementation strategy development. The specification of mechanisms of action is essential to understand why and how implementation strategies can enhance the implementation of interventions.[31] In this study, we used social cognitive theory[25] and the taxonomy of behaviour change methods[26] to clarify the mechanisms of action deemed applicable and effective for targeting the MyGoals determinants and facilitating MyGoals implementation. To produce effective implementation strategies, it is

important to develop tailored strategies with clear targeted determinants and mechanisms of action.[31,32] MyGoals implementation strategies are tailored to the identified determinants and developed based on the theory- and evidence-based mechanisms of actions and the parameters of effectiveness. Given that tailored implementation strategies are known to be more effective than the non-tailored ones[31,32], we hypothesized that MyGoals implementation strategies would be effective in achieving good appropriateness, acceptability, feasibility, fidelity, and process outcomes. Because we clearly and carefully mapped the mechanisms of action and implementation strategies, this study will advance our understanding of why and how MyGoals implementation strategies work and what aspects of these strategies require improvement to further enhance the implementation of MyGoals.

Despite existing implementation strategy reporting guidelines, many intervention studies have limited descriptions of their implementation strategies, which can hinder reliable interpretation of research findings and replication in future work.[30,31] We demonstrated that it is feasible to report implementation strategies for a rehabilitation intervention according to the guideline.[30,31] As recommended by the guideline[30], we labeled MyGoals implementation strategies consistent with the implementation science literature and defined the actors, actions, action targets, temporality, dose, target implementation outcomes, and justifications. This work will allow replication of high-quality MyGoals implementation in future studies as well as inform implementation strategies for other potential goal setting and goal management interventions. Furthermore, it may stimulate better reporting practices, and thus better synthesis and replication of future rehabilitation research in general.

Overall, we demonstrated that it is feasible to develop both MyGoals implementation strategies and MyGoals concurrently. Implementation science literature has recommended taking

more active consideration of implementation strategies, ideally from the earliest stages of intervention development, to facilitate intervention translation.[12] However, implementation strategies are not regularly addressed in the developmental phase of interventions in general and even more rarely in rehabilitation fields.[12,18] Our collaborative and systematic approach enabled us to develop tailored implementation strategies and enhance the adaptability of MyGoals without compromising its essential intervention components. We are currently testing MyGoals implementation strategies using a mixed-methods study of occupational therapist-client dyads based on the developed implementation outcome evaluation plans. The findings from these outcome and process evaluations will allow us to further optimize MyGoals implementation strategies and inform other works.

Limitation

We had a comparatively small planning team, and client and occupational therapist members only had limited time to commit to this research. Both occupational therapist planning team members worked at the same university community-based clinic, so they do not represent all community-based occupational therapists. If we could have worked with a larger number of people from different settings, from more diverse demographic and socioeconomic backgrounds, and with more protected time to work on this research throughout the study design, analysis, and manuscript writing, we could have further enhanced the overall Implementation Mapping process and produced more equitable and generalizable findings.

However, to address these limitations, we incorporated multiple approaches to enable all members to actively participate in the current research study so that we were able to complete the

collaborative Implementation Mapping tasks. We endeavored to develop MyGoals implementation strategies that are deemed feasible and effective for general community-based settings, so extensive adaptation work may not be required. However, future studies may still benefit from adapting MyGoals to facilitate its implementation in specific contexts. Organizational and systematic support to allow diverse stakeholders' active and sustainable participation in research can enhance our efforts to incorporate community-engaged research in implementation science.

3.6 Conclusion

We demonstrated that it is feasible and beneficial to develop implementation strategies using Implementation Mapping with the CBPR principles in conjunction with the development of the rehabilitation intervention itself. We identified MyGoals implementation determinants, strategies, and evaluation plans. The MyGoals implementation strategies, which are currently being evaluated using the developed evaluation plans, should enable occupational therapists to implement high-quality goal setting and goal management intervention. These efforts to address implementation strategies early and systematically may help bridge the current research-practice gaps in community-based rehabilitation and enhance health in adults with chronic conditions.

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Chapter 4: Aim 3: Evaluate the implementation strategies in occupational therapists

This chapter is under-review:

Kang E, Chen J, Foster ER. Acceptability, appropriateness, and feasibility of implementation strategies for occupational therapists to promote high-quality goal setting and goal management. Under-review. 2022.

4.1 Abstract

Background**:** Clinicians indicate there is a need for an effective evidence-based system to support their implementation of high-quality goal setting and goal management. We have developed a new goal setting and goal management system for community-based rehabilitation, called MyGoals, along with implementation strategies to support occupational therapists in its administration. This study evaluates the acceptability, appropriateness, and feasibility of the implementation strategies, *Clinician Education* and *Audit & Feedback.* It also explores whether occupational therapists achieve the change objectives of the MyGoals implementation strategies and MyGoals intervention fidelity. Methods: This mix-methods case series study completed implementation mapping task 5 – implementation outcome evaluation. Seven occupational therapists and thirteen adults with chronic conditions participated in this study. Occupational therapists participated in two *Clinician Education* sessions, delivered two MyGoals interventions, and participated in two *Audit & Feedback* sessions. We evaluated the acceptability, appropriateness, and feasibility of the implementation strategies using the Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), Feasibility of Intervention Measure (FIM), and semi-structured interviews. We also explored the occupational therapists' achievement on MyGoals change objectives and MyGoals intervention fidelity using quantitative measures and semi-structured interviews. All quantitative data were analyzed using descriptive statistics. Qualitative data were analyzed using content analysis by two independent coders. Results: *Clinician Education* and *Audit & Feedback* had high AIM (*M*=17.9, SD=2.7), IAM (*M*=17.3, SD=3.60), and FIM scores (*M*=17.3, SD=3). The occupational therapists also had high item-level mean scores on achievement of change objectives and intervention fidelity adherence and competence. Qualitative interviews suggested that the time commitment for *Clinician Education* is a key barrier to its acceptability, appropriateness, and feasibility.

Participants also provided suggestions on how to improve the strategies (e.g., providing recorded *Clinician Education,* etc.). Conclusion: The MyGoals implementation strategies are acceptable, appropriate, and feasible to occupational therapists working in community-based settings. Further, they support occupational therapists in achieving the change objectives necessary to deliver MyGoals completely and competently. Thus, the MyGoals implementation strategies have the potential to support clinicians in implementing a theory-based, client-engaged goal setting and goal management intervention for adults with chronic conditions. This may ultimately help improve the integration of evidence-based practice into real-world settings.

4.2 Introduction

Theory-based, client-engaged goal setting and goal management is an essential rehabilitation practice to provide person-centered care and improve health in adults with chronic conditions.[1,2] It includes the overall process of educating clients about the intervention purpose and their expected roles during the intervention, guiding them to reflect on their engagement in activities and roles, helping them to formulate goals and plans, and assisting them to review and adjust their goals and plans.[3,4] Through these processes, clinicians can establish a therapeutic alliance with clients and provide person-centered rehabilitation tailored to each client's goals.[5] Clients can also benefit from these processes by becoming intrinsically motivated to achieve their goals and engage more actively in the intervention and goal-striving behaviors.[5,6] In turn, this can ultimately help clients achieve better health.[5,6]

However, there are no widely used evidence-based goal setting and goal management interventions in rehabilitation.[3] Current goal setting and goal management practice is lacking in comprehensive theory-based interventions and the explicit promotion of active client

engagement during the intervention.[3] There have been calls for the development of an effective system to support clinicians in implementing theory-based, client-engaged goal setting and goal management to address these research-practice gaps.[7]

To meet this need, we used Intervention Mapping to develop MyGoals, a system that guides occupational therapists to administer high-quality goal setting and goal management for adults with chronic conditions in community-based rehabilitation.[8] The MyGoals intervention's ultimate goal is to help clients achieve their personally meaningful rehabilitation goals. To do so, MyGoals provides clinicians with comprehensive theory-based structured activities that guide them to easily deliver key goal setting and goal management-related components in clinical practice. MyGoals also provides clinicians with scripts designed to facilitate the use of empowerment-based approaches to promote active client engagement during the intervention such as explicitly asking the client's perspectives, desires, and needs to guide decision-making.

Effective implementation strategies are key to supporting clinicians in implementing complex interventions like MyGoals in practice.[9] In the absence of effective implementation strategies, clinicians may have difficulty delivering interventions as intended.[9] Implementation theories, models, and frameworks can guide the implementation strategy development and evaluation.[10]

Therefore to support future MyGoals' implementers (occupational therapists), we developed MyGoals implementation strategies using Implementation Mapping[9], the Consolidated Framework for Implementation Research[11], a taxonomy of behavior change[12], social cognitive theory[13], and Proctor's implementation research framework.[14] For details on how we developed the strategies using these theories, models, and frameworks, please refer to Kang and Foster 2022.[15] Briefly, *Clinician Education* teaches occupational therapists the theoretical background

of MyGoals and how to implement it in practice, and *Audit & Feedback* provides occupational therapists with information to help them become aware of their MyGoals intervention delivery quality and improve their knowledge, skills, and self-efficacy to enhance MyGoals intervention implementation.

This study aimed to determine and optimize the acceptability, appropriateness, and feasibility of these strategies in occupational therapists using quantitative measures and qualitative interviews. We hypothesized that the MyGoals implementation strategies would have good acceptability, appropriateness, and feasibility. We also examined occupational therapists' achievement of the change objectives of the MyGoals implementation strategies and their MyGoals intervention adherence and competence (intervention fidelity).

4.3 Methods

Study design

This was a mixed-methods multiple case series study to determine and optimize the acceptability, appropriateness, and feasibility of the MyGoals implementation strategies in occupational therapists using Implementation Mapping task 5 – evaluation of implementation outcomes.[9] We report our findings using the Standards for Reporting Implementation Studies statement (Appendix D).[16]

Figure 4.1 Study flowchart

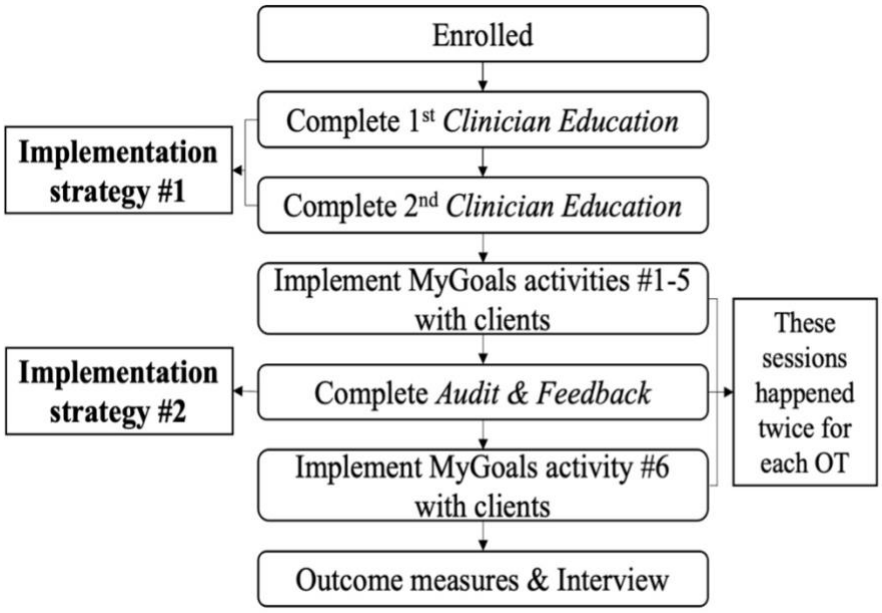

Figure 4.1 describes the overall study flow. Occupationaltherapists completed the following tasks: 1) two 2-hour zoom MyGoals *Clinician Education* sessions, 2) in-person delivery of MyGoals intervention activities 1-5 to the first client participant, 3) in-person or virtual *Audit & Feedback* session with the research team, 4) in-person delivery of MyGoals intervention activity 6 the first client participant, 5) in-person delivery of MyGoals intervention activities 1-5 to the second client participant, 6) in-person or virtual *Audit & Feedback* session with the research team, 7) in-person delivery of MyGoals intervention activity 6 the second client participant, and 8) complete outcome measures with the research team.

Client participants completed the following two in-person visits: demographic survey and MyGoals intervention activities 1-5 and MyGoals intervention activity 6 and outcome measures.

Context

This study was conducted using zoom and in-person meetings at a research-based university in the Midwest, USA. This study is approved by the university's institutional review board. All participants provided a consent before their participation.

Participant eligibility and recruitment

Occupational therapists

We recruited individuals who 1) were over the age of 18, 2) were licensed occupational therapists, and 3) had at least 1-year clinical experience in goal setting and goal management in adults with chronic conditions in community-based rehabilitation settings. We recruited occupational therapist participants using word of mouth and snowball sampling.

Client participants

We recruited individuals who 1) were over the age of 18, 2) had one or more chronic conditions, and 3) did not have severe cognitive or communication impairment operationally defined as having a total Montreal Cognitive Assessment (MoCA) score of 21 or lower [17]. We recruited client participants using word of mouth, snowball sampling, existing research registries, flyers, and referrals.

MyGoals intervention (Clinical intervention)

In our previous studies, we developed MyGoals using Intervention Mapping and its implementation strategies using Implementation Mapping tasks 1-4 in collaboration with client and occupational therapist partners.[15] In this study, the MyGoals intervention included two

weekly in-person sessions. The MyGoals intervention's ultimate goal is to enable clients to achieve personally meaningful rehabilitation goals. It includes six structured activities: *Education, Reflection, Find My Goals, Make My Goals, Make My Plans*, and *My Progress*. Throughout the intervention, the occupational therapist guides the client to understand the overall intervention purpose and their expected roles during the intervention, reflect on their current engagement in personally meaningful activities and roles, develop goals and plans, and review and adjust them. To facilitate these processes, MyGoals encourages occupational therapist to use the empowerment-based approach. This approach involves *using open-ended questions, using plain language, not demanding clients to change their responses*, and *explicitly asking about clients' needs, preferences, perspectives, or desires*.

MyGoals implementation strategies

We developed MyGoals implementation strategies using Implementation Mapping. Table 4.1 describes the *Clinician Education* and *Audit & Feedback* implementation strategies based on the recommendation by Proctor et al. (2013).[18]

Table 4.1 MyGoals implementation strategy specification

	Clinician Education	***Audit & Feedback***
Actors	The research team	The research team member who observed and evaluated the occupational therapist participant's MyGoals intervention sessions in real-time
Actions	<u>Before MyGoals clinician education</u> 1. Emailed the developed easy-to-understand, eye-catching education materials to the occupational therapists to provide the opportunity to review MyGoals intervention activities and their strengths & evidence and relative advantages <u>First 2-hour 1:1 zoom MyGoals clinician education</u> 1. Introduced MyGoals intervention concepts, importance, activities, strengths & evidence, relative advantages, flexibility 2. Educated on knowledge and skills necessary to deliver MyGoals completely and competently 3. Provided audio-recording of an experienced occupational therapists delivering MyGoals to learn ideal MyGoals practice, gain awareness about one's practice, and perceive the potential benefits of using MyGoals 4. Discussed the audio-recording of the experienced occupational therapist's MyGoals sessions <u>During the 2nd 2-hour zoom</u>	<u>Audit</u> 1. The research team audited occupational therapist's in-person MyGoals intervention sessions with clients in real-time 2. During the observation, the research team evaluated the adherence and competence of occupational therapist-delivered MyGoals intervention sessions using the observer-rated MyGoals fidelity assessment - Competence and Adherence Scales <u>Feedback</u> 1. The research team encouraged the occupational therapist to share self-reflection on their MyGoals intervention delivery and encouraged them to ask questions 2. The research team discussed the occupational therapist's self-reflection and answered questions 3. The research team verbally debriefed the MyGoals fidelity assessment results. The research team made sure to provide positive reinforcement by emphasizing the well-implemented components and communication strategies 4. The research team asked the

	<u>MyGoals clinician education</u> 1. Role-played to practice how to translate their knowledge and skills into practice, improve one's self-efficacy to deliver MyGoals, and provide a chance to perceive the relative advantages and strengths & evidence of MyGoals	occupational therapists to share their reflections and questions regarding the Fidelity assessment results 5. The research team nonjudgmentally and interactively discussed with the occupational therapist ways to improve their knowledge, skills, and performance. The research team helped the occupational therapists improve their knowledge, skills, and performance 6. The research team suggested clear target intervention components and communication strategies that can or need to be improved to adhere to the MyGoals manual 7. The research team verbally provided tailored action plans for each occupational therapist to help them adhere to the MyGoals manual and improve intervention quality 8. The research team reminded the occupational therapists that they now have the necessary knowledge and skills and supported them to enhance their self-efficacy to deliver MyGoals completely and competently
Action target	• occupational therapist's knowledge, awareness, skills, outcome expectancy, self-efficacy • MyGoals intervention' strengths & evidence, and relative advantages	• occupational therapist's knowledge, awareness, skill, and self-efficacy
Temporality	Two 2-hour zoom sessions provided before the occupational therapist delivers MyGoals to client	Provided between the 1st and 2nd MyGoals intervention sessions with each client participant (2 sessions per occupational therapist

	participants	participant)
Dose	Two 2-hour zoom sessions	Two 0.5-hour sessions
Implementation outcomes affected	Acceptability, appropriateness, feasibility, MyGoals intervention fidelity	Acceptability, appropriateness, feasibility, MyGoals intervention fidelity
Justification	We developed the tailored strategies to target the MyGoals implementation determinants, which we identified through a rigorous process [22] including Implementation Mapping [9], a taxonomy of behavior change [12], CFIR [11], and social cognitive theory [13] and based on the existing literature such as ERIC-recommended strategies. [23]	

Outcomes

Acceptability, Appropriateness, Feasibility of MyGoals implementation strategies

We adopted Proctor et al. (2011)[14] to conceptually define implementation outcomes. Acceptability was defined as occupational therapists' perception of the extent to which *MyGoals Clinician Education* and *Audit & Feedback* are agreeable, palatable, or satisfactory.[14] Appropriateness was defined as the occupational therapists' perception of the fit, relevance, or compatibility of the strategies to equip them to deliver MyGoals as intended.[14] Feasibility was defined as the occupational therapists' perception of the extent to which the strategies can be successfully conducted in community-based rehabilitation. [14] We measured these outcomes using the Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), and Feasibility of Intervention Measure (FIM), respectively.[19] Mean total scores of AIM, IAM, and FIM $\geq$ 16 were used as benchmarks for good acceptability, appropriateness, and feasibility.[19]

We also explored occupational therapists' perspectives on the acceptability, appropriateness, and feasibility of *Clinician Education* and *Audit & Feedback* using 1-hour individual semi-structured interviews. A semi-structured interview guide was developed (Appendix E). Example questions include "*What aspects of MyGoals Clinician Education and*

Audit & Feedback were less feasible?" and *"How can we make MyGoals clinician training more feasible?*" The interviews were audio-recorded and transcribed verbatim.

Achievement of change objectives

We evaluated the 15 change objectives developed in the previous Implementation Mapping Task[15] using an 11-point scale (0: strongly disagree – 10: strongly agree); e.g., "*I understand goal setting and goal management practice concepts and their importance*." If participants rated any item lower than 7, we asked the following interview question to explore how we can improve the implementation strategies to address that change objective (e.g., "*How can we improve MyGoals training so that it can help you to [understand goal setting and goal management practice concepts and their importance])*?

MyGoals intervention fidelity

We assessed two aspects of intervention fidelity: adherence and competence.[20] We defined adherence as the extent to which occupational therapists implemented the MyGoals intervention components (i.e., completeness of delivery) and competence as how well occupational therapists implemented the MyGoals empowerment-based approaches during the intervention (i.e., quality of delivery).[20] Adherence and competence were measured using the observer-rated MyGoals Fidelity tool. Adherence was rated using a dichotomous response (yes/no). Competence was rated using a 3-point scale (1=low, 2=medium, and 3=high quality).

Demographics

Occupational therapists self-reported their sex, race, ethnicity, and years of professional experience. Clients self-reported their age, sex, race, ethnicity, and health conditions. Clients also completed the MoCA.

Analysis

We used descriptive statistics to analyze quantitative outcomes and demographics. Using the pre-determined benchmarks (Mean total scores of AIM, IAM, and FIM ≥ 16), we determined the acceptability, appropriateness, and feasibility of the implementation strategies.

To analyze qualitative interview data, we used content analysis.[21] Two coders (E.K, J.C) independently analyzed all transcripts using the Microsoft Excel program and then discussed the analysis results to reach a consensus. When there were discrepancies, they were solved through an interactive discussion or consultation with a senior author (E.F).

4.4 Results

Participant characteristics

Seven occupational therapists participated in this study. All occupational therapists self-identified as female, White, and not Hispanic or Latino. The mean years of professional experience in rehabilitation were 9.3 (SD= 5.9).

Thirteen clients participated in this study. Nine were female, and four were male. Two participants self-identified as multi-racial: one self-identified as American Indian or Alaska Native and White and the other as Black and White. The other 11 participants self-identified as White. Twelve people self-identified as Not Hispanic or Latino, and one did not know their ethnicity. All 13 participants had more than a high school education. The mean total MoCA

score was 23.9 (SD=2.6, range = 21-30). Participants had a wide variety of chronic conditions, and they often had more than one condition (arthritis = 2, diabetes = 1, heart failure = 1, hypertension = 2, multiple sclerosis = 1, Parkinson's disease = 3, schizophrenia =1, osteoporosis = 1, nerve damage = 1, Crohn's disease =1, rheumatoid arthritis = 2, basal cell cancer = 1, osteopenia =1, heart disease =1, and gout =1).

Acceptability, Appropriateness, Feasibility of MyGoals implementation strategies

Table 4.2 shows the AIM, IAM, and FIM results. The mean scores of all scales ranged from 17.3 to 17.9, which is higher than our predetermined benchmark for good acceptability, appropriateness, and feasibility. Item-level mean scores ranged from 4 to 4.6.

Table 4.2 Quantitative results on the acceptability, appropriateness, and feasibility of the MyGoals implementation strategies

AIM, IAM, FIM items	Mean, SD, range
MyGoals training meets my approval	4.6, 0.5, 4-5
MyGoals training is appealing to me	4.4, 0.8, 3-5
I like MyGoals training	4.2, 1, 3-5
I welcome MyGoals training	4.6, 0.5, 4-5
Total AIM score	17.9, 2.7, 14-20
MyGoals training seems fitting	4.3, 1, 3-5
MyGoals training seems suitable	4.3, 1, 3-5
MyGoals training seems applicable	4.3, 1, 3-5
MyGoals training seems like a good match	4.4, 0.8, 3-5
Total IAM score	17.3, 3.6, 12-20
MyGoals training seems implementable	4, 1.3, 2-5
MyGoals training seems possible	4.6, 0.5, 4-5
MyGoals training seems doable	4.6, 0.5, 4-5
MyGoals training seems easy to follow	4.1, 0.9, 3-5
Total FIM score	17.3, 3, 14-20

Table 4.3 displays the qualitative findings regarding the acceptability, appropriateness, and feasibility of the MyGoals implementation strategies. Participants mentioned that the only less

acceptable and feasible aspect of the implementation strategies was the time commitment for *Clinician Education* (two 2-hour zoom sessions). However, participants also explained that it was worthwhile to invest time to learn new knowledge and skills. Participants provided several suggestions to improve the strategies. These were related to the structure, delivery, and content of the *Clinician Education* and MyGoals manual. Participants did not mention any less acceptable, appropriate, and feasible aspects of *Audit & Feedback* or ways to improve that implementation strategy.

Table 4.3 Qualitative results on the acceptability, appropriateness, and feasibility of the MyGoals implementation strategies

Less acceptable aspect
Clinician Education requires a time commitment but is helpful (*"I would probably say the length of time it took…it was a couple hours to practice and go through the slides, and it was all very helpful")*
How to improve acceptability?

[*Clinician Education* structure]
• Streamline the sessions
  o Streamline audio examples ("*if it was like shorter clips with like a more specific…targeted communication because I think that part was maybe the only thing that was a little bit hard to focus on*")
  o Provide audio examples not at once, but rather provide them throughout the training ("*Spacing out the audio clips to give examples throughout, like as we're initially going through the manual to maybe hear some examples relevant to certain topics*")
 	
[*Clinician Education* delivery]
• Provide the flexible delivery model
  o Provide educational materials before the first session ("*I guess maybe just being able to read through it before people first might be helpful*")
  o Use a different and/or flexible training mode ("*the different modes of training are good too. You had some visuals and you had the audio clip and all that just helps make it a little more engaging...I think giving the independent work is good. Because I think people could take it and do it if they have a cancelation. They could do some of the reading or something...An a la carte type of service...do the training as they're able*")

- Providing recorded sessions and quizzes so that occupational therapists can learn at their own pace and time ("*I think the recorded sessions would really fit well into that. Because it (3rd party education system) has…courses where you go through PowerPoint slides and things like that. They show like a demonstration of how to implement it. That's super helpful to have both of those components*")

[*Clinician Education* contents]

- Communication skill-related contents
  - Clarify communication strategies ("*I know it talked about the four communication styles or techniques, and I was trying to think…I don't think I could rattle off like it. I don't feel like it was like really made obvious. We're looking at these four styles of communication. I could think about well we did this and this, but it might help to just like, have a section and say this is how we're communicating, and list out those four techniques or styles*")

  - Briefly address common occupational therapist skills and take a deeper look at more advanced skills ("*somethings were pretty inherent to occupational therapists…like asking open-ended questions...Briefly touching on things like that, but then kind of like saving time there and going on to. The most different part of the intervention for me was just kind of learning to take a step back…I try to do this in my practice, too. I feel like it was very emphasized here and for good reason to let the patient kind of take the reins on creating the goal completely, which is great. I don't always do it to that extent because of time purposes. But for somebody who's able to do that, like cognitively, I feel like that's really helpful. So having, like emphasis on that, instead of maybe some of the other stuff that most people know about already might help*")

- Provide more intense education on practical skills and knowledge ("*I feel like we probably could have gotten away with doing a little less about the background of it…more of the actual…how do you like put this into practice and like challenges that you might encounter when doing it?... I think that was actually like a really good like… this is how I go to practice because like when we were doing like the background of it and all that stuff, I was like, Yes, this makes perfect sense. And then I had to do the role play and I was like, What now? I don't know where to go from here*")

- Role-playing
  - Provide more role-playing with practical case examples ("*more role-playing with challenging answers*")

[MyGoals manual]

- Enhance MyGoals packet adaptability ("*just the organization of the manual*")

Less appropriate aspect

None

How to improve appropriateness?

[*Clinician Education* structure]

- Provide group sessions ("*I think (group education) could be helpful because hearing other people ask those questions and that the gray questions know that aren't like part of*

the script, but you need to ask to hear somebody else ask")

[*Clinician Education* contents]

- Provide tailored training for each clinician ("*make sure that people have…a baseline level of understanding of some of these occupational therapy skills and how to apply them. Since people are bringing different levels of experience into this process*")

- Provide more role-playing ("*more role-playing*")

[*Clinician Education* delivery]

- Provide different education material types ("*having like a link to like an audio PowerPoint with this like that you have already…everyone learns differently. Having that is a way to just to go through it*")

[MyGoals manual]

- Streamline MyGoals intervention manual ("*have like a really concise… handout of…a short blurb about what this is. This is how you do it…kind of jogging your memory…a quick guide to me to know how to do…the intervention…It's easily implemented just to kind of help educate therapists. On the go, basically...Make MyGoals intervention packet easier to follow*")

Less feasible aspect

- *Clinician Education* requires a time commitment but is necessary to learn new knowledge and skill ("*it was a little bit time consuming to do like the training just with like other stuff (with my regular full-time job) going on…I also feel like…I could have used a little more training….Maybe it's a little less feasible because it is more time intensive to train, but I also think that's kind of like what you need, so a little like give and take*")

How to improve feasibility?

[*Clinician Education* structure]

- Provide quizzes during the recorded sessions ("*having quizzes and things like that to kind of check understanding because a lot of times those components really help…Quiz questions…stick in your mind because you're like should have paid attention to that*")

- Provide clinician incentives ("*I hate to sound like that let it serve a purpose for me, but like that is a nice thing that you… (provided compensation). I (hope to) also get some CEU (continuing education unit) for it*")

[*Clinician Education* delivery]

- Provide recorded sessions to allow occupational therapists to complete the sessions at their convenient time ("*having it be recorded. So that we don't have to coordinate schedules (for the education with a researcher)*")

Achievement of change objectives

Six participants rated their perceived achievement of the MyGoals implementation change objectives (Table 4.4). The mean scores of all items ranged from 8 to 9.7, indicating participants successfully achieved all predetermined change objectives. There were several items with lower minimum responses such as 5 and 6. Table 4.5 displays these items and the occupational therapists' recommendations on how to improve the implementation strategies to help them achieve these change objectives.

Table 4.4 Change objectives achievement results

	Change objective item	**Mean, SD, range**
1	I understand goal setting and goal management practice concepts and their importance	9.7, 0.5, 9-10
2	I understand the MyGoals evidence	8.7, 2, 5-10
3	I acknowledge that current goal setting and goal management practice is not optimal	8.7, 2, 5-10
4	I acknowledge that MyGoals is acceptable	9.3, 1, 8-10
5	I acknowledge that MyGoals is appropriate	9.0, 1.5, 7-10
6	I acknowledge that MyGoals is feasible	8.3, 2, 6-10
7	I expect delivering MyGoals will improve personally meaningful goal achievement in clients	8.0, 2.3, 5-10
8	I understand all MyGoals intervention components	8.5, 1.8, 6-10
9	I have skills for delivering all MyGoals intervention components completely	8.7, 2, 5-10
10	I expect delivering all MyGoals intervention components will improve personally meaningful goal achievement in clients	8.7, 1.8, 6-10
11	I am confident in my ability to deliver all MyGoals intervention components	8.5, 2.1, 5-10
12	I understand 4 MyGoals communication strategies*	8.8, 1.8, 6-10

13	I have skills for delivering all MyGoals activities by using 4 communication strategies*	9.0, 1.4, 7-10
14	I expect using 4 MyGoals communication strategies will improve personally meaningful goal achievement in clients*	9.2, 1.1, 8-10
15	I am confident in my ability to deliver all MyGoals activities by using 4 communication strategies*	8.6, 1.7, 6-10

*n=5

Table 4.5 Qualitative feedback to improve the implementation strategies to address the change objectives with lower achievement scores

Change objective	**How can we improve the MyGoals implementation strategies to help you achieve the change objective?**
I understand the MyGoals evidence	• Provide empirical evidence ("*I understand the evidence of MyGoals… obviously the principles behind it. You shared that and I understand that, but I feel like the evidence of MyGoals itself is still like in the works*")
I acknowledge that MyGoals is feasible	• Provide an electronic version MyGoals & streamline MyGoals ("*I feel like if it was like electronic or accessible by computer through like smart phrase and also just it needs somehow has to be shortened or broken up into sessions")*
I expect delivering MyGoals will improve personally meaningful goal achievement in clients	• Promote tailored MyGoals intervention for each client ("*I feel like for most people, it [MyGoasl intervention] would be really meaningful, but like one system does not work for every person… You have to look at your clients and see who will be really benefit from it and who needs a different approach…Anybody that is goal-oriented would really benefit from this depending on how they do, people that are less goal-oriented could do well from this or could not do well from this because some people either get stressed out by their goals*")
I expect delivering all MyGoals intervention components will improve personally meaningful goal achievement in clients	• Promote tailored MyGoals intervention for each client ("*There are MyGoals intervention components that are super helpful with goal achievement, but I feel like using all of them all the time, like I was focused on the word "all" there, it is not like feasible all the time. Using the principles is great. I just don't think it's feasible to do this whole process with all the clients. But if it says, like just said "utilizing components from my goals in practice will be personally meaningful in goal achievement with clients" I would say 100 percent that would be like there are so many good components*")
I am confident in my ability to deliver all	• Improve MyGoals manual adaptability ("*I don't think any of it was like very complicated, necessarily. I just think like I may have gotten a little confused trying to follow the script and use*

MyGoals intervention components	*the handouts. Maybe… the way that that packet is organized. It might be helpful to kind of like reorganize it a little bit…So I think that was probably why I put a little bit lower on my confidence*")
I am confident in my ability to deliver all MyGoals activities by using 4 communication strategies*	• Clarify the communication strategies and provide a cheat sheet ("*I wasn't really quite sure the other four communication strategies, exactly what those were...Provide a cheat sheet for clinicians to implement communication skills*") • Provide more role-playing ("*Having more role playing or being able to like, you know, look at that stuff a little*")
I understand all MyGoals intervention components	• Provide more practice and role-playing sessions ("T*hat's just like my skills, I'm not great at… open-ended. That's more like me making my brain do something that it's not like that. I don't know if that's necessarily a problem with the tool...I feel like it was the actual role-playing. Just being able to like maybe do more of that because I even felt like during my the second client, it was like this is at least a little easier than the first time doing it.*")
I have skills for delivering all MyGoals intervention components completely	• Provide more practice and role-playing sessions ("T*hat's just me being bad at open-ended things*")

MyGoals intervention fidelity

All seven of the occupational therapists were assessed for fidelity with their clients. One participant only saw one client participant, so a total of 13 fidelity assessments were completed. One client participant was lost to follow-up after their first visit, so the items in activity 6 for this client were not completed.

For adherence, about 70% of the MyGoals intervention components were implemented by all therapists every time (Table 4.6). Two components in activity 4 (*Educate and discuss one's current health condition from the biopsychosocial perspective* and *Educate and discuss the benefits of using life goals, goals, and building block goals*) were most commonly omitted.

Table 4.6 MyGoals intervention fidelity adherence results

[MyGoals intervention activity #] **Fidelity - Adherence items**	**Implemented (%)**	**Not implemented (%)**
[1] Educate and discuss the overall goal setting and goal management concept	100	0
[1] Educate and discuss the client's expected roles during goal setting	100	0
[2] Guide reflection about the current engagement in meaningful activities and roles	100	0
[3] Rate the importance of potential goal activities	100	0
[4] Guide life goal formulation	92.3	7.7
[4] Guide goal formulation	100	0
[4] Guide the self-efficacy level evaluation	100	0
[4] Guide the positive outcome expectancy level evaluation	92.3	7.7
[4] Guide building block goal formulation	100	0
[4] Educate and discuss one's current health condition from the biopsychosocial perspective	69.2	30.8
[4] Educate and discuss the benefits of using life goals, goals, and building block goals	76.9	23.1
[5] Guide barrier identification	100	0
[5] Guide facilitator identification	92.3	7.7
[5] Guide planned behavior identification	100	0
[5] Guide if (when)-then plan formulation	100	0
[5] Guide the self-efficacy level evaluation	92.3	7.7
[6] Educate and discuss client's expected roles during goal management	100	0
[6] Guide goal progress (performance) evaluation	100	0

[6] Guide satisfaction with a goal progress evaluation	100	0
[6] Discuss goal progress	100	0
[6] Discuss goal and plan adjustment	100	0

The MyGoals intervention fidelity competence results are in Table 4.7. All of the therapists *used plain language* with high quality consistently. Overall, the therapists successfully used the other skills as well, as demonstrated by the near-perfect average scores. One participant demonstrated low quality with using open-ended questioning and explicitly asking about the client's needs, preferences, perspectives, or desires.

Table 4.7 MyGoals intervention fidelity competence results

	M	**SD**
Used open-ended questioning	2.8	0.5
Used plain language	3.0	0
Explicitly asked the client about their needs, preferences, perspectives, or desires	2.8	0.5
Did not demand the client to change their responses to questions, goals, or plans	2.9	0.2

4.5 Discussion

This study evaluated the acceptability, appropriateness, and feasibility of the MyGoals implementation strategies that we developed and specified using Implementation Mapping. [15] We found that MyGoals implementation strategies had high acceptability, appropriateness, and feasibility among occupational therapists working in community-based rehabilitation. In addition, the occupational therapists successfully achieved the change objectives of the strategies and demonstrated good MyGoals intervention fidelity. Our results support the potential of the

MyGoals implementation strategies to enhance goal setting and goal management practice in rehabilitation.

The MyGoals implementation strategies were considered acceptable, appropriate, and feasible by occupational therapists. These three outcomes are leading indicators of successful implementation. [19] Assessing them in feasibility studies is particularly informative as it provides the stakeholders' perspectives on, and can guide potential modifications of, the strategies to understand and optimize their uptake by the end-users. [19] The high acceptability, appropriateness, and feasibility scores in our study demonstrate that the current strategies fit well with the therapists' needs and preferences and suggest they are likely to be used in clinical practice.

Moreover, our change objectives achievement and fidelity data provide preliminary evidence for the efficacy of the MyGoals implementation strategies. The high change objective achievement ratings suggest that the MyGoals implementation strategies produce the desired changes in the occupational therapists' determinants such as knowledge and self-efficacy. These findings are promising because implementers who achieve change objectives are more likely to achieve the ultimate implementation outcomes.[9] The implementation strategies were also effective in supporting occupational therapists' delivery of MyGoals. Almost all intervention components were delivered using high-quality empowerment-based approaches. Having good intervention fidelity is one of the ultimate implementation effectiveness outcomes.[14] Therefore, the MyGoals implementation strategies may have the potential to effectively support high-quality goal setting and goal management implementation.

The qualitative feedback from the interviews provided information on how we can improve the acceptability, appropriateness, feasibility, and potential effectiveness of the implementation strategies and the MyGoals intervention itself. The major concerns raised by the

occupational therapists were the time commitment for *Clinician Education* and potentially limited clinical time to implement MyGoals. However, the occupational therapists also acknowledged that it is worthwhile to invest time to learn new clinical knowledge and skills. They suggested several methods to mitigate these real-life barriers including providing clinician incentives (e.g., continuing education unit, financial incentives) and more flexible education delivery methods (e.g., recorded sessions, providing educational materials in advance). They also emphasized the need to promote how MyGoals could be adapted to meet clinician or client preferences, needs, and clinical constraints (e.g., electronic versions, spiral bindings, cheat sheets, etc.) while still maintaining its key ingredients. We will incorporate these suggestions into future iterations of MyGoals to facilitate the integration of the intervention into real-world settings.

Analysis of the intervention fidelity data revealed further enhancements we can make to the implementation strategies. Additional emphasis and training on the two most omitted components, *Educate and discuss one's current health condition from the biopsychosocial perspective* and *Educate and discuss the benefits of using life goals, goals, and building block goals*, is needed to improve adherence. Participants mentioned that they either forgot or were not sure how to appropriately deliver these components. Notably, *Educate and discuss one's current health condition from the biopsychosocial perspective* was the only component that did not have a script since it needs to be personalized for each client. In the future, we will provide more education and role-playing focused on using this component during *Clinician Education* and add explicit instruction for its implementation to the MyGoals clinician manual. More education and feedback on the use of open-ended questions and explicitly exploring clients' perspectives is needed to improve competence. We observed that occupational therapists sometimes asked one

open-ended question and then did not fully explore clients' perspectives. Clients do not always provide sufficient depth or detail in their initial responses, so it is often necessary to use additional methods or follow-up questions to fully explore their perspectives. In general, we found that individual occupational therapists demonstrated considerably different levels of knowledge, skills, and performance in implementing the MyGoals intervention, so additional tailored *Clinician Education* training modules or *Audit & Feedback* sessions for personalized support may be helpful for some occupational therapists.

This study provided insight into how to improve our outcome measures to better capture the mechanisms and outcomes of the MyGoals implementation strategies. We have now added *active listening* and *using guided discovery* to the fidelity assessment. These are key skills in delivering MyGoals, as highlighted in this participant quote: "*Having strong active listening skills. That really helps deliver it. Guided discovery and being able to pause to ask an open-ended question and just wait and not jump in and provide options or an answer right away. I think those are really important pieces of delivering it*". We had assumed that these skills were inherent in occupational therapists so we did not include them in the assessment; however, we observed that this was not the case. Thus, it is necessary to incorporate these items into the fidelity assessment to more thoroughly evaluate competence in MyGoals delivery. We also identified a few change objective survey items that can be improved. For instance, the item, *I acknowledge that current goal setting and goal management practice is not optimal*, was intended to measure if occupational therapists realize that current practice can be improved. However, participants rated this item lower because they did not believe all goal setting and goal management practice is suboptimal. Collaborating with occupational therapists to draft and pilot-

test these items will allow us to better evaluate the MyGoals implementation strategies moving forward.

Limitations

This was a feasibility study with a small number of participants who live in the same geographical area. The healthcare policy, organizational implementation climate, or other implementation determinants in this context may differ from others and influence the study outcomes. In addition, the occupational therapists' personal determinants such as existing knowledge and skill, preferences, and past working experiences may have affected the current study findings. This is illustrated by the following interview quotes: "*That's just like my skills, I'm not great at open-ended. That's more like me making my brain do something that it's not like that. I don't know if that's necessarily like a problem of the tool", "Since people are bringing different levels of experience into this process", "Just my personal preference would be to have like one piece of paper",* etc. The occupational therapists also mentioned that client-related factors (e.g., goal-oriented individuals vs. not goal-oriented individuals) could affect the implementation outcomes. Future studies with more diverse participants can explore the dynamics among implementation outcomes, other determinants, and generalizability across contexts.

4.6 Conclusion

MyGoals implementation strategies are considered to be acceptable, appropriate, and feasible by occupational therapists working in community-based rehabilitation. These strategies may help occupational therapists provide theory-based, client-engaged goal setting and goal management

for adults with chronic conditions, and ultimately may improve health in this population. More research is required to advance and investigate the effectiveness of the MyGoals implementation strategies and the MyGoals intervention itself.

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Chapter 5: Aim 4: Evaluate the intervention system in adults with chronic conditions

This chapter is submitted:

Kang E, Chen J, Foster ER. Assessing Structured Goal Setting and Goal Management: Feasibility, Client Engagement, and Person-Centeredness Among Adults with Chronic Conditions. Submitted. 2022.

5.1 Abstract

Purpose: We evaluated the credibility, expectancy, satisfaction, client engagement, and person-centeredness of a new structured goal setting and goal management intervention (MyGoals) for adults with chronic conditions in community-based rehabilitation. We also explored the extent to which clients achieved the pre-determined MyGoals intervention change objectives. Materials and methods: This was a mixed-methods case series study. Twenty-two participants completed two weekly in-person MyGoals intervention sessions. Feasibility was assessed using the Credibility/Expectancy Questionnaire (CEQ), Client Satisfaction Questionnaire (CSQ), Client-Centredness of Goal Setting (C-COGS), and semi-structured interviews. We analyzed data using descriptive and framework analysis. The intervention change objectives were measured using a quantitative survey with an 11-point scale (0: strongly disagree – 10: strongly agree). Results: The mean scores of credibility and expectancy subscales of CEQ, CSQ, goals, and participation subscales of C-COGS were all high (M= 25.7, 23.9, 30.8, 29.4, and 19.4, respectively). Participants demonstrated high achievement of intervention change objectives with mean scores ranging from 8.6 to 10. Conclusions: MyGoals is a credible, promising, satisfying, client-engaged, and person-centered community-based goal setting and goal management intervention for adults with chronic conditions.

5.2 Introduction

Person-centered rehabilitation, a way of planning and implementing care in collaboration with the client, has been actively advocated to improve health and participation in personally meaningful activities and roles in adults with chronic conditions.[1,2] Efforts across interpersonal, microsystem, and macrosystem levels are required to promote its implementation.[2] At the client-

clinician interpersonal level, goal setting and goal management is thought to be critical in promoting person-centered rehabilitation.[2]

High-quality goal setting and goal management includes key attributes thought to facilitate person-centered rehabilitation and ultimately enhance the health of adults with chronic conditions.[2-4] These include facilitating collaborative interpersonal interaction between the client and clinician, tailoring care to the client's needs, perspectives, and life goals, and respecting the client's choices and personal control over their life and healthcare.[2] However, despite its importance, there is no widely accepted evidence-based goal setting and goal management intervention that includes all of these attributes in community-based rehabilitation for adults with chronic conditions.[5] Thus, there is a need to use a systematic developmental approach to develop a new goal setting and goal management intervention.[5,6]

To meet this need, we developed MyGoals, a goal setting and goal management intervention to be used with adults with chronic conditions in community-based rehabilitation. MyGoals was developed to address two major research-practice gaps: a lack of comprehensive theory-based intervention component implementation and poor client engagement during the intervention.[5] We developed MyGoals using rigorous Intervention Mapping including a systematic review of current practice, needs assessment, literature review, collaboration with community stakeholders (e.g., clients and clinicians), and pilot-testing.[7,8]

The purpose of this study is to test the feasibility of MyGoals. Specifically, we aimed to assess the credibility, expectancy, satisfaction, client engagement, and person-centeredness of MyGoals for adults with chronic conditions in community-based rehabilitation using a mixed-methods approach. We hypothesized that the MyGoals intervention would be credible,

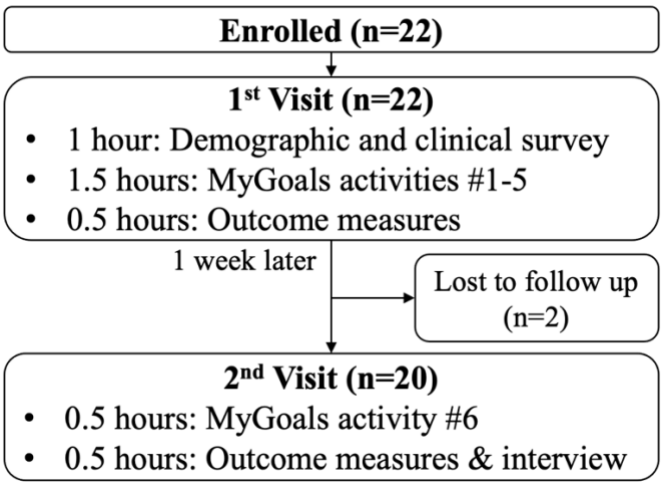
promising, satisfying, engaging, and person-centered. We also evaluated whether clients can achieve the desired improvements in intervention change objectives related to knowledge, awareness, self-efficacy, and outcome expectancy.

5.3 Methods

Study design and context

This was a mixed-methods case series study of adults with chronic conditions to evaluate the feasibility of MyGoals using the evaluation plan we developed during Intervention Mapping. Participants completed a demographic and clinical survey, two in-person MyGoals intervention sessions spaced one week apart, and outcome measures. Figure 5.1 describes the overall study flow.

Figure 5.1 Study flow



Setting and location

Participants completed their research sessions through an in-person individual format at a research-based university in Midwest, USA.

Participant eligibility and recruitment

Participant eligibility included individuals who 1) were aged 18 years or older, 2) could speak English, and 3) have one or more chronic conditions, which was operationally defined as a health condition that persists for one year or longer and impacts engagement in daily activities or situations (e.g., arthritis, cancer, stroke, etc.). [9]

Participants were excluded if they had 1) severe cognitive impairment defined as a Montreal Cognitive Assessment (MoCA) [10] total score of <21 or dementia, 2) psychotic symptoms or major psychiatric disorder such as schizophrenia, or 3) any condition that may have interfered with research participation such as being non-English speaking. People who had psychiatric conditions and symptoms were excluded if they answered "yes" to either of the following questions "*Do you feel your psychiatric conditions and symptoms would significantly hinder you from participating in this research including the inter-personal interaction with the occupational therapists to develop your therapy goals, plans, and monitor your goal progress, and complete demographic and clinical assessments?*" and "*Do you feel your psychiatric conditions and symptoms significantly hinder you from participating in your daily life activities or situations?*"

Participants were recruited through existing research registries, snowball sampling, flyers, referrals, and word of mouth. The institutional review board approved this project. All participants provided informed consent before their research participation.

MyGoals intervention

The MyGoals intervention includes six structured goal setting and goal management activities. It ultimately aims to help adults with chronic conditions achieve their personally meaningful rehabilitation goals. We developed MyGoals using social cognitive theory[11-13], self-determination theory[14,15], and the theory of intentional action control.[16,17]

In this study, MyGoals was delivered using two in-person sessions spaced one week apart. The occupational therapist provided the client with printed client worksheets. In the first session, the occupational therapist delivered the first five activities: *Education, Reflection, Find My Goals, Make My Goals,* and *Make My Plans*. In *#1 Education,* the occupational therapist educated the client on goal setting and goal management concepts and purpose, and the importance of active client engagement during the intervention to achieve better outcomes. In *#2 Reflection,* the occupational therapist facilitated the client in reflecting on their current engagement in meaningful activities and roles, environment, or health to support goal formulation. In *#3 Find My Goals,* the occupational therapist helped the client develop a potential goal list. In *#4 Make My Goals,* the occupational therapist guided the client to develop a life goal and therapy goals. The life goal was defined as a state the client seeks to reach (e.g., living independently, being a good parent). Therapy goals included goals and building block goals. Goals were defined as activities or roles that the client wanted to reach as a result of

therapy (e.g., walking 15 minutes every day, reading a book for my child on weekdays). Building block goals were defined as skills or functions the client needed to build to reach their goals (e.g., being good at time management). In *#5 Make My Plans*, the occupational therapist helped the client make action and coping plans using if-then formats (e.g., If it is 8 am, then I will go for a walk for 15 minutes). A week later, the occupational therapist and client met again and completed *#6 My Progress*. In this activity, the occupational therapist guided the client to review their performance and satisfaction towards goal achievement, discuss their progress, and adjust their goals if needed.

Although we made no considerable intervention structure tailoring, we personalized the intervention discussion contents because each participant had their own unique perspectives, goals, environments, plans, etc. We describe MyGoals according to the Template for Intervention Description and Replication (TIDieR) checklist[18] (Appendix F).

Assessments

We collected participants' age, sex, race, ethnicity, education level, and health conditions using a self-report survey. Participants also completed the MoCA[10] at the first visit. Participants completed all outcome measures at their last visit except for the Client-Centredness of Goal Setting (C-COGS) scale[19] and intervention change objective measure for *MyGoals activities #1-5*. To minimize recall bias, they completed these assessments at their first visit.

Credibility and expectancy

We assessed the credibility and expectancy of MyGoals using the Credibility and Expectancy Questionnaire (CEQ).[20] Credibility is defined as the extent to which clients perceive MyGoals to be believable, convincing, and logical. Expectancy is defined as the extent to which clients expect to achieve personally meaningful goals through MyGoals intervention. A 9-point scale (e.g., 1: not at all – 9: very useful) is used in three credibility items and one expectancy item. An 11-point scale (0% - 100%) is used in the two other expectancy items. For these items, we re-coded the 40-60% responses into one value (i.e., 5) for analysis.[21] Each scale ranged from 3 to 27, with higher scores indicating higher intervention credibility and expectancy.

Satisfaction

We evaluated clients' satisfaction with the MyGoals intervention using the Client Satisfaction Questionnaire-8 (CSQ).[22,23] The CSQ included 8 self-report items that used a 4-point scale (e.g., 1: quite dissatisfied – 4: very satisfied). The CSQ total score ranged from 8 to 32, with higher scores indicating higher satisfaction.

Semi-structured qualitative interviews

We conducted a 20-minute individual semi-structured interview after the last intervention session to understand clients' perceptions of how the credibility, expectancy, satisfaction, client engagement, and person-centeredness MyGoals could be improved. The interviews were audio-recorded and transcribed verbatim. Appendix G has the semi-structured interview guide.

Client engagement and person-centeredness of goals

We assessed clients' perceptions of how actively they engaged in goal setting using the Participation subscale of the Client-Centredness of Goal Setting (C-COGS) scale.[19] We evaluated to what extent clients perceived their developed goals were meaningful, relevant, and motivating, and to what extent they felt ownership of their goals using the Goals subscale of C-COGS[19]. Items in both scales are rated using a 5-point scale (1: strongly disagree – 5: strongly agree). The total scores of the Participation and Goals subscales ranged from 6-30 and 4-20, respectively. Higher subscale scores indicated greater engagement and client-centeredness.

MyGoals intervention change objectives

We developed MyGoals change objectives during Intervention Mapping. We assessed to what extent clients achieved the pre-identified change objectives using a self-report survey with an 11-point scale (0: strongly disagree – 10: strongly agree).

Analyses

We used descriptive statistics for all quantitative data. We used thematic analysis to analyze the interview transcripts.[24] Two independent coders (E.K and J.C) completed six phases of thematic analysis: being familiar with the data, initial coding, theme searching, theme review, defining themes, and reporting the findings. We developed consensus through discussion. If we could not reach a consensus, we consulted the senior author (E.F).

5.4 Results

Participant characteristics

Twenty-two clients participated in this study. Twenty clients completed all research sessions. Two participants were lost after the first visit due to a family emergency and lack of transportation. Participants' demographic and clinical characteristics are in Table 5.1.

Table 5.1 Demographic and clinical characteristics of the sample (*N*=22)

Mean age (years) (SD)	59.9 (13.3)
Sex (Female/male)	19/3
Race	
Asian	1
Black or African American	8
White	14
Ethnicity (Hispanic or Latino/Not Hispanic or Latino)	1/21
Education level (High school graduate/More than High school graduate)	1/21
Health conditions	
Attention-Deficit/Hyperactivity Disorder	1
Anxiety	2
Arthritis	4
Asthma	2
Back pain	2
bipolar	1
Cancer	1
Chronic kidney disease	1
Chronic pain	1

Depression	2
Diabetes	9
Heart failure	1
HIV	1
Hypertension	7
Insomnia	1
Liver disease	1
Multiple sclerosis	1
Obesity	1
Osteogenesis imperfecta	1
Osteoporosis	1
Parkinson Disease	3
Prostate cancer	1
Post-traumatic stress disorder	1
Schizophrenia	1
Stroke	1
Mean MoCA score (SD, range)	26.7, 2.4, 21-30

Outcomes

Twenty participants completed all outcome measures and interviews. The two participants who were lost to follow-up only completed the C-COGS and intervention change objective measure for MyGoals activities #1-5.

MyGoals feasibility

The quantitative feasibility results are in Table 5.2. Participants had high credibility and expectancy, with group average scores higher than 88% of the total score.[25] Satisfaction, client engagement, and client-centeredness scores were also high, with group average scores higher than 96% of the total score.

Table 5.2 MyGoals feasibility *(N*=22)

	M, SD, range
Credibility*	25.7**, 1.7, 22-27
Expectancy*	23.9**, 2.7, 18-27
Satisfaction	30.8***, 1.8, 26-32
Client engagement	29.4***, 1.3, 24-30
Person-centeredness of goals	19.4***, 1.3, 16-20

*n=20, **These were higher than 88% of the total score. *** These were higher than 96% of the total score.

After coding the first several transcripts, we found that participants' responses were all related to social support. We then reviewed social support literature and confirmed that our data could be coded using social support types: appraisal, emotional, and informational support. [26] We used these social support types to guide further analysis. Notably, although we only asked clients to share their perspectives on how to improve MyGoals, they further elaborated on what aspects of the intervention they deemed particularly beneficial.

Table 5.3 describes what immediate social support from MyGoals participants particularly valued and what distal benefits were drawn by that immediate appraisal, emotional, and informational support.

Appraisal support. Participants shared that receiving information that helps self-evaluation from MyGoals helped them formulate good goals and plans. Guidance in self-reflecting on past successes and strengths in achieving goals helped build confidence to reach goals. Help in refining over-ambitious goals by guiding clients to appraise their capacity or environment assisted in more realistic goal and plan development. Lastly, helping the client bridge their life values and therapy goals helped them to develop more motivating goals.

> *"I never would have thought I needed to come out and talk about my (house) clutters. But it seems like it's pushing me to help me to realize I have goals, but just make them manageable.*"

> "*Let's break it down in little steps and…do one step at a time…You may not get the whole thing done, but you got some progress and that motivates you to go farther.*"

> "*If somebody understands that your goals are going to help you reach your life goal. And if your life goal is something related to your health, why anybody isn't going to want better health?*"

*Emotional support. Occupational*therapists' empathy, trust, and caring during MyGoals helped clients actively engage in goal setting and goal management. These included not being judged by the occupational therapist during the intervention, feeling listened to, and feeling welcomed.

"*It didn't feel like I'm being judged. It just felt like you wanted to get me to a point where I achieved my goals. That's one thing that a person who's doing this job needs to probably keep in mind that…you can't make the person feel judged"*

"*Really listening to what people are talking*"

"*To convince someone to go and let them know that the therapist was very nice and patient. And I guess just the personality wise, listen…all that plays a part that's that could convince somebody (to engage in the intervention)."*

Informational support. Advice, information, and suggestions provided from MyGoals helped the general goal setting and goal management process. By learning how MyGoals could benefit their overall life, the clients could engage more actively in their goal setting and goal management. In addition, MyGoals helped clients develop transferable goal setting and goal management skills. Lastly, learning the purpose, expectation, and potential benefits of MyGoals, as well advice from the occupational therapist, increased clients' expectancy that MyGoals would help them achieve their goals and improve their health.

"*For someone that isn't as motivated and interested in the process, I think the connection between life goals connecting it to something that like you want for yourself… what do I want for my life and how would this make my life better."*

"*I've learned a lot from you as far as good planning.*"

"*I did like how you started everything with an explanation of…why setting goals is helpful... I just like that connection between what you're doing and…the outcome.*"

Participants provided suggestions to improve MyGoals. These included providing longer or more frequent sessions, telehealth delivery, group sessions, sharing goals with other healthcare providers to facilitate interdisciplinary person-centered care, and helping them understand the potential negative outcomes of not reaching goals.

"*Be more helpful if there was longer term follow up.*"

"*For the primary care doctor to also realize what their goals are and is on something like Mychart. Then multiple professions can see what is meaningful for that patient. To all be on that same continuity of care.*"

Table 5.3 Qualitative results on MyGoals feasibility

Support type	How support was operationalized in MyGoals	Benefit from the support
Appraisal support	Guided reflection on successful past experiences and personal strengths	Increased goal confidence
	Breaking over-ambitious goals down into more achievable goals	Realistic goal development
	Connecting life values with therapy goals	Motivational goal development
Emotional support	Non-judgmental interactions	Active client engagement
	Welcoming atmosphere	
	Feeling listened to	
Informational support	Learning how MyGoals can benefit life, not only care	
	Learning goal setting and goal management skills	Gain goal setting and goal management skills
	Having advice from occupational therapist	
	Learning the purpose, expectations, and potential benefits of MyGoals	Gain high expectancy about goal setting and goal management

MyGoals intervention change objectives

Participants had high achievement scores on reaching the intervention change objectives. The mean scores of all items ranged from 8.6 to 10 (Table 5.4).

Table 5.4 Intervention change objective achievement results

	M (SD)
Administered after MyGoals intervention activities #1-5 (*N*=22)	
I know why goal setting and goal management is important	9.9 (0.5)
I know my expected role during goal setting and goal management	9.9 (0.3)
I am aware of the activities and roles that I have been doing	9.9 (0.2)
I am aware of activities or roles that I want to work on	10 (0.2)
I know what life goals, goals, and building block goals are	9.7 (0.6)
I am confident in my ability to reach my goals	8.6 (1.6)
I expect that reaching my goals gives me mental, physical, or social benefits	9.8 (0.5)
I know what the plan is	9.6 (0.7)
I know what challenges, supports, and opportunities are	9.6 (0.7)
I am aware of my challenges, support, and opportunities	9.4 (0.9)
I am aware of my plan	9.9 (0.5)
I am confident in my ability to reach my plan	8.9 (1.2)
I expect that reaching my plan gives me mental, physical, or social benefits	9.8 (0.5)
Administered after MyGoals intervention activity #6 (*N*=20)	
I understand my plan	9.9 (0.2)
I am aware of when to carry out my plan and what my plan is	10 (0.2)
I am confident in my ability to reach my plan	9.3 (1.0)
I expect that reaching my goals gives me mental, physical, or social benefits	9.9 (0.3)
I understand my expected role during goal management	9.9 (0.4)
I am aware of my progress toward the goal	9.8 (0.6)
I am confident in my ability to monitor my goal and plan	9.4 (0.8)
I understand that I can change my goal and plan if I want	9.9 (0.5)
I am aware of my goal, when to carry out my plan, and what my plan is	9.9 (0.3)

I am confident in my ability to change my goal and plan	9.7 (0.6)
I expect that changing my goal and plan as needed gives me mental, physical, or social benefits	9.9 (0.4)

5.5 Discussion

This study evaluated the feasibility of MyGoals delivered in-person to adults with chronic conditions. To our knowledge, this is the first study to examine the feasibility of an in-person goal setting and goal management intervention developed explicitly to include all essential theory-based intervention components and promote active client engagement during the intervention. As hypothesized, we found that MyGoals had high client-perceived credibility, expectancy, satisfaction, engagement, and person-centeredness. Participants also had high achievement of the intervention change objectives. The qualitative data provide information on how we can further improve the feasibility of MyGoals.

MyGoals was perceived as credible, potentially helpful, and satisfying by adults with chronic conditions. These findings are promising as high credibility, expectancy, and satisfaction with an intervention are known to be positively associated with better intervention outcomes.[20,27,28] When people perceive the intervention as credible, potentially helpful, and satisfying, they tend to engage in goal-striving behaviors more actively, and thus ultimately achieve better health outcomes.[20,27,28]

MyGoals also enabled clients to actively engage in their goal setting and develop personally meaningful, motivating, and relevant goals. Poor client engagement in goal setting and goal management has been a major challenge in practice.[5] Our findings suggest that MyGoals may be able to address this critical clinical limitation. In addition, active client

engagement facilitated by MyGoals may help clients become more motivated to participate in other goal-striving activities including subsequent rehabilitation intervention.[1,29] Therefore, MyGoals may promote active client engagement during goal setting and goal management as well as the overall course of rehabilitation.

MyGoals was effective in enabling clients to gain the knowledge, self-efficacy, skills, and outcome expectancy necessary to develop personally meaningful goals, make relevant and confident plans, and carry out their goals and plans. Improved personal factors (e.g., higher self-efficacy to act on one's plan) can support clients in performing the desired behaviors (e.g., carrying out the plan) and ultimately achieve better intervention outcomes (e.g., goal achievement).[7] These results support the potential efficacy of MyGoals for promoting goal achievement in adults with chronic conditions.

The social support provided by MyGoals was the key mechanism in promoting better goal setting and goal management among the clients. The different types of social support uniquely contributed to improved quality of goal setting and goal management and its benefits. Appraisal support was found to be helpful for goal and plan development, whereas emotional support was more related to enhancing client engagement. Informational support enhanced client engagement, goal/plan formulation, and skill acquisition. The gaining of transferable goal setting and goal management skills reported by participants is particularly promising, as promoting strategy transfer in clients through rehabilitation interventions is important but challenging.[30] Our findings suggest that MyGoals has the potential to teach transferable goal setting and goal management skills to this population. Considering that our interview was not designed to systematically explore the benefits of MyGoals, there may be more undiscovered advantages.

Future studies should further explore potential benefits and favored supports and capitalize on these to enhance its efficacy and effectiveness.

In direct response to the questions about how MyGoals could be improved, participants expressed the need for a more frequent, intense, and longer MyGoals intervention. Although it was delivered in two sessions in this study for the sake of feasibility testing, MyGoals was designed to be an ongoing and iterative intervention that can be applied throughout the rehabilitation process, which addresses this feedback. These findings are encouraging and suggest the potential feasibility of a more intense and sustained version of MyGoals. Sharing their goals developed from MyGoals with other healthcare providers was also suggested to promote better person-centered care. This indicates the potential utility of MyGoals in multi- or interdisciplinary healthcare. Additional suggestions from clients to enhance the feasibility of MyGoals included providing an interactive communication platform with the occupational therapists, telehealth, etc. Future studies should explore these possible enhancements to MyGoals in addition to the ideal dose, intensity, and delivery mode of the intervention.

Limitations

Participants were predominantly female, White, and not Hispanic or Latino individuals. They also had various chronic condition diagnoses. Therefore, more research can be needed to improve the generalizability of our findings to implement MyGoals in a broader population or specific disease group. However, goal setting and goal management is a general practice applied across diagnostic groups, and our findings demonstrate the feasibility of MyGoals for this purpose across a variety of clinical populations.

One researcher conducted the overall study process including recruitment, screening, intervention implementation, outcome evaluation, and interviews. Therefore, participants' frequent interactions with one researcher could have influenced their perceptions of the study or their outcome measure results. We could not blind the assessor, but we used multiple independent coders to minimize bias in our qualitative findings. Future studies with larger and more diverse samples and blinding will be conducted to evaluate the effectiveness of MyGoals.

5.6 Conclusion

MyGoals is a credible, promising, satisfying, client-engaged, and person-centered goal setting and goal management intervention for adults with chronic conditions in community-based rehabilitation. Our results suggest it has the potential to establish a good client-clinician therapeutic alliance, personally meaningful goal development, person-centered rehabilitation, and, ultimately, to enhance health in adults with chronic conditions.

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Chapter 6: Conclusion

6.1 Summary of studies

The purpose of this dissertation was to establish a foundation for a new theory-based, client-engaged goal setting and goal management system. Additionally, implementation strategies were developed to support effective implementation by OTs with adults with chronic conditions in community rehabilitation. To achieve this purpose, this dissertation used a rigorous, systematic Intervention Mapping approach to (1) develop a goal setting and goal management system called MyGoals (2) develop implementation strategies for OTs, (3) evaluate the implementation strategies in OTs, and (4) evaluate MyGoals in adults with chronic conditions.

In the first aim, the Intervention Mapping study produced MyGoals by determining its ultimate purpose (i.e., enabling adults with chronic conditions to achieve their personally meaningful goals), four intervention targets (i.e., clients' self-efficacy, knowledge, awareness, and outcome expectancy), change (e.g., improve confidence in achieving goals) and performance objectives (e.g., complete action plan), mechanisms of action (e.g., participation, discussion, and individualization), and intervention components. Collaboration with end-users during this process helped us to improve the ecological validity and feasibility of MyGoals. We additionally completed early pilot testing of MyGoals, and our findings indicated that MyGoals was perceived as feasible from the perspectives of both clients and OTs.

In the second aim, the Implementation Mapping study produced the MyGoals' implementation strategies of *Clinician Education* and *Audit & Feedback* by identifying the implementation outcome (i.e., delivering MyGoals intervention for adults with chronic conditions in community rehabilitation completely and competently), change (e.g., understanding all MyGoals intervention components) and performance objectives (e.g., delivering all MyGoals intervention components), and determinants at the individual OT level

(e.g., OT's awareness). Early pilot-testing of the implementation strategies indicated that the strategies are acceptable, appropriate, and feasible but should be further evaluated in a larger OT sample. Thus, an additional evaluation of MyGoals implementation strategies was conducted in Aim 3.

In the third aim, a case-series mixed-methods study of OTs was conducted to evaluate (1) the acceptability, appropriateness, and feasibility of the implementation strategies, (2) to what extent OTs achieve the pre-identified change objectives, and (3) OTs' fidelity in delivering the MyGoals intervention. Results indicated that the implementation strategies were acceptable, appropriate, and feasible to guide OTs to deliver MyGoals completely and competently. In addition, the strategies were effective in helping OTs achieve the change objectives. This finding is important, as it suggests that the MyGoals implementation strategies' mechanisms of action were operationalized as we intended and that the implementation strategies have the potential to support OTs in implementing MyGoals with adults with chronic conditions in community-based rehabilitation. Another important task is evaluating the MyGoals intervention from the client's perspective. This was addressed in Aim 4.

In the fourth aim, a case-series mixed-methods study of MyGoals in clients with chronic conditions was conducted to evaluate the credibility, expectancy, satisfaction, client engagement, and person-centeredness of MyGoals. This study also evaluated to what extent clients can achieve the pre-determined MyGoals intervention change objectives to assess how the pre-identified mechanisms of action work. Results show that MyGoals was perceived by the clients as credible, promising, satisfying, engaging, and person-centered. In addition, it enabled clients to achieve the change objectives, suggesting the mechanisms of action were operationalized as we intended. These findings suggest that MyGoals has the potential to support clients to develop

personally meaningful rehabilitation goals, make relevant plans, execute goal-striving behaviors, monitor goal progress, and achieve their goals and better participation.

6.2 Significance and contribution to Rehabilitation & Participation Science and Practice

This dissertation produced new knowledge about key rehabilitation and participation science research and clinical priority areas including goal setting and goal management and complex theory-based intervention development and evaluation. This work also leveraged three innovative methodologies – Intervention Mapping, Implementation Mapping, and stakeholder engagement – to tackle the "black box" of rehabilitation, or poor understanding of interventions' mechanisms of action, and accelerate theory-based intervention integration into practice. The following discussion further describes the significance of these contributions to the field.

This dissertation provides insight into goal setting and goal management and person-centered care, both of which are critical aspects of rehabilitation and participation science. To improve the participation and health of clients, it is essential to have an in-depth understanding of their desired participation and personal, environmental, and occupational factors. This understanding can be developed through high-quality goal setting and goal management. However, high-quality goal setting and goal management is not fully realized in current rehabilitation practice.[1,2] Our systematic review of goal setting and goal management practice identified two major gaps in current practice: a lack of comprehensive theory-based intervention components and poor client engagement during the intervention. This study made an important contribution to the rehabilitation goal setting and goal management literature by providing detailed information to

guide the decomposition and evaluation of interventions and inform future development of a more comprehensive and client-engaged intervention.

Informed by this knowledge, this dissertation produced a new goal setting and goal management intervention, called MyGoals, that includes all essential intervention components, along with implementation strategies to facilitate delivery of this intervention and ensure active client engagement in the process. Feasibility testing indicated that MyGoals and its implementation strategies are perceived as feasible, valuable, and promising by the target clinical population, adults with chronic conditions, and the end-users, OTs. This work lays the groundwork for the implementation of theory-based, client-engaged goal setting and goal management in community-based rehabilitation to improve person-centered care, thereby enhancing the participation and health of adults with chronic conditions. More studies are necessary to evaluate the efficacy and effectiveness of MyGoals as well as potential effect modifiers such as individual characteristics (e.g., cognitive impairment, diagnosis) or environmental factors (e.g., social support, access to care).

This work used a rigorous, developmental approach – Intervention Mapping – to guide the use of theories in developing and evaluating rehabilitation and participation science and practice. Although the importance of theory-based intervention has been continuously advocated, there is still a lack of guidance on developing and evaluating theory-based occupational therapy interventions.[3,4] This dissertation demonstrated how to use theories to identify the intervention targets, objectives, and mechanisms of action and also how to translate these theories to produce an occupational therapy intervention and its therapeutic approaches.

This dissertation utilized Implementation Mapping to accelerate evidence-based intervention integration into rehabilitation and participation science and practice. It is well known that there are significant delays in translating evidence-based interventions into real-world rehabilitation practice.[5] This issue can be solved through systematic implementation efforts supporting stakeholders to deliver evidence-based interventions in practice by addressing influential implementation factors such as inner setting, outer setting, and individuals involved.[6] However, there is scarce research on the rehabilitation implementation context and the development of implementation strategies to bridge rehabilitation research-practice gaps.[7] Our work provides insights on how to study the implementation context and develop implementation strategies for rehabilitation practice. It also resulted in tangible findings for rehabilitation goal setting and goal management including MyGoals implementation facilitators (e.g., support from the clinic management team, good usability of the intervention), barriers (e.g., lengthy intervention time, clinicians' lack of clinical skill), and strategies (*Clinician Education* and *Audit & Feedback*).

Lastly, this dissertation demonstrated the feasibility and benefits of stakeholder engagement in rehabilitation and participation science. Ultimately, evidence-based interventions will only be used in practice when the end-users, like clients and clinicians, are willing to use them. It is recognized that active client and clinician involvement in research can facilitate the acceleration of evidence-based intervention development and translation by enhancing the ecological validity of interventions.[8,9] However, this is not yet common practice in rehabilitation and participation science research, potentially due to restrictive institutional research policies and procedures, limited research funding, lack of partnership equity among the stakeholders and researchers, poor collective awareness of each stakeholder's processes, etc.[10,11] This work shows

that collaboration with adults with chronic conditions (the target client population), clinicians, and researchers is feasible and can potentially help advance rehabilitation and participation science and practice. Working with the clients and clinicians throughout the entire intervention development process allowed us to understand the end-users' perspectives from the initial stages of intervention and implementation strategy development, identify potential issues in advance, and efficiently address or avoid them.

6.3 Theoretical considerations

This dissertation expanded the understanding of goal setting and goal management-related theoretical constructs in occupational therapy by evaluating their activation and mechanisms during the intervention. Previous literature informed important goal setting and goal management theoretical constructs such as self-efficacy and outcome expectancy.[12] However, a systematic review conducted by our team revealed that no interventions comprehensively targeted and evaluated the activation of these theoretical constructs among adults with chronic conditions in community-based rehabilitation.[2] This dissertation developed an occupational therapy goal setting and goal management system to intentionally target the key theoretical constructs of self-efficacy, outcome expectancy, knowledge, and awareness of adults with chronic conditions. Evaluation of this system suggests that these four theoretical constructs are activated during the intervention through the pre-defined theoretical mechanisms of action.

This dissertation revealed areas for enhancement in the theoretical specification and translation of MyGoals. Although MyGoals was implicitly designed as a social intervention, qualitative interviews highlighted how the social support provided by MyGoals was a particularly salient feature for clients. Emotional and informational support were found to

promote active engagement in the intervention. Informational support was additionally noted as beneficial for the clients to learn goal setting and goal management skills. Lastly, appraisal support facilitated personally meaningful and realistic goal development among the clients. In future studies, the mechanisms and outcomes of the different types of social support provided by MyGoals should be explicitly considered and leveraged to better conceptualize and evaluate the theoretical underpinnings of the intervention. Fidelity ratings also indicated that individual OTs had different levels of familiarity with therapeutic approaches used during the intervention, in particular, guided discovery. Some OTs already have learned and been implementing guided discovery in their clinical practice so that they could apply them during MyGoals. Conversely, some were new to guided discovery and required more intense *Clinician Education* and *Audit & Feedback*. Thus, guided discovery should be more explicitly and intentionally addressed during *Clinician Education* and *Audit & Feedback* to better train OTs in future research.

Testing the efficacy and effectiveness of MyGoals in promoting goal achievement and better participation and health are next steps that will inform the development, evaluation and refinement of the theoretical foundation for this work, as there may be additional important theoretical constructs or mechanisms that were not identified in the feasibility studies.

6.4 Limitations and future directions

We have detailed the limitations of each study in the individual chapters. This section elaborates on overarching limitations and how they will be addressed in future studies.

We did not explore the association between individual characteristics (e.g., cognitive function, diagnosis, age) and the feasibility of MyGoals. Our studies involved small samples of

individuals with diverse demographic and clinical characteristics. We intentionally made this decision because goal setting and goal management is a fundamental part of all occupational therapy practice regardless of client characteristics. However, admittedly, individual characteristics may have significant effects on the feasibility, efficacy, and effectiveness of MyGoals. In particular, cognitive function can have a considerable influence on the ability to set and manage goals and plans. Additional or more intentional efforts to guide this process and facilitate learning may be required to deliver MyGoals to adults with cognitive dysfunction. Ultimately, we need more studies to evaluate the clinical utility of MyGoals in subgroups of adults with chronic conditions with different characteristics and optimize the intervention for each context.

Although MyGoals was designed to be used over the course of rehabilitation care using multiple intervention sessions, the feasibility studies in this dissertation only included two sessions. As a result, this dissertation could not fully evaluate MyGoals, particularly the goal management phase, as individuals often need more time and opportunities to experience and reflect on their goal progress, make adjustments in goals and plans, and take actions to achieve goals. However, these studies allowed us to confirm and refine the feasibility of the individual intervention activities, which is an important first step before conducting longer-term and more resource-demanding studies of the full intervention. Future studies will evaluate MyGoals using more pragmatic trial designs where it is delivered in natural community rehabilitation contexts and as originally intended.

Our findings lack generalizability due to the small sample size. Although we used several recruitment strategies such as social media, flyers, and e-blasts to OT list serves, OT participant recruitment was challenging. OTs were often busy with their clinical or personal responsibilities

and had limited availability to participate. In addition, our geographical catchment area was somewhat limited because our studies required OTs to visit our institution in person. As a result, our OT participants may have different perspectives and experiences on goal setting and goal management compared to those from other communities. Similarly, due to the nature of the feasibility studies and limited resources, our client sample size for Aim 4 (n=20) was relatively small. We also had limited racial and ethnic diversity in our samples, particularly among the OT participants, who all self-identified as White. People from different racial and ethnic communities can have different perspectives, preferences, and experiences, so investigation of MyGoals in more diverse clinician and client populations is necessary for future research.

This study was conducted in a controlled laboratory environment, and thus may lack external validity. Although we endeavored to understand the participants' perspectives as if we were in real clinical practice by using carefully designed survey items, it is difficult to replicate real-world experiences in a laboratory. Thus, additional research is required to further evaluate the utility of MyGoals and its implementation strategies in actual clinical and community environments. Such studies will be required to generate concrete conclusions on the feasibility, efficacy, and effectiveness of MyGoals.

6.5 Conclusion

These dissertation studies laid the groundwork for establishing theory-based goal setting and goal management for adults with chronic conditions in community-based rehabilitation. By using a rigorous, systematic, collaborative, and iterative developmental approach, this work enhanced the quality, feasibility, and potential effect of MyGoals. More studies are required to determine the efficacy and effectiveness of MyGoals and its implementation strategies, and adaptations

may be required for different implementation contexts and more diverse populations. Overall, these findings provide preliminary support for the feasibility and value of MyGoals and its implementation strategies for improving goal setting and goal management in rehabilitation and participation science and practice. Evidence and future directions produced by this dissertation will make an important contribution to accelerating the translation of evidence-based goal setting and goal management to real-world clinical practice and ultimately improve the participation and health of adults with chronic conditions.

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Appendix A

Appendix A. MyGoals - The TIDieR Checklist

The TIDieR (Template for Intervention Description and Replication) Checklist*:

Information to include when describing an intervention and the location of the information

Item number	Item	Where located **	
		Primary paper (page or appendix number)	Other † (details)
	BRIEF NAME		
1.	Provide the name or a phrase that describes the intervention.	36	NA
	WHY		
2.	Describe any rationale, theory, or goal of the elements essential to the intervention.	34-36	NA
	WHAT		

3.	Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (e.g. online appendix, URL).	Appendix B	Available upon request from authors
4.	Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities.	43-60 Appendix B	NA
	WHO PROVIDED		NA
5.	For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given.	39	NA
	HOW		NA
6.	Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.	42	NA
	WHERE		NA
7.	Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.	42-43	NA

	WHEN and HOW MUCH		
8.	Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose.	42-43	NA
	TAILORING		NA
9.	If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how.	NA	NA
	MODIFICATIONS		NA
10.‡	If the intervention was modified during the course of the study, describe the changes (what, why, when, and how).	59-60	NA
	HOW WELL		NA
11.	Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them.	NA	NA
12.‡	Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned.	NA	NA

Appendix B

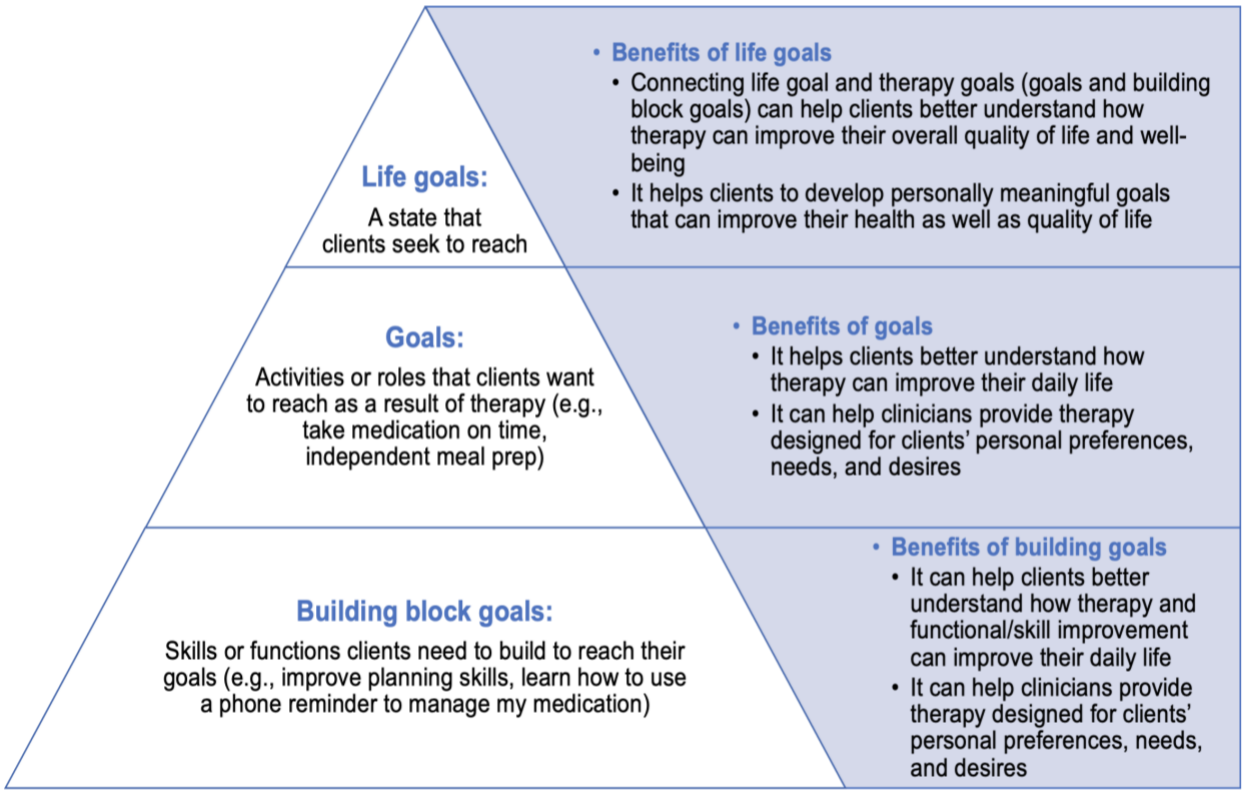
Appendix B. MyGoals Activty 4 example

Activity 4. Make My Goal

Objective:

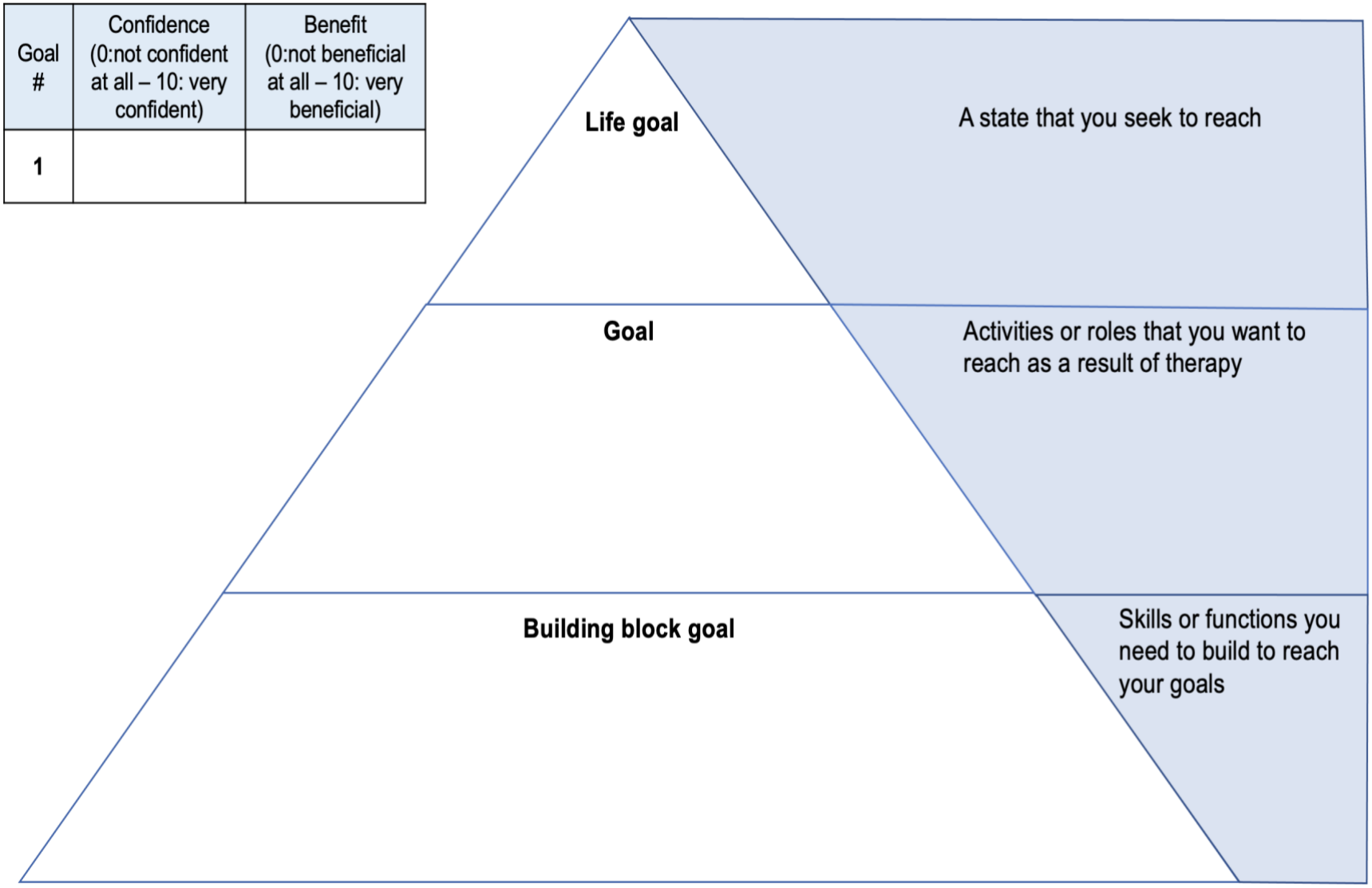
- Guide life goal, goal, building block goal formulation
- Guide the evaluation of self-efficacy and positive outcome expectancy levels of goals
- Educate and discuss the benefits of using different goal types
- Educate clients' health conditions from the biopsychosocial perspective
  -

Based on the previous activity, guide clients to develop life goals, goals, and building block goals. See definitions, examples, and benefits of three goal types in Fig.4.1. Use the prompts/phrases/questions provided in the following pages to educate clients about different goal types.



MyGoals Goal Pyramid

Goal #	Confidence (0:not confident at all – 10: very confident)	Benefit (0:not beneficial at all – 10: very beneficial)
1		



Activity 4. Make My Goal (cont.)

1. Provide Find My Goal Sheet to the client.

2. Based on the chosen potential activities or roles, let's make one goal. Which one do you want to work on?

3. Provide MyGoals Pyramid Sheet to the client.

4. Let's talk more about your goal to make it more specific. Tell me more about this goal. What do you want to achieve?

5. Write down your goal in the "goal" section of the Pyramid. Make your goal more meaningful and relevant to you using your own words.

6. Given your goal, let's think about your life goal. A life goal is a state that you seek to reach. It can be about independence, well-being, health, self-image, career, family, relationships, and so on. Life goals can be simple such as *I want to live independently* or as specific as you want.

7. What is your life goal?

8. Write down your life goal in the "life goal" section of the Pyramid.

9. Your life goal may help you see how therapy goals can help you improve your overall quality of life and reach your life goal.

10. Based on your goal, let's think about your building block goal. Building block goals are skills or functions you need to build to reach your goal. It can be about skills such as planning skills and functions such as walking. What skills or functions do you think can help you to reach your goals? [If clients cannot develop building block goals, provide guidance or examples. These can be

explored by using questions about barriers to achieving their goals (e.g., Why is it difficult for you to take medications independently?)]

11. Write down your building block goal in the “building block goal” section of the Pyramid.

12. [Rate confidence to reach each goal] Rate how confident you are in reaching your goal (0: not confident at all – 10: very confident). [If clients have a lower than 7 confidence level, explore what makes them feel less confident. (e.g., Tell me why you rated the confidence 5.) After discussion, if clients are still not confident to reach their goals, consider modifying goals. Do not discourage or force clients to change their goals in this activity. If needed, goals can be revised in Activity 6. It is more important to help clients feel ownership, rather than setting attainable goals.]

13. [Rate perceived potential positive mental, physical, and social outcomes of each goal] Rate how much you may benefit from reaching your goal. Think about the potential positive mental, physical, or social benefits of your goal (0: not beneficial at all – 10: very beneficial). [If clients have a lower than 7 benefit level, explore what makes them see such low benefit (e.g., Tell me about what makes you rate the benefit 5.) Guide clients to see more potential befits of their goals.]

14. [Summarize the goal pyramid] This is your building block goal. [Point to building block goal]. It can help you reach your goal. [Point to the goal] Working towards these goals can help you do your desired activities and reach your life goal [Point to the life goal].

Appendix C

Appendix C. Mechanisms of actions and parameters for effectiveness incorporated in MyGoals

Mechanisms of action (Applied parameters of effectiveness)	**How this parameter is incorporated in MyGoals (MyGoals activity number(s) or occupational therapist education)**
Advance organizers (Schematic representation of the intervention contents and guides to the contents)	• Enable clients to understand the concepts of life goals, goals, and building block goals using Goal Pyramid Sheet and verbal education (4)
Discussion (Carefully listen to clients to make sure the targeted schemas are activated)	• Educate clinicians about the importance of active listening and ensuring clients' understanding of the targeted schemas (occupational therapist education) • Actively listen to clients and explicitly ask questions to confirm their understanding of the targeted schemas (1,4-6)
Elaboration (Personally relevant and easy-to-understand messages with direct instructions)	• Stimulate clients to add meaning to the life goal, goal, and building block goal, guide clients to reflect on what potential outcomes they may have by working towards reaching their life goal, goal, and building block goal, and guide clients to understand that working towards their goals and building block goals can help them reach their life goal (4) • Guide clients to reflect on potential positive outcomes of their plans (5)
Individualization (Personal communication tailored to the client's needs)	• Encourage clients to ask personal questions and provide individualized instructions (1-6) • Provide clients with individualized instructions based on their understandings, and explicitly ask clients whether they understand the intervention concepts (1,4-6)
Participation (Clinicians' willingness to accept clients as active partners in their care; clients with motivation and skills)	• Educate clinicians about the importance of active client engagement (occupational therapist education) • Ask open-ended questions and develop easy to participate activities using lay language (1-6) • Encourage clients to actively participate in MyGoals activities using verbal education and read out loud the MyGoals summary sheet (1,6) • Guide clients to reflect on their current engagement in activities and their health and environment and share their reflections (2) • Guide clients to come up with and write down activities and roles they want to work on using the Find My Goals Sheet (3)

	• Guide clients to come up with and write down personally meaningful goals with high confidence and positive outcome expectancy using the Make My Goals Sheet and guide them to realize potential positive outcomes of the developed goals (4) • Guide clients to come up with and write down their facilitators, barriers, and planned actions using My Plan and Progress Sheet, Guide clients to develop personally relevant and confident plans, with high positive outcome expectancy, and guide clients to realize potential positive outcomes of the developed plans (5) • Guide clients to monitor their goal progress using the My Plan and Progress Sheet, guide clients to adjust their goals and/or plans to develop personally meaningful goals and relevant plans with high positive outcome expectancy (6)
Self-reevaluation (Provide clients feedback related to affective and cognitive stimulation to appraise their self-image)	• Guide clients to evaluate their cognitive and effective self-image regarding current engagement in activities, potential goal activities, developed goals, plans, goal progress, and goal and/or adjustment and provide feedback to support the appraisal process (2-6)
Enactive mastery experiences (A client's willingness to accept feedback from the clinician)	• Build rapport and trust with clients (1-6) • Guide clients to work on increasingly challenging goals and plans and provide feedback to assure clients that they can achieve those (6)
Feedback (Individualized and specific feedback)	• Provide individualized and specific feedback about clients' goal progress (6)
Goal setting (Clients' commitment to the goal; challenging but attainable goals)	• Guide clients to develop and adjust personally meaningful, challenging, and attainable goals (4,6) • Guide clients to develop and adjust personally relevant and attainable plans (5,6)
Implementation intention (Clients' positive intention)	• Guide clients to develop if-then plans using the planned action/behavior that clients have positive intentions (5)
Improving physical and emotional states (Carefully interpret physical and emotional states)	• Guide clients to carefully interpret and manage their emotional states regarding their goal progress (6)
Planning coping responses (Identification of barriers	• Guide clients to identify barriers and plan the coping responses to develop coping plans (5)

and practice coping strategies)	
Public commitment (Public announcement)	• Guide clients to announce their goals to clinicians and/or others (4,5)
Self-monitoring of behavior (Monitoring of the specific behavior; The monitoring results need to be interpreted and used)	• Guide clients to monitor their goal progress and other goal-related behaviors to interpret and use for the goal progress monitoring (6)
Set graded tasks (The difficult level of the final behaviors can be adjusted)	• Guide clients to develop challenging but attainable goals and plans (4-5)
Verbal persuasion (Reliable source)	• Reinforce clients that they can reach their plans (5)

Appendix D

Appendix D. Standards for Reporting Implementation Studies: The StaRI checklist for completion

Checklist item		Reported on page #	Implementation Strategy	Reported on page #	Intervention
			"Implementation strategy" refers to how the intervention was implemented		"Intervention" refers to the healthcare or public health intervention that is being implemented.
Title and abstract					
Title	**1**	NA	Identification as an implementation study, and description of the methodology in the title and/or keywords		
Abstract	**2**	101-102	Identification as an implementation study, including a description of the implementation strategy to be tested, the evidence-based intervention being implemented, and defining the key implementation and health outcomes.		
Introduction					
Introduction	**3**	102-104	Description of the problem, challenge or deficiency in healthcare or public health that the intervention being implemented aims to address.		
Rationale	**4**	102-104	The scientific background and rationale for the implementation strategy (including any underpinning theory/framework/model, how it is expected to achieve its effects and any pilot work).	102-104	The scientific background and rationale for the intervention being implemented (including evidence about its effectiveness and how it is expected to achieve its effects).
Aims and objectives	**5**	104	The aims of the study, differentiating between implementation objectives and any intervention objectives.		
Methods: description					

Design	**6**	104	The design and key features of the evaluation, (cross referencing to any appropriate methodology reporting standards) and any changes to study protocol, with reasons		
Context	**7**	106	The context in which the intervention was implemented. (Consider social, economic, policy, healthcare, organisational barriers and facilitators that might influence implementation elsewhere).		
Targeted 'sites'	**8**	106	The characteristics of the targeted 'site(s)' (e.g locations/personnel/resources etc.) for implementation and any eligibility criteria.	106	The population targeted by the intervention and any eligibility criteria.
Description	**9**	Table 3.1	A description of the implementation strategy	106-107	A description of the intervention
Sub-groups	**10**	NA	Any sub-groups recruited for additional research tasks, and/or nested studies are described		
Methods: evaluation					
Outcomes	**11**	110-111	Defined pre-specified primary and other outcome(s) of the implementation strategy, and how they were assessed. Document any pre-determined targets	NA	Defined pre-specified primary and other outcome(s) of the intervention (if assessed), and how they were assessed. Document any pre-determined targets
Process evaluation	**12**	110-111	Process evaluation objectives and outcomes related to the mechanism by which the strategy is expected to work		
Economic evaluation	**13**	NA	Methods for resource use, costs, economic outcomes and analysis for the implementation strategy	NA	Methods for resource use, costs, economic outcomes and analysis for the intervention
Sample size	**14**	NA	Rationale for sample sizes (including sample size calculations, budgetary constraints, practical considerations, data saturation, as appropriate)		

Analysis	**15**	112	Methods of analysis (with reasons for that choice)		
Sub-group analyses	**16**	NA	Any a priori sub-group analyses (e.g. between different sites in a multicentre study, different clinical or demographic populations), and sub-groups recruited to specific nested research tasks		
Results					
Characteristics	**17**	112-113	Proportion recruited and characteristics of the recipient population for the implementation strategy	112-113	Proportion recruited and characteristics (if appropriate) of the recipient population for the intervention
Outcomes	**18**	113-121	Primary and other outcome(s) of the implementation strategy	NA	Primary and other outcome(s) of the Intervention (if assessed)
Process outcomes	**19**	117-118	Process data related to the implementation strategy mapped to the mechanism by which the strategy is expected to work		
Economic evaluation	**20**	NA	Resource use, costs, economic outcomes and analysis for the implementation strategy	NA	Resource use, costs, economic outcomes and analysis for the intervention
Sub-group analyses	**21**	NA	Representativeness and outcomes of subgroups including those recruited to specific research tasks		
Fidelity/ adaptation	**22**	NA	Fidelity to implementation strategy as planned and adaptation to suit context and preferences	119-121	Fidelity to delivering the core components of intervention (where measured)

Contextual changes	**23**	NA	Contextual changes (if any) which may have affected outcomes		
Harms	**24**	NA	All important harms or unintended effects in each group		
Discussion					
Structured discussion	**25**	121-125	Summary of findings, strengths and limitations, comparisons with other studies, conclusions and implications		
Implications	**26**	121-125	Discussion of policy, practice and/or research implications of the implementation strategy (specifically including scalability)	NA	Discussion of policy, practice and/or research implications of the intervention (specifically including sustainability)
General					
Statements	**27**	NA	Include statement(s) on regulatory approvals (including, as appropriate, ethical approval, confidential use of routine data, governance approval), trial/study registration (availability of protocol), funding and conflicts of interest		

Appendix E

Appendix E. Clinician interview guide

[Acceptability]

- What aspects of MyGoals training seem less acceptable?
- How can we make MyGoals training more acceptable?

[Appropriateness]

- What aspects of MyGoals training seem less appropriate?
- How can we make MyGoals training more appropriate?

[Feasibility]

- What aspects of MyGoals training seem less feasible?
- How can we make MyGoals training more feasible?

[Intervention change objectives]

- How can we improve MyGoals training so that it can help you to [understand goal setting and goal management practice concepts and their importance?

Appendix F

Appendix F. The TIDieR checklist

Item number	Item	Where located	
		Primary paper (page or appendix number)	Other (details)
1.	**BRIEF NAME** Provide the name or a phrase that describes the intervention.	130	NA
2.	**WHY** Describe any rationale, theory, or goal of the elements essential to the intervention.	130-132	NA
3.	**WHAT** Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (e.g. online appendix, URL).	134-135	NA
4.	Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities.	134-135	NA
5.	**WHO PROVIDED** For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given.	134	NA

6.	**HOW** Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.	134	NA
7.	**WHERE** Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.	133	NA
8.	**WHEN and HOW MUCH** Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose.	134	NA
9.	**TAILORING** If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how.	135	NA
10.	**MODIFICATIONS** If the intervention was modified during the course of the study, describe the changes (what, why, when, and how).	135	NA
11.	**HOW WELL** Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them.	NA	NA
12.	Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned.	NA	NA

Appendix G

Appendix G. Semi-structured interview guideline

- Credibility: In what way do you think we can make this program more believable, convincing, and logical?

- Expectancy: What can we do to make you think or feel this program helps you achieve your goal?

- Satisfaction: In what way do you think we can make this program more satisfying?

- Engagement: How can we encourage you or people to actively participate in the session?

- Person-centeredness: In what way do you think we can help you or people make personally meaningful goals?