

2019

Occupational therapy leadership:
promoting an autonomy-supportive
environment based on
self-determination theory, to
improve patient outcomes in acute
and post-acute stroke rehabilitation

<https://hdl.handle.net/2144/38178>

Boston University

BOSTON UNIVERSITY
SARGENT COLLEGE OF HEALTH AND REHABILITATION SCIENCES

Doctoral Project

**OCCUPATIONAL THERAPY LEADERSHIP:
PROMOTING AN AUTONOMY-SUPPORTIVE ENVIRONMENT BASED
ON SELF-DETERMINATION THEORY, TO IMPROVE PATIENT OUTCOMES
IN ACUTE AND POST-ACUTE STROKE REHABILITATION**

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Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Occupational Therapy

2019

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DEDICATION

I would like to dedicate this work, with great appreciation, to every person that had a stroke, brain injury, or other health-changing event and is striving to return to his or her life.

ACKNOWLEDGMENTS

I would like to thank my wife and three children for their support and encouragement.

Sincere thanks to Dr. Linda Niemeyer for her support, mentoring and her wealth of knowledge that she kindly shared with me, and to Dr. Karen Jacobs for her guidance, support, and her efforts to promote occupational therapy around the world. I also would like to thank my peer mentors and colleagues in BU for their feedback and support.

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Boston University, Sargent College of Health and Rehabilitation Sciences, 2019

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ABSTRACT

A major dilemma that is being addressed in the current project is the discrepancies between healthcare system's expectations for a rapid and successful rehabilitation process and patients after having a stroke ability to meet these expectations while striving to adapt to the calamitous event in their life. Emphasizing a more biomedical approach and under implementation of psychosocial approaches, poor acknowledging of patients' basic psychological needs lead to poor motivation, therapeutic disengagement and may lead to a rehabilitation failure.

To cope with this gap in the process of stroke rehabilitation, an educational program aiming for occupational therapists working with patients after having a stroke in their acute and post-acute rehabilitation phases was constructed. The program guides practitioners for effective communication with their patients, building a needs-supportive environment and addressing their patients' basic psychological needs in light of the self-determination theory, theories of adaptation from occupational therapy perspectives and considering occupational justice and the ICF model. A clinical reasoning, step-by-step

problem solving is introduced using adaptation of known models and innovated models for interventions that were created for this purpose.

Program delivery through a series of 4-webinar modules is illustrated with their learning objectives, assignments and discussions. The program evaluation and implementation are expected to be the initiator of a change in the health and rehabilitation climate and in Israel.

TABLE OF CONTENTS

DEDICATION	iv
TABLE OF CONTENTS	viii
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xiii
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: THEORETICAL AND EVIDENCE BASE TO SUPPORT THE PROPOSED PROJECT	18
Part 1. Evidence Supporting the Problem	18
Part 2. Evidence Supporting the Solution	33
Part 3. Relevant Measures	45
Part 4. Other Theories and Constructs	76
CHAPTER 3: DESCRIPTION OF THE PROPOSED PROGRAM	87
CHAPTER 4: PROGRAM EVALUATION PLAN	112
CHAPTER 5. FUNDING PLAN	133
CHAPTER 6: DISSEMINATION PLAN	142
CHAPTER 7: CONCLUSION	152
APPENDIX A. LESSON PLAN	154
APPENDIX B. NEEDS-ASSESSMENT SURVEY	177
APPENDIX C. POST-COURSE SURVEY	179
APPENDIX D. POST-COURSE KNOWLEDGE EXAM	181
APPENDIX E. EXECUTIVE SUMMARY	186
APPENDIX F. FACT SHEET	196

REFERENCES	199
CURRICULUM VITAE	223

LIST OF TABLES

Table 2-1 Review of measures potentially appropriate for future research purposes.....	46
Table 3-1 A case scenario that illustrates incorporation of a more holistic, psychosocial approach.....	91
Table 3-2 Webinar schedule	106
Table 4-1 A case scenario demonstrating the justification for the proposed program....	113
Table 4-2 Anticipated formative and summative research questions from stakeholders that reflect what each group would be interested in learning from the study results. (Summative research questions will be addressed using pre- and post-testing)	119
Table 5-1 Program expenses.....	138
Table 5-2 Potential funding sources.....	140
Table 6-1 Expenses for two-years of dissemination	150
Table A-1 Set the expectations/goals from the S.H.O.W	170
Table A-2 Illustration of a downloadable handout that participants can use when implementing the SDT in their clinical environment.	174

LIST OF FIGURES

Figure 1-1 Stroke rehabilitation as a complex adaptive system (CAS).....	1
Figure 1-2 Patient experiences and perceptions that can lead to disengagement from rehabilitation	4
Figure 1-3 Rehabilitation options for stroke survivors in Israel funded by the National Health Insurance (NHI) plans or sick funds.....	8
Figure 1-4 The structure of post-stroke rehabilitation in Israel, showing domains that are addressed in each phase	9
Figure 1-5 Changes in the perspectives of occupational therapy practitioners who find themselves limited by a biomedical approach to stroke rehabilitation.....	12
Figure 1-6 Flow of progression through post-stroke rehabilitation, showing ICF domains that can be addressed at each phase from grounding in occupational justice.....	15
Figure 2-1 A representation of the model of disability developed by the World Health Organization (which is the basis of the ICF)	81
Figure 2-2 A flow diagram of social learning theory processes.	84
Figure 3-1 Logic model	95
Figure 3-2 Example of a downloadable page that will be given for each session	99
Figure 3-3 An illustration of the continuum of motivation according to the SDT (with an example of a patient's response at each construct)	102
Figure 4-1. Basic program logic model.....	117
Figure 4-2 Flow of the proposed program evaluation process	122
Figure 4-3 Items that consist of open-ended qualitative questions to be incorporated into formative program evaluation.....	124
Figure 4-4 Sample items for formative program evaluation that require quantitative rating on a 1 to 10 scale. Appendix C describes more questions for post-course evaluation.	125
Figure 4-5 Items for pre-post investigation that require quantitative rating on a 1 to 10 scale	126

Figure 4-6 Sample case scenario followed by items requiring multiple-choice responses.
Appendix D introduces more questions addressing summative program evaluation 128

Figure A-1 Example of a slide describing the rehabilitation process in Israel 159

Figure A-2 Example of a slide describing the biomedical approach features 160

Figure A-3 Example of a slide illustrating the Self-Determination Theory constructs... 161

Figure A-4 Example of two items from the Goal Attainment Scale as compiled for
therapeutic disengagement..... 165

Figure A-5 The M.U.S.T model: abbreviation and meaning..... 169

LIST OF ABBREVIATIONS

ADL	Activities of daily living
BDI-II	Beck Depression Inventory
BI	Barthel Index
BP	Bodily pain
BPNSFS	Basic Psychological Need Satisfaction and Frustration Scale
CAS	Complex Adaptive System
CDI	Cognitive Depression Index
CFA	Confirmatory Factor Analysis
CESD	Center for Epidemiologic Studies Depression Scale
CMT	Cognitive Milieu Therapy
CNS	Canadian Neurological Scale
COPM	Canadian Occupation Performance Measure
CTT	Classical Test Theory
EFA	Exploratory Factor Analysis
FIM	Functional Independence Measure
GAS	Goal Attainment Scale
GCS	Glasgow Coma Scale
GOS	Glasgow Outcome Scale
HADS	Hospital Anxiety and Depression Scale
HCCQ	Health Care Climate Questionnaire
HRQoL	Health-Related Quality of Life

ICF	International Classification of Functioning, Disability, and Health
IRT	Item Response Theory
MCS	Mental Health Component Score
MH	Mental health
MMSE	Mini-Mental State Examination
MOH	Ministry of Health
MOS	Medical Outcomes Study
NASIS	National Acute Stroke Israeli Survey
NHI	National Health Insurance
OJ	Occupational justice
OT	Occupational therapists
PAC	Physical Activity Counseling Trial
PCS	Physical Health Component Score
PF	Physical functioning
QOL	Quality of Life
RE	Role Emotional
ROC	Receiver Operating Curve
RP	Role Physical
SDT	Self-Determination Theory
SF	Social functioning
TBI	Traumatic brain injury
VT	Vitality

WHO

World Health Organization

WHOQOL-BREF

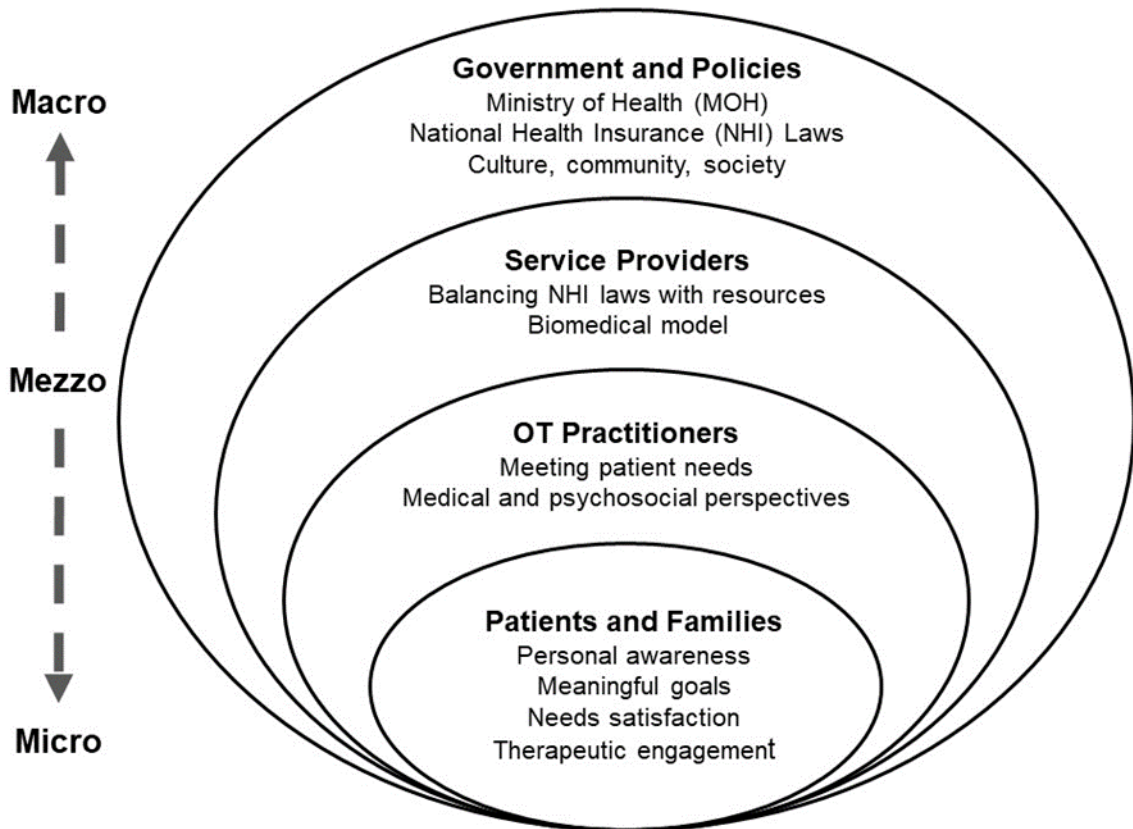
World Health Organization Quality of Life Scale

CHAPTER 1: INTRODUCTION

Context of the Problem

Stroke rehabilitation in Israel, like all Western-based health care delivery networks, can be conceptualized as a *complex adaptive system* (CAS) consisting of a large number of components that are interdependent and that interact in a non-linear, dynamic and often unpredictable fashion (Lipsitz, 2012; Liljenstrom & Svedin, 2015; Tan, Wen & Awad, 2005). A simplified CAS model, which incorporates constructs that will be discussed further, is depicted in Figure 1-1.

Figure 1-1 Stroke rehabilitation as a complex adaptive system (CAS)



The regulatory and societal environment at the macro level sets the parameters for mezzo level healthcare Service delivery settings at the mezzo level in multiple governmental, non-governmental and community settings including hospitals, rehabilitation units, clinics, and extended care facilities. Occupational therapy practitioners, also at the mezzo level, carry out rehabilitation with patients and their families or caregivers at the micro scale in keeping with established departmental procedures. As every aspect of a complex adaptive system is interconnected and interdependent, influence can proceed in many directions. Emergent concerns of patients, caregivers, and therapists, for example can lead to changes in provider practices and ultimately regulatory policies.

The problem being addressed in the author's doctoral project arises when policy makers, facility administrators, physicians, neurologists, internal medicine specialists, psychiatrists, occupational therapists, physical therapists, speech pathologists and other direct care providers within this complex system adhere to a mechanical, regulatory approach to stroke rehabilitation in which components are viewed as interacting linearly (Lipsitz, 2012); this can lead to unintended and undesirable consequences in some stroke survivors. Of particular concern is deficient *therapeutic engagement* in rehabilitation, as evidenced by poor attendance, participation, motivation, expression of interest, carryover, or readiness for change (Kennedy & Davis, 2017). Kennedy and Davis (2017) emphasize the importance of therapeutic engagement as the "precursor to the initiation of *occupational engagement*" (p. 102), which is considered to be a core construct in occupational therapy. In truth, the intricacies of human physiology, psychology, history,

and culture generate uncertainties in stroke rehabilitation that make it “difficult, if not impossible, to plan and standardize the healthcare intervention processes” (Tan, Wen & Awad, 2005, p. 39). The authors note that though rehabilitation characterized by a high level of order and stability can induce a sense of control and certainty in the organization, this “will generate nothing new” (p. 42) and the system might not adapt as the environment evolves.

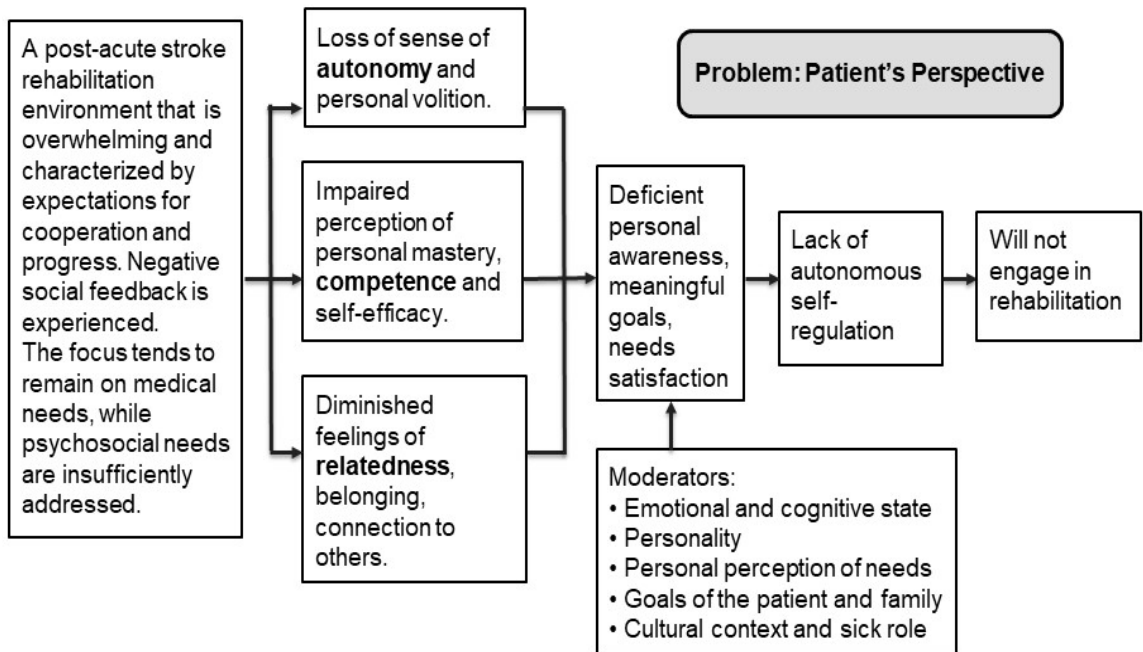
Lipsitz (2012) notes, “To help guide future policies and avoid the unanticipated consequences of regulation, policy makers and physicians need to understand health care as a complex system and apply the principles of complexity science to achieve its goals” (p. 243). The antithesis of excessive stability is the capacity for creative self-organization, which is facilitated by “removing structural boundaries between health care professionals, aligning their goals, enabling experimentation, and establishing simple rules to help limit costs” (p. 245). The author’s aim in this doctoral project is to enhance the capacity for self-organization in stroke management and rehabilitation programs in Israel by educating occupational therapy practitioners in ways to foster therapeutic engagement in rehabilitation using the principles of an *autonomy supportive environment* based on *self-determination theory*.

The Problem from the Stroke Survivor’s Perspective

An overview of the patient’s perspective during post-acute stroke rehabilitation that can lead to disengagement from therapy is shown in Figure 1-2. When a person is admitted to a hospital from one to several days following onset of stroke, he or she begins a process of recovery that can last from months to years. During the acute and post-acute

phases, this individual is confronted with sudden, unpredicted, and sometimes disastrous changes in his or her life, yet at the same time is called upon to cooperate with the rehabilitation team's demands. He or she must receive and process new information, for example the names and roles of members of the rehabilitation team, follow instructions, and actively cooperate while trying to comprehend the degree to which life has changed (Peoples, Satink, & Steultjens, 2011).

Figure 1-2 Patient experiences and perceptions that can lead to disengagement from rehabilitation



A patient's perception of his or her current condition, goals and roles will affect coping and may also influence the health care providers' behaviors (van Dulmen, Sluijs, van Dijk, de Ridder, Heerdink, & Bensing, 2007). Patient education that is individualized to the person's needs is an effective intervention for enhancing his or her adherence to medical treatment. (MacDonald, Kayes, & Bright, 2013; van Dulmen et al., 2007).

Acceptance of the information provided is influenced by the health care provider and patient relationship, however. Therefore, ensuring the quality of these interactions is imperative.

Expectations for progress that are communicated by means of verbal or nonverbal social feedback may be perceived as threatening, patronizing or belittling (Longtin, Sax, Leape, Sheridan, Donaldson, & Pittet, 2010; Vansteenkiste & Ryan, 2013). If the individual actively refuses treatment, attends therapy sessions but expends poor effort, or performs therapeutic tasks as told but with lack of understanding regarding how to integrate them into everyday life, he or she could meet with disapproval (Longtin et al., 2010). Health care providers who view these signs of disengagement in therapy as noncompliance may not support such behaviors. A team member might tell the patient that he or she is uncooperative or warn that failure to put forth maximum effort will lead to discharge home or to a long-term care facility. If the stroke survivor does not feel psychosocially or physically ready for the acute or post-acute rehabilitation process, he or she could be faced with the possibility of failure and early discharge (Badriah et al., 2013; Kelly-Hayes et al., 2003; Musicco, Emberty, Nappi, & Caltagirone, 2003).

The Problem from the Healthcare System Perspective

In Israel, citizens and permanent residents are entitled to publicly funded health insurance and healthcare under the National Health Insurance (NHI) laws (Rosen, 2011). The Ministry of Health (MOH) is responsible for the functioning of the healthcare system. Among its many roles, the MOH oversees provision and effective use of resources for the NHI system, operation of government-owned hospitals, and activities of

nongovernmental providers in the healthcare system. Israelis can enroll in any of four health insurance plans or *kupot holim*, which translates as “sick funds.” Health plans are funded by public monies distributed according to a capitation formula and must provide all services included in the benefits package stipulated by NHI law (Rosen, 2011). This is true for provision of services for elderly neurological rehabilitation patients (Ministry of Health, Medical Administration, 2009). “Thus, the government determines for the health plans both what services they must provide and how much money they will have to provide them. It leaves to the plans the task of how best to organize the care in order to provide those services as effectively as possible, given the budget constraint” (Rosen, 2011, p. 18).

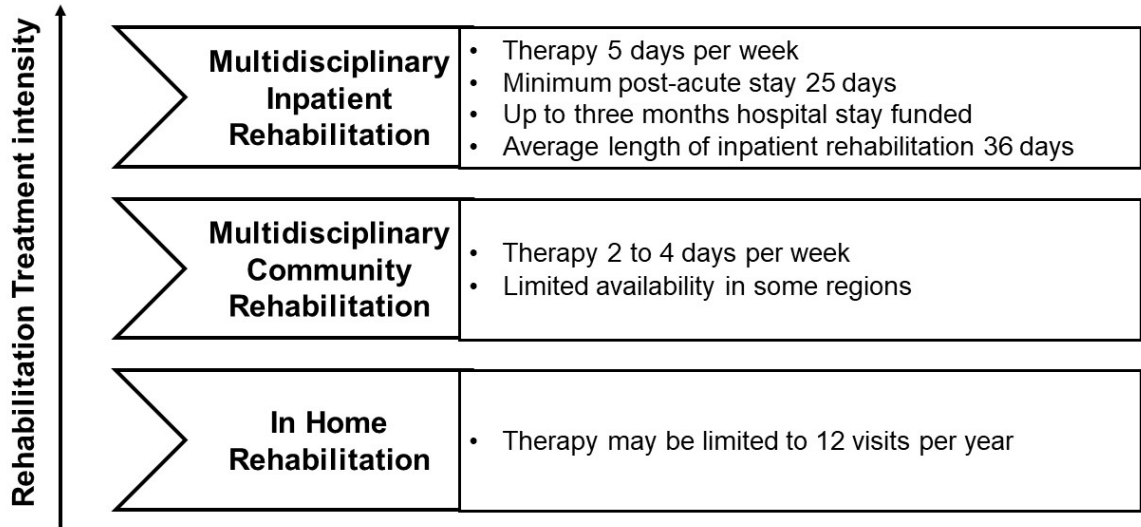
Under Article 23, Second Schedule, of the National Health Insurance Law (Ministry of Health, 1994; Ministry of Health, 1995), the benefits package for a rehabilitative patient allows up to three months of hospitalization for post-acute rehabilitation. When an individual is admitted to an inpatient facility for acute stroke, once the diagnosis is established and immediate needs for intervention are carried out, a decision must be made regarding the next step in the continuum of post-stroke care (Wissel, Olver, & Sunnerhagen, 2013). “Selecting people for rehabilitation poses a difficult dilemma in trying to balance between the objective to provide proper treatment...and the need to avoid wasting scarce resources on candidates who are expected to fail” (Zucker et al., 2013).

The decision made might be prompted by the patient’s ability to meet a performance improvement timetable, which is often an integral component of the expert

judgment of professional staff who are charged with “[providing] services as effectively as possible, given the budget constraint” (Ministry of Health, 2009). According to the American Heart and Stroke Association guidelines, Medicare regulations specify that admission to inpatient rehabilitation facilities should be limited to patients for whom significant improvement is expected within a reasonable length of time and who are likely to return to a community setting (Winstein et al., 2016). Similar guidelines are employed in Israel.

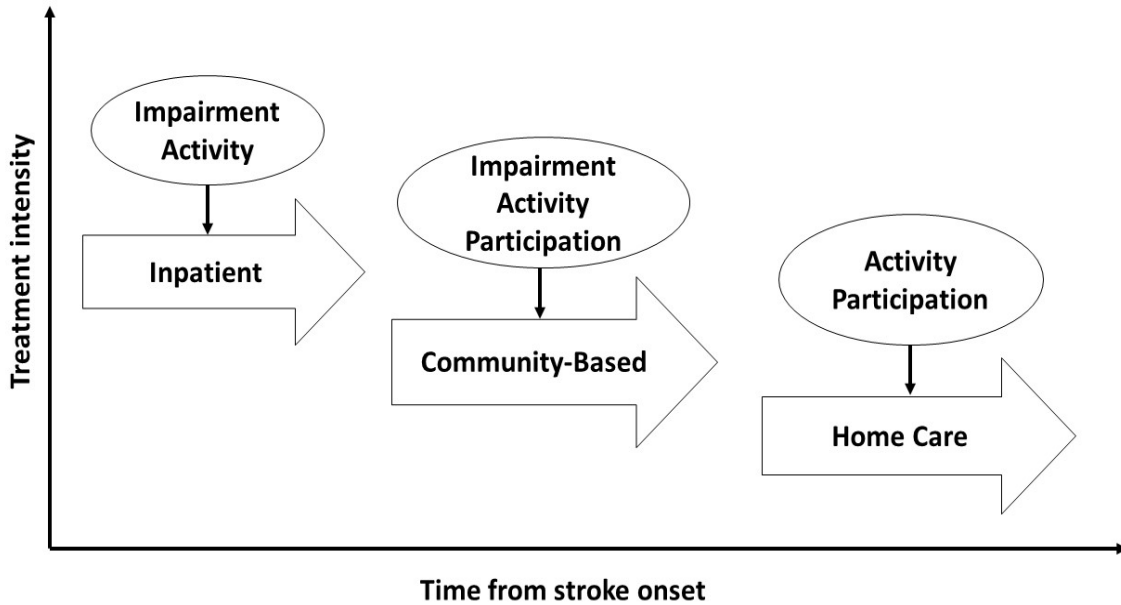
Figure 1-3 provides an overview of the rehabilitation options available to Israeli stroke survivors. Inpatient rehabilitation services, where contact with therapists takes place five days per week, is the most intensive and costly, so this option may be reserved for patients deemed to have the greatest potential. After being discharged from inpatient settings, patients can be referred to community-based or home-based rehabilitation, where therapy visits are reduced, or to home care or a nursing facility with no rehabilitation (Treger et al., 2008).

Figure 1-3 Rehabilitation options for stroke survivors in Israel funded by the National Health Insurance (NHI) plans or sick funds



A post-acute stroke survivor who is progressing in his or her rehabilitation will move through inpatient care and discharge to therapy in the community. As depicted in Figure 1.4, during the inpatient stay of 25 days to three months, the focus of therapy will customarily be mitigation of impairment, or physical and cognitive loss brought on by the stroke, and improvement in capacity to function in performance of activities of daily living. Participation will not be addressed in therapy until he or she is residing in the community and confronted with real-life challenges as experienced away from the hospital environment. As treatment intensity at this phase is lower than it was during inpatient rehabilitation, the main focus will likely be teaching of compensatory strategies. Because of the current structure of inpatient therapy, opportunities during these intensive weeks for OTs to work with the patient to anticipate and plan for meaningful occupational engagement at home and in the community are often missed.

Figure 1-4 The structure of post-stroke rehabilitation in Israel, showing domains that are addressed in each phase



Research data are available on outcomes of rehabilitation in different provider settings. Multidisciplinary home-based rehabilitation was compared to multidisciplinary inpatient rehabilitation by Weiss and colleagues (2004). After a short stay in acute inpatient care, study participants were allowed to choose between these two post-acute options. Home rehabilitation took place over an average of 56.8 days and for inpatient rehabilitation the average stay was 59.82 days. Outcomes were comparable. The authors concluded that, for those with mild to moderate impairment and functional limitation, multidisciplinary home rehabilitation can be a viable option. Hartman-Maeir et al. (2007) compared outcomes for two groups who had engaged in post-acute hospital rehabilitation and were discharged to home. Group 1 participated in an ongoing community-based multidisciplinary rehabilitation program 2 to 4 days per week and Group 2 received no rehabilitation. The authors found that individuals in Group 1 demonstrated greater

improvement in activity level and higher overall satisfaction. According to statements recorded during interviews, their program afforded opportunities for social interaction and expanded options for meaningful occupational engagement. It is noteworthy, however, that community-based rehabilitation services are not always available in the region where the patient lives (Zucker et al., 2013).

If unacknowledged psychosocial issues slow performance improvement and obscure the patient's actual potential, the post-stroke care decision could deprive him or her of appropriate rehabilitation continuity. According to the 2010 National Acute Stroke Israeli Survey (NASIS), in which data were gathered on all acute stroke hospital admissions in Israel over a two-month period, 29% of patients with hemorrhagic stroke and 27% with ischemic stroke were discharged to rehabilitation settings, whereas 28.4% and 60% respectively were discharged home. These percentages were similar to findings of previous surveys (Ministry of Health, Israel Center for Disease Control, 2010). In another study specifically aimed at determining rehabilitation services provided to elderly patients following stroke (Zucker et al., 2013), 421 discharged patients were interviewed, usually with caregivers. Overall, 56.5% received rehabilitation in some form and 32.5% did not receive rehabilitation in any setting.

The Problem from the OT Practitioner Perspective

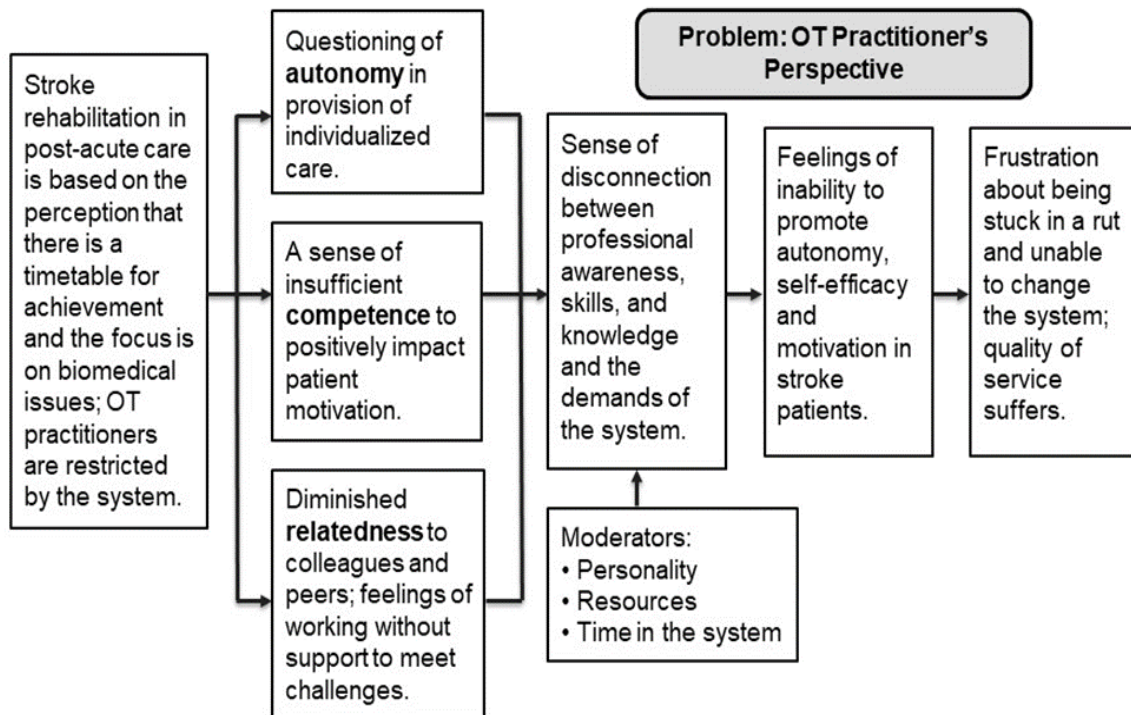
The Israeli approach to stroke rehabilitation is primarily rooted in the biomedical model adopted by Western medicine, which evolved over approximately 300 years in parallel with scientific methodology. It was founded on the assumption that changes in a person's health are based on disease or disorder affecting bodily structures or functions.

Moreover, treatments are an external intervention and the ill person is a passive recipient. Wade (2015a, 2015b, 2106a, 2016b) wrote a four-part editorial series in which he advocated for new approaches to rehabilitation in the U.K. and addressed the negative implications of biomedical model dominance. He stated, “One major consequence is that some patients are unwilling to make enough personal effort to return to active involvement in activities...They do not consider undertaking activities as ‘treatment’ and so do not comply” (Wade, 2015a, p. 1047). When health care policy favors a biomechanical focus on functional performance, it impacts the population of stroke survivors by creating a gap between the need to attend to social roles and context, emotional distress and environmental and cultural factors inherent in the person and the biomedical knowledge and skills supported by the system (Van de Velde, Eijkelkamp, Peersman, & De Vriendt, 2016; Wade, 2015b).

Figure 1-5 provides a flow chart illustrating the dilemma faced by occupational therapy practitioners where there is biomedical dominance in a provider’s approach to post-acute stroke rehabilitation. As a social agent the OT practitioner is obligated to actively foster patients' needs satisfaction and refrain from *needs depriving* or *needs thwarting* behaviors such as threatening, patronizing or belittling (Vansteenkiste & Ryan, 2013). Occupational therapists are aware that they have the knowledge and skill foundation that enables them to address patients' psychosocial needs in the acute phase and thereby support therapeutic engagement in rehabilitation. Early in the process, occupational therapy interventions can be designed to enhance patients’ abilities to adapt and to engage in those occupations that they perceive as most important or meaningful in

this phase (Schiavi et al., 2018). In this scenario, assessment and intervention would take into consideration the context of the current environment in relation to personal factors such as motivation and depression (Schkade & Mcclung, 2001; Solet, 2008).

Figure 1-5 Changes in the perspectives of occupational therapy practitioners who find themselves limited by a biomedical approach to stroke rehabilitation.



However, based on the Western care models currently adopted in Israel, many occupational therapists are working in clinical settings that emphasize the biomedical framework and improvement of functional performance components over biopsychosocial and environmental models. Furthermore, their treatment is bounded by organizational and health care system demands that encourage rapid discharge, thus limiting the practitioner's opportunity to address patients' psychosocial needs (McGrath et al., 2017). This same limitation is described by Wade (2016b) in part four of his

editorial series. The author noted that therapists attached to services or wards in the U.K. are not part of the multidisciplinary team. As their work is circumscribed by the biomedical model, “Their goal is usually to speed up discharge [and] rarely to increase patient autonomy unless that is the only way to transfer a patient from the medical setting” (p. 112).

Some patients, not necessarily only those who are severely affected, need time to become emotionally and cognitively aware and to adjust to the fact that their lives have changed (Bendz, 2003; Liao & Craske, 2013; Pearce et al., 2015). Only then are they ready to fully engage in the rehabilitation process. Therefore, because expectation to see significant changes in the acute or post-acute stages precludes attention to relevant personal needs or goals, a gap in service provision exists for many who are recovering from stroke (Pearce et al., 2015, Siegert & Taylor, 2004, Tholin & Forsberg, 2014). Problems can emerge when a stroke patient’s need to attain psychosocial and physical readiness prior to embarking on the rehabilitation race towards recovery is overlooked and the patient’s lack of engagement in rehabilitation is perceived as noncompliance. This phenomenon has been recognized in other countries whose health care is based primarily on a Western model (Bendz, 2003; Kirkevold, Martinsen, Arnesveen Bronken, & Kvigne, 2014; Siegert & Taylor, 2004, Wade, 2015a).

The Problem from the Global Perspective

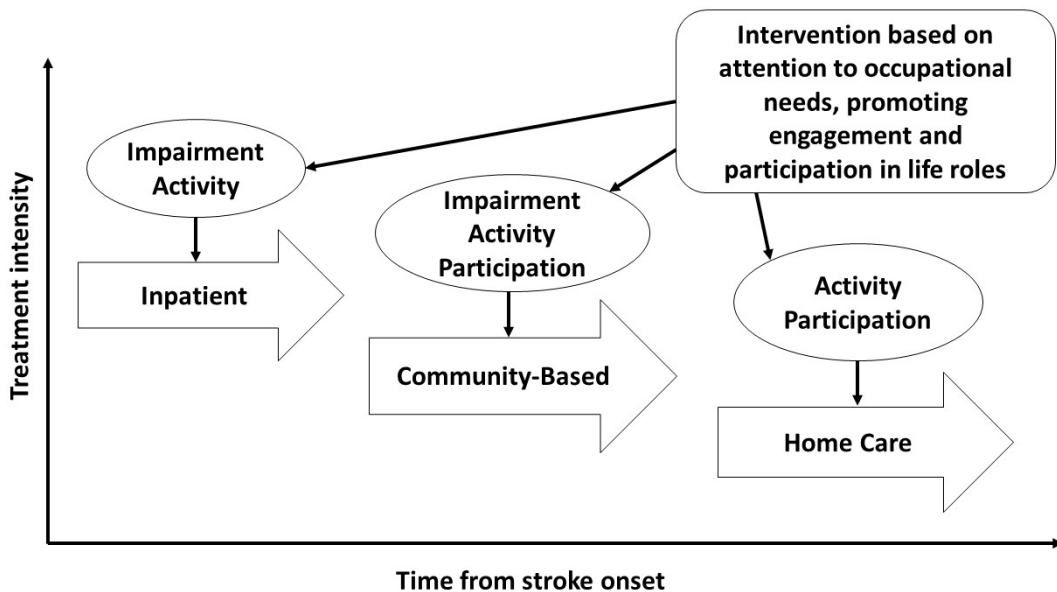
Of central importance from the global perspective are *occupational justice* and the *International Classification of Functioning, Disability, and Health (ICF)*. At the macro level of healthcare as a complex adaptive system, occupational justice has parallels in the domains of human rights and social inclusion, while day-to-day experiences of individuals are embedded in the micro level (Kinsella & Durocher, 2016). Townsend and Wilcock (2004) name four occupational rights, namely “to experience meaning and enrichment in one's occupations; to participate in a range of occupations for health and social inclusion; to make choices and share decision-making power in daily life; and to receive equal privileges for diverse participation in occupations” (p. 75). The ICF is a multi-level classification system for health-related domains that encompasses body structure and function, activity, participation, and environmental and personal contexts (World Health Organization, 2002). It is intended to provide “a standard language and framework for the description of health and health-related states...the conceptual basis for the definition, measurement and policy formulations for health and disability...[and] a planning and policy tool for decision-makers.” (p. 2).

Biomedical model dominance, therefore, can have far-reaching implications. From the global perspective, adherence to the principles of biomedicine at the expense of psychosocial and environmental factors in a complex system is out of step with these more current conceptual developments. Occupational therapists working in settings where evaluation and treatment are focused on improving bodily systems are conceptually drawn away from consideration of the psychological, emotional and social

contexts that are keys to therapeutic engagement and ultimately occupational engagement and wellbeing.

Occupational justice can be addressed in rehabilitation that extends beyond the biomedical focus. Attention to occupational needs and goals, psychosocial readiness, and the right to make choices will transform the clinical relationship such that the rehabilitation practitioner shifts from powerful expert to powerful arbitrator (Pillay, 2011). As depicted in Figure 1-6, occupational justice can be inherent in each stage of service delivery as the medical model basis shifts to social responsiveness and collaboration.

Figure 1-6 Flow of progression through post-stroke rehabilitation, showing ICF domains that can be addressed at each phase from grounding in occupational justice



Proposal to Address the Problem

The proposed project is designed to remedy the current gap in health care delivery by creating an educational program for occupational therapy practitioners and other service provision personnel who provide rehabilitation to patients in the acute and subacute stages following stroke. Participants will learn application of assessment and intervention techniques designed to enhance patients' therapeutic engagement while reducing noncompliance. The conceptual bases of education will be self-determination theory and the autonomy-supportive environment. Self-determination theory (SDT) provides a framework to build participants' understanding that a patient's therapeutic engagement is linked to fulfillment of the three basic needs of competence, autonomy and relatedness early in rehabilitation, thus increasing the individual's inner drive and motivation and enhancing success in the rehabilitation process (Ryan & Deci, 2017; Vansteenkiste & Ryan, 2013). Contrary to clinical settings where the therapists and other health care providers are pressured to achieve specific outcomes and patient choices are limited, SDT teaches that the ultimate clinical goal is to support the patient's autonomy by providing opportunities to make choices (Ryan & Deci, 2017).

The author will design a series of webinars where the educational content will include discussion of the current approach to treatment of stroke patients who are not psychosocially ready or considered to be noncompliant. After defining key concepts, the author will reframe the dilemma of the disengaged or noncompliant stroke patient in terms of self-determination theory and will provide guidelines for creating the autonomy-supportive environment. In addition, standardized psychosocial measures appropriate for

assessing patients that might be labeled as noncompliant in stroke rehabilitation will be explored. The psychometric properties and clinical utility of these measures and usefulness for future research will be examined. Participants will be led to apply what they learned to their current stroke rehabilitation setting and in the final educational session to discuss any changes they experienced.

The expected long-term outcome of the author's doctoral project is gradual self-reorganization of the complex system of stroke management and rehabilitation programs in Israel to admit a shift to a more holistic and needs-oriented approach to rehabilitation policy. The author anticipates that the content of his educational program will bring together multiple stakeholders from different components of stroke rehabilitation to act *synchronistically* in the interest of achieving better outcomes and greater patient and family satisfaction. If supportive human interaction, trust, empathy and acceptance are improved in the stroke rehabilitation milieu, this will enable a challenging category of stroke survivor to succeed.

CHAPTER 2: THEORETICAL AND EVIDENCE BASE TO SUPPORT THE PROPOSED PROJECT

Part 1. Evidence Supporting the Problem

Patients need time to adapt. There is a general agreement that early commencement of interdisciplinary stroke rehabilitation and rehabilitation intensity are among the factors that significantly predict functional outcome (Burton et al., 2018; Hu, Hsu, Yip, Jeng, & Wang, 2010; Salter et al., 2006; Winstein, et al., 2016). According to Winstein and colleagues (2016), “There is strong evidence that organized, interprofessional stroke care not only reduces mortality rates and the likelihood of institutional care and long-term disability but also enhances recovery and increases independence in ADLs” (p. e103). Stucki, Cieza, and Melvin (2007) identify optimal function and quality of life as the primary goals of rehabilitation, which, “achieves its goal by applying and integrating approaches to optimize a person’s capacity, approaches which build on and strengthen the resources of the person, which provide a facilitating environment, and which develop performance in the interaction with the environment” (p. 280).

However, given a structure of the stroke rehabilitation process that is fragmented, patients can be discharged to post-acute care, where goals are functional improvement, shortly after being admitted to acute care, where the focus is medical stabilization (Winstein et al., 2016). This might occur regardless of whether rehabilitation therapies have been initiated and can be experienced as an abrupt transition. When patients attempt to adjust to their functional, physical or cognitive losses while being faced with sudden environmental changes, they may react emotionally with depression or anxiety, as

well as with feelings of confusion, sadness and anger (Kneebone & Lincoln, 2012; Taylor, Todman, & Broomfield, 2011; Winstein et al., 2016). Taylor, Todman and Bloomfield (2011) note that the process of post-stroke adjustment requires sufficient time to enable patients to cope with their experiences. The authors proposed a modified social cognitive transition model of adjustment that incorporates a “cyclical process in which patients evaluate their post-stroke coping responses and modify them over time until eventual adjustment of assumptions is achieved.” (p. 812). In this approach, patients are progressed from coping behaviors such as denial and avoidance in an individualized manner that is not time limited. Yet the time allotted in many stroke rehabilitation programs is inadequate to address a patient’s psychosocial issues, particularly depression (Winstein et al., 2016).

An appreciable percentage of residents in long-term care facilities may have been discharged from rehabilitation after being identified as having failed. Cowman et al. (2010) conducted a cross-sectional study of care provided in 60 nursing homes in Ireland and found that 73% of post-stroke residents were considered highly dependent, while approximately 22% were moderately dependent. Moreover, 53% of this population were prescribed anti-depressant medication. According to the authors, findings were similar to U.S. data. The authors observed that nursing home residency in some cases might have been unnecessary, given a more holistic strategy with less fragmentation of stroke care. They stated, "A whole systems approach is essential to planning, delivery and ensuring capacity in the services, so as to offer people affected by stroke, choice, quality services and access to care... There is abundant research evidence that early poststroke

rehabilitation provides best results, including maintaining or improving functioning and quality of life after stroke” (Cowman et al., 2010, p. 4).

The time elapsed between onset of stroke and initiation of rehabilitation, intensity of rehabilitation, and time spent in treatment are factors that have been shown to affect outcomes. Hu and colleagues (2010), conducted prospective research in an intensive stroke unit and found strong evidence that earlier initiation and more intensive rehabilitation were associated with better functional outcomes at discharge. In a retrospective study, Salter et al. (2006) demonstrated that early commencement of rehabilitation was associated with better functional improvement and shorter hospital stays in patients with first unilateral stroke.

Loshe, Lang, and Boyd (2014), based on meta-analysis, noted a positive dose-response relationship between treatment time and improvement in impairments and function. However, the role of psychosocial factors in affecting the ability to engage in early rehabilitation has received little attention. Hu et al. (2010) excluded 40 patients from their research on early commencement of rehabilitation without stating the reason. In Salter et al. (2006) there was also missing information regarding co-morbidities that might have included psychosocial factors. Loshe, Lang and Boyd (2014) highlight the time patients need to adapt. The authors state, "if started too early, intensive therapy may hinder the rate of recovery or have no benefit over less intense therapies. Also, too many hours of therapy may not be tolerable for participants, leading to dropouts" (p. 2056).

Health care policy and implementation may deprive patients of needed rehabilitation. Current research and updated knowledge on brain plasticity and motor

learning have shown that brain pathways can be modified, and impairments can be improved, months or years after stroke onset (Carey, 2012; Krakauer, 2005). The Loshe, Lang and Boyd (2014) study results suggest that "the benefit of large increases in therapy is similar across a range of poststroke times regardless of whether a client is several months or several years after stroke (poststroke times ranged from 0.003 to 5.38 years)" (p. 2056). Nevertheless, according to the American Stroke Association guidelines, "post-acute care and rehabilitation are often considered a costly area of care to be trimmed but without recognition of their clinical impact and ability to reduce the risk of downstream medical morbidity resulting from immobility, depression, loss of autonomy, and reduced functional independence" (Winstein et al., 2016, p. e99).

This problem can also be found in Israel's rehabilitation services provision. The most current findings of the National Acute Stroke Israeli Survey (NASIS), showed that the mean duration of stay in rehabilitation settings for individuals with stroke was 36 days, whereas 28% of the survey's participants were discharged earlier than the recommended minimum rehabilitation duration of 25 days (Ministry of Health, Israel Center for Disease Control, 2010). Zucker and colleagues (2013), in their account of findings of the first national study of geriatric rehabilitation services following acute stroke, noted that post-acute rehabilitation in Israel typically takes place in an inpatient facility, as the availability of outpatient multidisciplinary treatment is limited. Moreover, Zucker and colleagues (2013) observed that, although practice guidelines for stroke rehabilitation prepared by the Israeli Ministry of Health specify that "rehabilitation potential should be assessed by a specialist in either rehabilitation medicine or in

geriatrics, this is often not implemented in practice” (p. 32). The authors noted discrepancies in rehabilitation service provision related to geographic area, and also that half of those not receiving rehabilitation were discharged home; they surmised that many of those discharged to home might have benefited from this service.

The Israeli State Comptroller addressed this problem in his report for the year 2011 (Ministry of Health, 2012). According to this examination, older adults who needed rehabilitation were discharged to nursing homes for long-term care or awaited rehabilitation for a long period of time in internal medicine or acute wards instead of being referred to rehabilitation settings. In this account, 20% of the patients who needed rehabilitation had not received it. Also highlighted was the reduction in the rehabilitation length of stay as a result of economic and financial considerations. These constraints emphasize the gap between patients' needs and the health system's ability to support those needs. Thus, supporting basic psychological needs in this population is paramount in the current healthcare environment.

The rehabilitation environment affects wellbeing and motivation. According to Pillay (2011), rehabilitation therapists who “build biologic images of patients through their medical gaze” (p, 124) engage in “dis-othering” of patients, as a type of social labeling in which the individual is designated as “outside of the politically, culturally, and socially dominant group” (p, 125). The author notes that creating the dis-othered patient by focusing on his or her disorder, impairment, disability or handicap helps the practitioner to maintain the professional reality and the legitimacy of his or her role in society. "Possible or not, practitioners enter lives armed with conceptual resources

belying essentialism: Classification systems, rating scales, coding, assessment tools, and therapy programs – things that defines 'good' rehabilitation" (Pillay, 2011, p. 125). Dis-otnering will affect communication with the patient, as it may obscure knowledge the therapist acquires about the person's experiences, strengths, abilities, possibilities and resources (Pillay, 2011). Therapists who hold this worldview may engage in needs depriving, needs thwarting, patronizing, or dissociated behaviors when working with a patient, which will affect his or her response to treatment and compliance (Ackerman & Hilsenroth, 2003; Taylor, Todman, & Broomfield, 2011).

Leape et al. (2012) suggest a useful classification of disrespectful behaviors that can be seen in health care environments. Dismissive treatment of patients might be described as "He treats me like an idiot" or "He makes me feel like I'm wasting his time," (p.847). Systemic disrespect among health care providers can also be manifested as lack of an inviting introduction and greeting and failure to provide the patient with information regarding his or her medical condition and treatment. These kinds of negative practitioner behaviors may cause a patient to experience fear, frustration, confusion, shame, depression and anxiety and lead to disengagement in therapeutic activities. Moreover, from the health care practitioner's point of view, when working in a demanding and controlling environment where he or she needs to demonstrate success over a short period of time, the ability to support patients' needs while encouraging motivation and wellbeing will be compromised (Ryan & Deci, 2017). When the patient, who is confronting massive change in his or her life while trying to find new meaning, interacts with a health care practitioner who is under pressure as noted above, this can

trigger an increase in the patient's distress. In this environment, the therapist may interpret the patient's disagreement with clinical suggestions and negative responses as a non-compliant attitude (Dubouloz & King, 2016).

Westra, Aviram, Connors, Kertes, and Ahmed (2012) examined therapists' emotional reactions while working with clients with anxiety disorder and their resistance during cognitive behavioral therapy sessions. Results demonstrated that early expressed positive emotions in therapist reactions toward the client, especially liking, fondness and affection, enjoyment, a sense of connection or attachment, and optimism about the client's future were consistently and significantly associated with lower resistance. There was also a trend toward association of greater therapist early negative reactions to subsequent resistance by clients, though these results were not significant.

Creation of a supportive environment that promotes satisfaction of the basic psychological needs for autonomy, competence and relatedness is essential for ensuring patient wellbeing and motivation, according to Vansteenkiste and Ryan (2013). The authors state, "Not only can low satisfaction of any of these needs hamper growth, but need frustration [within a social context] can be especially harmful and even pathogenic" (p. 264). Basic psychological needs can be thwarted during rehabilitation, for example, when a patient is presented with a level of challenge that is either too high or not high enough or by a context that is controlling, critical or rejecting. The result can be inhibition of intrinsic motivation, fewer resources for growth, a sense of ill-being with depressive symptoms, rigid behavior patterns, and other psychopathologies (Vansteenkiste & Ryan, 2013).

Lack of individualized psychosocial goal setting. Wressle, Oberg, and Henriksson (1999) analyzed qualitative information from patients and personnel in a geriatric stroke rehabilitation program and found that, when therapists set up individual treatment goals with stroke patients, 1) there was the tendency to frame goals primarily concerned with mobility and physical independence, 2) the patient typically did not participate in the goal setting process, and 3) health professionals and patients differed in what they considered to be important or meaningful outcomes. Moreover, in the context of inpatient rehabilitation, Siegert and Taylor (2004) noted in a review of the literature that main goals addressing areas of basic activities of daily living such as mobility, hygiene, eating, dressing, communication, and personal safety were the primary focus, while the influence of context may be underestimated. For example, goals emphasizing psychological wellbeing, social functioning and reintegration into the family and community tend to be neglected in the post-acute phase. Participation and psychosocial outcome measures were also missing in research addressing acute and post-acute stroke rehabilitation (Clark et al., 2017; Loshe, Lang, & Boyd, 2014; Teoh, Sims, & Milgrom, 2009).

Teoh, Sims, and Milgrom (2009) examined psychosocial factors and their influence on a chronic stroke patient's quality of life. Their results highlighted the need to address psychosocial aspects, more specifically depression, self-esteem, and perceived control. The authors recommended that "rehabilitation programs become more multidimensional [as the] overall goal is to promote the adoption of better adaptation and

coping strategies by the individual such that they achieve their highest possible HRQoL" (p. 164).

In the broader view, stroke starts as an acute medical event and progresses most of the time into a chronic medical, functional and social condition. As mentioned earlier, health systems that are organized predominantly according to the biomedical model, which emphasizes the acute, reactive and episodic nature of illness, may not address the longer-term psychosocial intervention needs of patients with chronic conditions (Nuno, Coleman, Bengoa, & Sauto, 2012). Individual goal setting with a health professional helps patients to optimally adjust aims for goal attainment, enhances wellbeing and the motivation to be independent, and increases patients' sense of self-efficacy (Brands, Bouwens, Wolters Gregório, Staper, & van Heugten, 2013; Brands, Wade, Staper, & Van Heugten, 2012; Ertzgaard, Ward, Wissel, & Borg, 2011). Health professionals must therefore strengthen interpersonal and communication skills and consider not only patients' immediate physical, functional and cognitive goals, but also psychological and social goals (Nuno, Coleman, Bengoa & Sauto, 2012).

Fragmentation of the rehabilitation process. From the complex adaptive systems perspective, the rehabilitation process is fragmented when there is insufficient continuity between different care settings and health care providers (Lipsitz, 2012). Lipsitz called attention to the lack of recognition of the non-linear connections between all the components of this complex system, which results in little attention being given to patient transitions and communication channels between facilities. Wissel, Olver and Sunnerhagen (2013) conducted a review of the literature on transition from acute to post-

acute stroke care in developed countries and concluded that, “As stroke patients advance along the current care continuum, they often encounter fragmented and distinct modules of stroke care, each well-defined with a specific purpose and separate accountability...Fragmentation of existing stroke health systems translates into inconsistent delivery of care to stroke patients” (p. 3-4). According to Lang and colleagues (2011) writing in a special interest article for physical therapists in the U.S, “While organized delivery of stroke care often exists within institutions that provide care at various stages of the rehabilitation process, it does not often exist across institutions, as patients move from one institution to another and then to home...The lack of consistency and continuity results in barriers to efficient and effective care delivery” (p. 194).

Concerns regarding fragmentation of services and lack of coordination and communication between health care providers are widespread. Nuno, Coleman, Bengoa, and Sauto (2012) conducted an analysis of the global burden of chronic disease and noted the presence of serious continuity problems in the treatment of chronic patients. In a national cross-sectional study of stroke survivors in nursing homes in Ireland, Cowman and colleagues (2010) found that 34% of managers reported poor communication with acute hospitals, mainly because discharge letters or care plans were not provided for stroke patients that were referred. This barrier for stroke rehabilitation continuity is intensified by lack of patient participation in the transition from one health care provider to another. Coleman and Boulton (2003) define transitional care as " a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care within the same location" (p. 30).

Dyrstad, Testad, Aase, and Storm (2015), in a review of the literature on patient participation in transitions, found that, in many cases, elderly patients reported that they were not involved or engaged in decision making regarding their transition from hospital to intermediate care. Decisions were made in staff meetings without the active participation of the patients, making them passive in goal setting and action planning. Moreover, patients stated that they were not aware that they were participating in an active rehabilitation program and believed that the main reason for their being discharged to another setting was to make a place for other patients.

In Israel, the duration of acute or post-acute inpatient rehabilitation typically ranges from 25 days up to three months according to the National Health Insurance Law (Ministry of Health, 1994). During the course of care, a stroke survivor in Israel might be transferred from inpatient acute to post-acute rehabilitation and subsequently to day rehabilitation, an ambulatory clinic, or home (Zucker, et al, 2015; Weiss et al., 2004). Placement is based on clinical judgment regarding need, potential, or “suitability,” plus practical considerations such as geographic location and bed availability. Lack of clear criteria can lead to wide variations in selection for rehabilitation (Zucker, et al., 2015). Moreover, according to the comptroller report for the year 2011 (Ministry of Health, 2012) following inspection of hundreds of discharge letters of stroke patients between 2009 and 2010, only two thirds acknowledged a recommendation for rehabilitation and 5% of these did not specify whether to transfer the patient to an inpatient or community rehabilitation setting. In the report summary; it was noted that the absence of coherent guidelines hampered the provision of appropriate rehabilitation services. Therefore,

where a patient is judged as lacking psychosocial and physical readiness, or where there are other perceived barriers to rehabilitation, the result can be earlier than usual discharge to an alternative setting. With every transition to a new care environment, the individual will be confronted with different rehabilitation team members, demands, instructions and expectations. Sometimes he or she receives instructions that are totally different from, or that even contradict, what had been told previously, as the new therapist might use a different treatment approach. This lack of attention to continuity promotes confusion and uncertainty.

Patients' lack of knowledge. Education of stroke patients throughout the rehabilitation process regarding what will be expected from them at each phase of this process is imperative. Patients initially experience confusion and uncertainty, and when able will actively seek knowledge and information that helps them in the adjustment process to their new occupational identity (Walder & Molineux, 2017). Nevertheless, patients and caregivers frequently complain about the unavailability of education and direction regarding the next phase of rehabilitative services (Wissel et al., 2013).

These individuals need assurance that being discharged from one rehabilitation setting and admitted to another is not a sign of failure. Some rehabilitation providers begin discharge planning at admission, following initial formal assessment of physical and cognitive impairments, without eliciting the person's own perspective and engaging in discussion about his or her needs and concerns (Dyrstad et al., 2015). Of the key issues reported in the literature, the authors noted lack of information provided to patients regarding the discharge plan, intermediate care, and what to expect upon transition to a

new rehabilitation setting. Although in some studies patients were involved in the process of preparation for discharge, they were not made aware of the rehabilitation goals that were set for them. Dyrstad and colleagues (2015) concluded, “Patients and their families need to be made aware of and educated to use their rights to participate in decisions concerning their needs and care level...In this way, patient empowerment can be facilitated” (p. 33).

Smith, Forster, and Young (2004) conducted a randomized controlled trial involving patients and caregivers at a stroke unit in a metropolitan city in England and found that providing an educational program for the study population was significantly more effective in reducing their anxiety in the early months following stroke, compared to a control group. A prospective study evaluating the usefulness of video-based educational intervention in promoting stroke patients' knowledge, self-efficacy, and patient satisfaction was carried out by Denny, Vahidy, Vu, Sharrief, and Savitz (2017). The authors developed a 5-minute stroke literacy video that was shown to recent stroke survivors prior to discharge from the hospital. The video was based on input from various health care providers, including occupational and physical therapists, stroke survivors and their caregivers. Research findings demonstrated that viewing the stroke education video resulted in significantly improved stroke knowledge, self-efficacy in recognizing stroke symptoms, and satisfaction with stroke education.

Another patient education issue identified by Dyrstad et al. (2015) was use of medical jargon, which presents a barrier to effective communication. Pillay (2011) suggests that practitioners use medical jargon as a means for reinforcing their role as

powerful experts. Castro, Wilson, Wang, and Schillinger (2007) examined primary care physicians' use of unclarified clinical jargon during communication with diabetes patients with limited health literacy. Health literacy was defined as "the degree in which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate medical decisions" (p. s85). The researchers found that physicians used at least one unclarified jargon term, which was essential for understanding physician recommendations and their implementation, during the majority of visits. McCarthy et al. (2012) assessed recall of spoken physician medical instructions in a sample of patients with limited health literacy. In two standardized health care scenarios in which verbal information and instructions for further care were provided, the authors found that the low and marginal health literacy groups demonstrated nearly 50% reduction in recall compared to those with adequate health literacy. Given that stroke patients frequently have cognitive and emotional impairments, these findings highlight the need for using clear and understandable language when offering education and direction aimed at facilitating their active engagement.

Therapeutic disengagement. Lequerica and Kortte (2010) proposed a model for medical rehabilitation in which they described engagement as "the act of beginning and carrying on of an activity with a sense of emotional involvement or commitment and the deliberate application of effort" and therapeutic engagement as, "a deliberate effort and commitment to working toward the goals of rehabilitation interventions, typically demonstrated through active, effortful participation in therapies and cooperation with treatment providers" (p. 416). Kennedy and Davis (2017), who conducted a qualitative

study in which occupational therapists shared their perspectives, discussed therapeutic engagement as the precursor to initiation of occupational engagement, which is a construct that “involves aspects of meaning, interest, motivation and/or perceived self-efficacy” associated with occupational performance (p. 99).

Conversely, disengagement from therapy was described by therapists as “occurring when a client presented with a glazed over expression, was not attending or participating, and had no motivation” (Kennedy & Davis, 2017, p.102). Other indicators of therapeutic disengagement can be poor understanding of the treatment rationale, lack of confidence in rehabilitation and its outcomes, and negative attitudes toward staff (Tetley, Jinks, Huband, & Howells, 2011). Based on participant reports during their qualitative research, Kennedy and Davis found that transitioning the client from therapeutic disengagement to therapeutic engagement, and subsequently to occupational engagement, necessitated following the individual’s “path of choice” during therapy (2017, p. 102). This entailed listening to the client to determine occupations that were viewed as important and meaningful and that fit his or her interests.

It is noteworthy that occupational engagement has parallels with the concept of flow as proposed by the well-known positive psychologist Mihaly Csikszentmihalyi (Emerson, 1998). Flow has been characterized as an experience of total involvement in an activity in which the individual demonstrates positive affect, motivation, ability to concentrate, energy, interest, and a sense of purpose. Prerequisite to an optimal experience of flow are choice, perceived control, clear feedback, appreciation of the activity as rewarding, and a good match between the individual’s perceived skills and

environmental or task essentials. Achieving “the ‘just-right’ fit between task demands and skill level create an optimal challenge for an individual leading to a *deep* flow experience” (Kennedy & Davis, 2017, p. 105). Similar elements can be found in the model proposed by Lequerica and Kortte (2010), which emphasizes the interaction between the personal factors of willingness and capacity with social and physical environmental factors in influencing the patient's motivation and engagement.

The working relationship between the therapist and the individual recovering from stroke can clearly be a critical determinant of therapeutic engagement versus therapeutic disengagement. Achieving effective collaboration between therapist and patient or client is key (Tetley, Jinks, Huband, and Howells, 2011). Within the complex adaptive system of post-acute stroke rehabilitation, however, stress that arises as a result of perceived expectations for progress, pressure to focus on biomedical issues over individual psychosocial needs, a demanding or controlling rehabilitation environment, and lack of consistency and continuity in the system, can impede achievement of that relationship. These barriers can be surmounted.

Part 2. Evidence Supporting the Solution

Occupational needs. Given that therapeutic engagement is supported when the patient and therapist collaborate to identify important and meaningful occupations as a basis for rehabilitation that takes into account the path of choice, the first step is to understand the effect of sudden onset of stroke and hospitalization on occupation. In the acute phase post stroke, the context of the patient’s environment will be comprised of hospital, treatment, therapists, other patients, and so forth. Participation in this context

will be different than the individual's customary world, as his or her primary role is to be a patient. Considering the challenges of this new environment and context, the patient is at risk for avoidant behavior and poor functioning when exposed to controlling, critical, or rejecting social contexts; these are conditions that hamper psychological need fulfillment (Vansteenkiste & Ryan, 2013). Thus, both stakeholders and policymakers have the crucial role in creating an environment that leads to needs satisfaction versus needs frustration.

Schiavi et al. (2018), in a cross-sectional study, used the Canadian Occupation Performance Measure (COPM) to identify occupational needs of complex post-stroke inpatients during rehabilitation, focusing on function and ability. Seventy-six percent of the occupational problems that were expressed by research participants were in the area of self-care followed to a lesser extent by productivity (15%) and only 9 percent were in the area of leisure. Regarding priorities, only a small number of patients (6-13%) listed productivity problems and no patient listed a leisure problem as a high priority. Only a small number of individuals in this sample named occupational problems related to the role of a patient in a rehabilitation setting; this concern was moving inside or outside the hospital. Other problems that were identified were not unique to the role of a patient in rehabilitation, for example the need to self-manage medication or engaging in the various treatments (Schiavi et al., 2018). Helping the patients meet these needs may be the foundation for their recovery process.

Eriksson and Tham (2009) in a qualitative, descriptive, longitudinal study described the lived experience of stroke patients in performing everyday occupation

during the first year after the stroke onset. The participants in their study were four inpatients visiting a rehabilitation clinic in Sweden. The data gathered provided a detailed description of their current experience performing daily activities compared with performing them before the stroke. Participants explained that the feeling of being competent early in the process of the rehabilitation after having a stroke was important in regaining a sense of being normal and setting expectations for future possibilities. The authors concluded that their findings indicated that participants' experiences of competence may contribute to narrowing their occupational gaps. Participants explicitly expressed that experiencing oneself as competent, even in the most basic activities, and recognizing oneself in the act of doing, contributed to their adaptation to trauma and life change.

Other basic needs that were found to be essential in the rehabilitation process of stroke patients are autonomy and social connections (Kubina, Dubouloz, Davis, Kessler, & Egan, 2012). In this qualitative study, a grounded theory approach was used to investigate the process of return to personally valued activities post-stroke. Social connections were conveyed as belonging, being a part of a group and its activities and reciprocity, and enhanced participants' willingness to engage. Autonomy in their study was expressed as being in charge and having the option to decide when and how to resume personally valued activities. Although most of the participants in their study were dedicated to returning to their previous personally valued activities, the authors also state that "autonomy could also lead to reassessment of priorities and a transformative learning process that leads to engagement in new activities" (p. 6). The authors concluded that

supporting autonomy, social connection, risk taking, adaptation and hope may help stroke patients to regain personally valued activities.

Meaning Perspective Transformation process. Dubouloz (2014) introduces the intriguing concept of transformation following catastrophic injury or illness and proposes that occupational therapists are “wired to be occupational transformers” (p. 205) who lead their clients “on a journey...toward a new beginning...to an adapted, significant occupational engagement” (p. 204). A sudden event resulting in disability, such as stroke, places the person’s sense of meaning in jeopardy. Meaning Perspective Transformation is an adult education model that provides a basis for guiding the individual through critical self-reflection and reshaping of values, beliefs, knowledge and feelings to discover new meaning.

In the model presented by Dubouloz, (2014), the transformation process is comprised of three phases, namely the *trigger phase*, *changing phase*, and *outcome phase*. During acute and post-acute stroke rehabilitation, occupational therapy practitioners usually first encounter the patient or client in the trigger phase, where he or she is becoming aware of the diagnosis, symptoms, and limitations in functional abilities. Interestingly, in this model the challenges brought on by the healthcare system are also contributing factors in the trigger phase. There is an interphase in which the person develops a readiness for a change. Dubouloz states that "without the initiation and development of this readiness phase, no measure or technical aid or other assistance would enable occupational therapy to reach its full, intended impact" (p. 209).

In the changing phase, the transformation of meaning perspectives occurs.

Habitual meanings of beliefs, values, feelings, and knowledge that do not fit the new reality are causing distortions. Critical reflection on personal biopsychosocial and spiritual issues connected with living with a disability are fundamental in this phase. This leads to deconstruction of meanings that no longer fit the new reality and reconstruction of new meanings, which leads to readiness for transition in occupational performance. In the outcome phase, the individual takes steps toward a new identity in which he or she adopts new meaningful occupations, resulting in a renewed sense of competence and control.

The role of occupational therapy practitioners in this transformative process is to take into account the person's "perceptions and the meaning of his or her existence" (Dubouloz, 2014, p. 205) by listening carefully "to identify the weakening and emerging meaning perspectives" (p. 211), and supporting movement between phases. During therapeutic activity or other occupational therapy treatment modalities, the practitioner should note when the individual is learning to cope with his or her limitations and identify when meaning perspectives are being transformed (Dubouloz, 2014).

Self-Determination Theory and the autonomy supportive environment.

Ryan and Deci (2017) created a model based on their work, entitled Self-Determination Theory (SDT), which is a model of human behavior and motivation that is applicable for explaining why some stroke survivors struggle with psychosocial adjustment. This theory provides an explanation for how social-contextual factors affect satisfaction of basic psychological needs and motivation. According to SDT, the need for *competence*, *relatedness* and *autonomy* must be satisfied across the life span for an individual to

experience an ongoing sense of integrity and wellbeing (Ryan & Deci, 2017). Individuals who are in rehabilitation are at risk for experiencing loss of these three basic needs (Kirkevold, Martinsen, Bronken & Kvigne, 2014).

Beginning early in the rehabilitation process, sense of autonomy is jeopardized, as the individual loses responsibility for managing his or her life. In the hospital setting, patients cannot choose what to wear, what and when they will eat, nor when they will wake up in the morning or bathe. Awareness of disability because of motor or cognitive impairments erodes competence. Sense of incompetence can be resolved if the individual is enabled to succeed with his or her functional activities and provided with the opportunity to engage in meaningful activities. Relatedness is jeopardized when patients are away from families and friends, and so are removed from the customary social context.

Ryan and Deci (2017) hypothesized that *a relevant social context that is autonomy supportive versus controlling will lead to autonomous motivation and perceived competence*, which are more proximal predictors of positive health behavioral change. In a clinical trial with patients undergoing dental treatment, the authors demonstrated that those who perceived the treatment climate as more autonomy supportive reported greater satisfaction of their basic psychological needs. This reduced their anxiety and increased their motivation and perceived competence. The authors described the healthcare environment as an interesting arena for examining autonomy. On the one hand “there are health care professionals who have clear goals or desired outcome for their patients. Often these professionals are under pressure and attaining outcomes can

have high stakes in terms of funds and reimbursement. On the other hand, it is fundamental goal of medical care to preserve and respect patient autonomy” (p. 454).

A culture of disrespect is the antithesis of an autonomy supportive health care environment; it precipitates stress that can be devastating for patients. Leape et al. (2012) described this sometimes-prevalent health care environment and culture that is disrespectful, degrading and humiliating and that threatens the organizational culture and patient safety. “Lack of respect poisons the well of collegiality and cooperation, undermines morale, and inhibits transparency and feedback. It is a major barrier to health care organizations becoming collaborative, integrated, supportive centers of patient-centered care” (p. 845). The authors conducted a national survey in the U.S. and found that two thirds of the physicians who were queried witnessed other physicians disrupting patient care because of disrespectful, demeaning or dismissive behavior. According to Leape and colleagues, one in nine physicians reported seeing this kind of disruptive behavior every day.

One might consider the inpatient rehabilitation setting, as with most hospital settings, to be a departure from the real world “or even a reversal of normal life...where the rules and obligations ... have been temporarily lifted” (van der Geest & Finkler, 2004, p. 1998). Though hospitals may seem to be isolated islands of biomedicine and technology, in truth the environment reflects the core values, beliefs and culture of larger society, which warrants giving attention to the individual psychosocial needs of patients and care providers (van der Geest & Finkler, 2004). The autonomy supportive environment provides the conditions for self-regulation and confirmation of the patient's

own values and goals within an interpersonal climate that enhances his or her adjustment to the environment and wellbeing (Chirkov, Ryan, Kim, & Kaplan, 2003; Deci & Vansteenkiste, 2004; Borge, Rossberg, & Sverdrup, 2013).

The concept of the autonomy supportive environment has been addressed in the nursing literature on *milieu therapy*. In mental health and rehabilitation intervention settings, milieu therapy can be a means to promote optimal psychosocial functioning by initiating enabling and supporting interactions between patients and staff (Pryor, 2010). For example, Nettet, Rossberg, Almvik, and Friss (2009) evaluated the effect of staff training in a Norwegian forensic psychiatric hospital, using lectures and role play to enhance understanding of milieu therapy, on patients' perceptions of the treatment environment. Staff were taught ways to involve patients in the treatment process, support them in difficult situations, and mitigate aggression. Based on sequential patient scores on the Ward Atmosphere Scale, the authors reported findings of increased involvement, support, practical orientation, and order and organization, plus decreased anger and aggression.

In a qualitative study, also carried out in Norway, Borge, Rossberg, and Sverdrup (2013) explored and described the perceptions and “essential experiences of mastery, learning alternative ways of thinking, and [acquisition] of new skills” (p. 934) in 20 inpatients who were involved in cognitive milieu therapy (CMT). The milieu approach was characterized by commitment, respect and cooperative collaboration in the therapeutic relationship. Each resident participated in development of his or her treatment plan, which included teaching of motivational, cognitive and behavioral strategies. A

number of themes emerged, particularly the reported safety and warmth of the learning climate, the experience of being understood, and working on equal terms with staff. The autonomy supportive environmental climate created in the author's research, which was consistent with the principles of Self Determination Theory, was an essential factor in the patients' motivation for learning.

An investigation of 50 elderly residents of a nursing home in Rochester, New York was conducted by Kasser and Ryan (1999) in order to study the relationship between perceived autonomy support and wellbeing. The authors administered a set of measures to the residents. Using correlational analyses, they found that perceived staff autonomy support was negatively correlated with depression and positively correlated with perceived wellbeing, vitality, and life satisfaction. These findings supported the author's hypothesis in that creation of an autonomy supportive environment was a "primary form of psychological nurturance that facilitates well-being" (p. 948).

The impact of the rehabilitation environment on a patient's engagement in stroke rehabilitation has been discussed within the context of *environmental enrichment* (Janssen et al., 2012; Rosbergen et al., 2017; Rosbergen, Grimley, Hayward, & Brauer, 2019). Rosbergen, Grimley, Hayward, and Brauer (2019) defined environmental enrichment as a "multifaceted intervention to create a stimulating housing environment to enhance exploration and engagement in social, cognitive and sensorimotor activities to promote recovery" (p. 785). Their prospective, controlled, before-after observational study, which was conducted in an acute stroke unit at a regional hospital in Australia, explored the effect of environmental enrichment on patients' engagement in activities

compared to a control condition that offered standard nursing care and one-on-one bedside therapy sessions. The environmental enrichment was embodied in both individual and communal settings. Public spaces in the acute ward were set up to provide common seating areas for patients and families. Stimulating materials were provided at bedside and in communal areas, including music, books, magazines, newspapers, games, puzzles, art, and iPads loaded with therapy apps. This environment was available 24 hours a day. At the patient's bedside, individualized activities appropriate to the patient's impairments, interests, or needs were also accessible.

The authors employed a reliable behavioral mapping tool to measure physical, cognitive, and social activity levels (Rosbergen, et al., 2019). Their results demonstrated that the enriched group patients spent significantly more time engaging in “upper limb, communal socialization, listening and iPad activities...sitting up and standing, with other patients, therapists and therapy assistants” compared to the control group (p. 790). There were no differences between groups in the amount of assistance needed from staff. Consequently, an embedded enriched environment can increase the acute stroke patient's engagement in cognitive, physical and social activities.

The evidence thus supports introduction of environmental elements consistent with Self-Determination Theory (SDT) into the acute and post-acute stroke rehabilitation setting. Other theories that facilitate autonomy, engagement and adaptation, such as the milieu approach and environmental enrichment, are applicable as well. An occupational therapy practitioner can enhance his or her practice by developing a therapeutic autonomy supportive environment early in the rehabilitation process to promote patients'

motivation and engagement. This environment would be aimed at enabling patients to meet the innate psychological needs of competence, autonomy and relatedness. Patients can be guided to make choices in accordance to their abilities and can be presented with the right level of challenge to maintain their need for competence.

Therapist education and Self-Determination Theory. Given that the goal is to optimize patient or client outcomes by instituting an autonomy supportive environment based on the principles of Self Determination Theory, the occupational therapy practitioner must be both learner and teacher. “The outcomes of health professional practice are achieved when the physical and psychosocial needs of the client are met. The outcomes of the educational process are achieved when changes in knowledge, attitudes, and skills occur. Both processes are ongoing, with assessment and evaluation perpetually redirecting the planning and implementation phases” (Bastable, Gramet, Jacobs, & Sopczyk, 2011, p. 11). As learner, the practitioner is called upon to enhance his or her clinical practice, competence and confidence; this entails willingness to be continually updated with new information. Improving the knowledge and skill base of practitioners will as a consequence increase the quality of the care they provide, as well as their job satisfaction. Ryan and Deci (2017) emphasized the beneficial effect of an autonomy-supportive environment on a patient's positive health outcomes and emphasized the need for health care providers to master the intricacies of Self-Determination Theory, because "helping medical trainees become autonomy-supportive practitioners of patient care would seem to be an important goal for the education of professionals in the medical fields " (p.454). As a teacher, the occupational therapy practitioner can educate the health

care team regarding the way that modifying the environment and strengthening therapeutic relationships creates favorable change in the patient's life and improved engagement in the therapeutic process. The practitioner can also educate and direct stroke patients to support their awareness of the rehabilitation process and engage them in dialog regarding psychosocial needs and meaningful occupations.

The benefits of STD education are supported in the literature. Murray et al. (2015) examined how communication skills training that was grounded in Self-Determination Theory affected physiotherapists' supportive behaviors during clinical practice with chronic low back pain patients. This multicenter randomized controlled trial was carried out in hospital outpatient physiotherapy clinics in Ireland. Physiotherapists included in the study participated in a training workshop where they were taught methods for applying SDT strategies during interactions with patients. Audio recordings of verbal behaviors were rated using the Health Care Climate Questionnaire (HCCQ) by expert assessors who were blinded to treatment allocation. Study results demonstrated that learning SDT-based communication skills had a significant positive effect on therapist's needs supportive behaviors.

Chan, Lonsdale, Ho, Yung, & Chan (2009) explored the relationship between perceived physiotherapists' autonomy supportive behaviors, patients' autonomous motivation, and adherence to the post-surgical rehabilitation regimen for anterior cruciate ligament repair carried out at a district Hong Kong hospital. Autonomous motivation was described as "intrinsic...and extrinsic motivation that is underpinned by a desire to obtain benefits that are highly valued" (p. 1978), as contrasted with more controlled extrinsic

motivation. The measures used were the Health Care Climate Questionnaire for therapist autonomy supportive behaviors, the Treatment Self-Regulation Questionnaire for patient motivation, and the Sport Injury Rehabilitation Adherence Scale for patient rehabilitation adherence. Based on the study findings, the authors constructed a model depicting how therapists' autonomy-supportive behavior predicted patients' autonomous motivation and adherence. Moreover, autonomous motivation served as a mediator between autonomy support by the physiotherapist and adherence. The results of these investigations build a case for educating therapists on the role of the autonomy supportive environment in stroke rehabilitation and for further examining the application of Self-Determination Theory with stroke patients.

Part 3. Relevant Measures

Overview. The author intends to evaluate the utility of selected established questionnaires in his proposed project that address relevant theoretical constructs from the literature as broad topics for future study. The aim is to derive variables that can be measured to describe characteristics of stroke survivors in rehabilitation who are at risk for therapeutic disengagement. These questionnaires might be used for screening purposes as well as to study outcomes. Some questionnaires have been translated into Hebrew to fit the needs of the population. For measures not available in the Hebrew language, the author has obtained permission from the authors to create a Hebrew version and test its psychometric properties. Table 2-1 provides an overview of constructs addressed, psychometric characteristics, and possible applications for 6 questionnaires of interest. Further details of each measure are provided in the sections that follow.

Table 2-1 Review of measures potentially appropriate for future research purposes.

(These might be used to describe stroke survivors who are likely to be poorly engaged in rehabilitation and to measure changes occurring as the result of adopting of the author's recommended changes in the rehabilitation milieu.)

Health Care Climate Questionnaire (HCCQ).		
Constructs Addressed	Psychometric Characteristics	Application
The health care recipient's perceived autonomy support provided by the health care provider.	15-item and 6-item versions. High internal consistency reliability. Single factor represented. Construct validity established. Good test-retest intraclass correlation. Short form and long form highly correlated.	Once translated into Hebrew, potential value as a screening and outcome measure to determine presence or absence of an autonomy supportive environment.
Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS)		
Constructs Addressed	Psychometric Characteristics	Application
A self-report scale measuring satisfaction versus frustration of psychological needs for autonomy, competence, and relatedness.	24 items measuring satisfaction and frustration for autonomy, competence and relatedness. Good internal consistency for each of the 6 4-item subscales. 6-factor model confirmed. Satisfaction and frustration of 3 needs are distinct constructs. Predictive validity with measures of self-esteem, depression, vitality, ill-being, well-being. Structure and functioning of 3 needs consistent across ages and cultures and seem to be universal.	Once translated into Hebrew, potential value as a screening and outcome measure to determine level of satisfaction and frustration of the needs for autonomy, competence and relatedness.
SF-36 Health Survey (SF-36)		
Constructs Addressed	Psychometric Characteristics	Application

Physical and mental health dimensions. Feelings, emotions.	All items have been shown to correlate substantially (greater than 0.40, corrected for overlap) with their hypothesized scales with rare exceptions. reliability estimates for physical and mental summary scores usually exceed 0.90. Internal consistency coefficients were satisfactory for group comparison, above .070, internal consistency reliability was significantly lower for the one-week in comparison to the four-week versions of the RE (0.59 versus 0.79). Test-retest reliability between .48 and .87	Selected for correlation research. A Hebrew translation is available. An acute form is available. Was tested with post stroke patients.
World Health Organization Quality of Life Scale (WHOQOL-BREF)		
Constructs Addressed	Psychometric Characteristics	Application
Psychological health, physical health, social relationships and environment, general quality of life. Feelings, emotions.	Cronbach's alpha coefficient for stroke patients and their caregivers was $\alpha = 0.79$. Construct validity w using confirmatory factor analysis (CFA) and the analysis of item and domains high Correlation coefficients ranged from 0.67 to 0.89 for the psychological domain ,from 0.62 to 0.71 for the physical domain ,from 0.69 to 0.81 for the social relationships domain, from 0.73 to 0.89 for the environment domain, and 0.89 and 0.90 for the level of independence domain. Test-retest reliability between .81 and .88	Selected as applicable to the author's study population. A Hebrew translation is available.

Pulse Profile		
Constructs Addressed	Psychometric Characteristics	Application
Physical condition, upper and lower limb functions, sensory components, excretory functions and mental and emotional status	Tested on TBI Test measure has test-retest reliability of 0.87 and inter-rater reliability that exceeds 0.95. as for its validity	Provides information about patient engagement with or without involved UE or LE.
Hospital Anxiety and Depression Scale (HADS)		
Constructs Addressed	Psychometric Characteristics	Application
Anxiety and depression	Internal consistency of the Hebrew version was 0.86 for the anxiety subscale and 0.89 for the depression scale as measured with cardiac patients. Test-retest was 0.95- 0.97 and correlation with the emotional wellbeing of the SF-36 using Pearson (0.69 for depression, and 0.62 for anxiety, $p < 0.01$). Examined with dialysis patients: Internal consistency for the HADS-D was 0.80 and 0.90 for the HADS-total. The HADS anxiety subscale and total scale had high internal consistency Cronbach's α was 0.87 for the HADS-A and 0.90 for the HADS-total. The HADS-A correlated strongly with the HADS-total ($r = 0.92$, $P < 0.01$).	Selected for assessing depression and anxiety. Was translated to Hebrew
Goal Attainment Scale (GAS)		
Constructs Addressed	Psychometric Characteristics	Application
Individual's goal achievement	Is dependent upon the measure constructs, content and scoring methods	To set and monitor individual's relevant and meaningful goals

Health Care Climate Questionnaire (HCCQ). The HCCQ (Williams, Grow, Freedman, Ryan, & Deci, 1996) is a 15-item measure that was developed to assess patients' perceptions of the degree to which their health care providers are autonomy supportive as well as their quality of care. An internal consistency Chronbach's alpha of .95 was established based on a sample of 276 patients, and factor analysis revealed a one-factor solution with all items fitting into the theoretical construct of perceived autonomy support (Williams et al., 1996). Aspects of autonomy support that are specifically addressed in the HCCQ are health care providers' interactions with patients, choice affordance, providing information and encouraging self-initiating behavior (Czajkowska, Wang, Hall, Sewitch, & Körner, 2017). Each item is rated on a 7-point Likert scale ranging from 1- strongly disagree to 7- strongly agree (Kasser & Ryan, 1999).

The HCCQ is also available in a shorter version consisting of 6 items; it was found to have excellent internal consistency reliability. Czajkowska, and colleagues (2017) aimed at validating the HCCQ short form, which was translated to French, in a hospital-based sample of inpatients diagnosed with melanoma. The authors found significant inter-item correlations ranging from .55 to .75 ($p < .001$ for all) and high Cronbach's alpha ($\alpha = .91$), indicating strong internal consistency. A confirmatory factor analysis was also conducted and showed an excellent fit of items to a single factor. The short, 6-item version of the questionnaire correlated very highly with the original, 15-item version ($r = .95$, $p < .001$). "Construct validity was established by testing hypotheses on how the HCCQ should correspond to similar and dissimilar constructs through correlations and pertinent single items, as well as sociodemographic and medical data. In

total, 12 of 13 hypotheses...were supported (92.31%) providing evidence for the construct validity of HCCQ” (p. 5). Test-retest reliability was calculated and showed strong intraclass correlation ($r = .55, p < .001$).

Shumway et al. (2015) also assessed the psychometric properties of the shorter version of the HCCQ. The participants in their study were female patients diagnosed with breast cancer, who were asked to respond to the questionnaire with reference to the overall autonomy supportive environment, followed by subsequent questionnaires where they were instructed to respond with reference to their surgeon, medical oncologist, and radiation oncologist. Exploratory factor analysis (EFA) for each of the questionnaires indicated a single factor solution. Factor loadings for each of the 6 questions onto the first factor were uniformly high, all above 0.7, which met their criteria for inclusion (factor loading >0.45). Internal consistency assessed by Cronbach’s alpha was 0.93, 0.94, 0.97, and 0.92 for the overall, surgeon, medical oncologist, and radiation oncologist scales respectively. The scales for each provider category were significantly positively correlated with the overall scale, at 0.74, 0.64, and 0.61 for the surgeon, medical oncologist, and radiation oncologist, respectively. However, provider level scales were less positively intercorrelated (0.47 to 0.55). The authors concluded that the HCCQ can be useful in understanding patients’ perceptions of how well physicians facilitate autonomous motivation and self-regulated behavior. Currently, the HCCQ has not been translated to Hebrew nor validated with post-acute stroke patients. As the author is in the process of translating the HCCQ to Hebrew, psychometric properties will be studied further.

Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS). The BPNSFS was developed to measure the satisfaction versus frustration of an individual's psychological needs for autonomy, competence, and relatedness, which are constructs of Self-Determination Theory. Chen and colleagues (2015) developed the current scale consisting of 24 items, with six 4-item subscales measuring both satisfaction and frustration of the constructs of autonomy, competence and relatedness. Respondents rate each item on a 5-point Likert scale ranging from ranging from 1- completely disagree to 5- completely agree.

Psychometric properties of the BPNSFS have been tested with children between 9 and 10 years old (Van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017), adolescents (Chen et al., 2015; Cordeiro, Paixão, Lens, Lacante, & Luyckx, 2016; Liga et al., 2018) and adults (Del Valle, Matos, Diaz, Pérez, & Vergara, 2018; Liga et al., 2018). National settings for psychometric research included Belgium (Chen et al., 2015; Van der Kaap-Deeder et al., 2017) China, Peru, and USA (Chen et al., 2015), Portugal (Cordio et al., 2016), Italy (Liga et al., 2018), and Chile (Del Valle et al., 2018). The BPNSFS has been translated into the languages of these cultures. For study of populations in Israel, the measure would require translation into Hebrew.

Chen and colleagues (2015) after establishing the final version of the BPNSFS, conducted a confirmatory factor analysis (CFA) that yielded a cross-culturally consistent 6-factor model. Based on correlational analysis, the authors found an overall pattern of relationships across the four culturally diverse countries that participated in their investigation. Of note was a clear distinction between need satisfaction and need

frustration, each with unique associations with “well-being,” measured as vitality and life satisfaction, and “ill-being,” measured as depressive symptoms. The six-factor structure of the BPNSFS, as well as need satisfaction and need frustration as distinct dimensions demonstrating unique variance in predicting well-being and ill-being, were confirmed by Cordiero et al. (2016), Del Valle et al. (2018), and Liga, et al. (2018). Del Valle et al. (2018) and Liga et al. (2018) calculated Cronbach’s alpha internal consistency reliability coefficients of the subtests ranged from .81 and .90, and Liga and colleagues (2018) noted that the six-factor model was consistent across age groups. Thus, the universality of the BPNSFS constructs was demonstrated. In a predictive model generated by the authors:

- Satisfaction of competence and autonomy needs predicted vitality.
- Frustration of autonomy, competence and relatedness needs predicted depression.
- Frustration of relatedness needs strongly affected self-esteem.
- Both frustration and satisfaction of autonomy and competence needs strongly affected self-esteem.

The study by Van der Kaap-Deeder et al. (2017) was unique in that the authors adjusted the basic psychological need satisfaction and need frustration scales to accommodate daily use by children between 9 and 10 years of age and employed a 12-item version of the BPNSFS questionnaire consisting of 4 items for satisfaction or frustration of the two basic needs of autonomy support and psychological control. The authors’ results indicated that daily fluctuations in autonomy support and psychological

control from important social sources are associated with daily satisfaction or frustration of these basic psychological needs and thereby perceived well-being and ill-being.

Although the target population of the writer's project consists of adults who are being seen in acute and post-acute rehabilitation after having sustained stroke, use of a daily version of the BPNSFS might reveal a pattern of daily fluctuation in patient reports of basic psychological need satisfaction versus frustration.

Short Form 36 (SF-36) Health Survey. The SF-36 is a well-accepted and widely used measure based on patient report that provides a comprehensive health status profile, often termed health-related quality of life (HRQOL) (McDowell, 2006). Historically, this generic instrument has been used internationally with a variety of health conditions and levels of severity for clinical practice and research, general population surveys, and evaluations of health policy (Bunevicius, 2017; Hobart, Williams, Moran & Thompson, 2002; Lins & Carvalho, 2016). It consists of eight scales that measure the dimensions of physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH) (Lins & Carvalho, 2016). Its 36 items were developed as part of the Medical Outcomes Study (MOS) from an initial pool of 116 questions derived from measures of well-being and function that were used in the 1970s and 1980s (McDowell, 2006). The MOS was a two-year, multi-site study of patients with chronic conditions, with a primary goal of achieving a better understanding of how patient outcomes might be measured (RAND Corporation, 2019).

Higher SF-36 item and scale scores indicate a better state of health. There have

been three approaches to composite scoring in this instrument. First, item scores are summed for each of the 8 scales to produce a health status profile (Hobart et al., 2002). It should be noted that the 36th item, which measures change in health, stands alone. Second, a total score might be generated as a single measure of HRQOL (Lins & Carvalho, 2016). In the third approach, two aggregated summary measures, derived via factor analysis based on the assumption that the physical and mental constructs are uncorrelated, provide a physical health component score (PCS) and mental health component score (MCS) (Farivar, Cunningham, & Hays, 2007). The former is comprised of the PF, RP, BP and GH scales, and latter of the VT, SF, Re and MH scales. Component score calculation is a multi-stage process (Hobart et al., 2002). Each of the scale scores is first transformed to a z score based on a normative population dataset. The z scores are then multiplied by a factor coefficient derived from the dataset and a sum of these calculations is generated for the four scales belonging to the PCS and MCS. Finally, the aggregated PCS and MCS z scores are converted to a T score with a mean of 50 and a standard deviation of 10.

Since the SF-36 was introduced in the 1990s, ongoing research on the basic psychometric properties of this measure has demonstrated acceptable internal consistency and test-retest reliability, as well as construct, predictive, convergent and discriminative validity, in keeping with Classical Test Theory (CTT), with various stroke populations. It is noteworthy that small to moderate sensitivity to change and some issues with floor and ceiling effects have been noted (Canadian Partnership for Stroke Recovery, 2019). These properties were investigated by Hagen, Bugge, and Alexander (2003), who assessed the

ability of early post-stroke patients to complete the SF-36, its internal consistency, construct validity, floor and ceiling effects, and sensitivity to a change with this population. Initial measurements at one-month post onset were repeated at 3 and 6 months. At one month, 17% of the 153 participants did not complete the measure because of the severity of their condition and inability to communicate stemming from aphasia, confusion and neurological impairment. For 10% of the remaining participants, a caregiver completed the SF-36 on behalf of the participant. At this point in time, a floor effect was found for the RP and PF scales, a ceiling effect for BP, and both floor and ceiling effects for RE.

Internal consistency reliability using Cronbach's α was assessed by Hagen and colleagues (2003) at each of the data collection points. Except for VT at 1 month, and GH at 3 months, all values exceeded the generally accepted criterion of 0.7 that indicates an acceptable level of correlation between items comprising the same subscale. Tests of construct validity were based on data summarized across the three collection points. Highest correlations were found between the PF, SF and MH scales and the Barthel Index (BI) and Canadian Neurological Scale (CNS). There were moderate correlations between the PF and MH and the Mini-Mental State Examination (MMSE). Mean ranks for SF-36 scores were higher in fully conscious participants at stroke onset for all subscales, compared to participants that were not fully conscious, but only for SF did the difference between the two groups approach significance. Low sensitivity to change between 1 and 3 months was demonstrated for BP, GH and MH subscales. For the remaining subscales, significant improvement was consistent with the BI, CNS and MMSE. Interestingly,

there were no significant changes in SF-36 subscales from 3 to 6 months, though significant changes were recorded for the three comparison measures.

In a recent study, Bunevicius (2017) reported the reliability and validity of the SF-36 in patients with brain tumors in a cross-sectional investigation. Two hundred twenty-seven participants completed the SF-36 questionnaire. The author used items from the Beck depression inventory II (BDI-II), namely “interest in other people” and “fatigue,” to evaluate the convergent validity of the Social Functioning and Vitality subscales of SF-36 respectively. In addition, the Barthel Index (BI), a functional measure, was used to evaluate the convergent validity of the physical component of the SF-36.

Findings demonstrated that internal consistency reliability, as measured by Cronbach's coefficient α , was greater than .70 for all SF-36 scales except for the GH and SF subscales, which were .69 and .53 respectively. Spearman rho correlation between the BI, the SF-36 physical component summary scores, and the SF-36 subscales referring to physical health ranged from .27 to .49 and from .54 to .83, respectively. The SF-36 mental component summary score spearman rho correlation with the SF-36 subscales addressing emotional health ranged from .75 to .82. The BDI-II total score was also found to be negatively correlated with SF-36 VT ($\rho = -.60$) and MH ($\rho = -.60$) scales. Bunevicius (2017) noted the low level of missing data in the study and concluded that the SF-36 demonstrated adequate criterion validity with other measures of physical and mental health and good discriminative validity for patients with different degrees of illness severity in this population.

In a unique psychometric evaluation of the SF-36, Cordier, Brown, Clemson, and

Byles (2018) conducted a prospective, population-based, longitudinal investigation in which Item Response Theory (IRT) methodology was employed. IRT is a newer psychometric analysis approach that can more accurately determine the measurement properties of items in a questionnaire. Three cohorts of the Australian Longitudinal Study on Women's Health, representing ages 18–23, 45–50, and 70–75 respectively in 1996, were randomly selected from the Medicare database. The authors considered their sample to be representative of the population. Each cohort was assessed in 6 waves every three years. Response rates across the three groups ranged between 37% and 52%. The authors established longitudinal SF-36 item and category stability for both total and component scores.

Contrasts from previous CTT-based psychometric research were discovered in this investigation. The authors noted unidimensionality of scales and a consistent hierarchical ordering of the SF-36 total scale items according to their difficulty, but misfitting items and item redundancies were found. Person separation reliability indexes across all waves of data and summary scales were in the unacceptable range (0.35 logits), which pointed to problems with internal consistency and sensitivity for discriminating between high and low performance in this sample. There were also indicators suggesting that item scores were influenced by locality and marital status, which impacts generalizability. The authors explained, “The contrast between results from IRT and CTT could be due to the further focus at item level that is characteristic to IRT. It is possible that overlapping items identified in the person-item map are contributing to lack of sensitivity in the scale...The results suggest the SF-36 is not as sound as previously

suggested...[F]uture research should further evaluate this measure using IRT methods...[M]ultiple items needed to be reassessed to avoid degrading the model and improve performance of the SF-36 as a reliable measure of health-related quality of life” (Cordier et al., 2018, pp. 24, 28).

Hobart, Williams, Moran and Thompson (2002), investigated previously untested scaling assumptions that could impact the usefulness of the SF-36 for assessing the quality of life of individuals who sustained an ischemic stroke. This measure was administered to 177 patients between one and eleven months after stroke onset via face-to-face interviews. The authors converted raw scores from individual scales to standard Z and T scores to allow comparison of standard deviations. They tested six scaling criteria related to 1) symmetry of item response distributions, 2) presence of a common underlying construct in each individual scale, 3) similar proportions of information on the underlying construct across scales, 4) higher correlation of items to the construct addressed by a scale than to constructs in other scales, 5) internal consistency Cronbach’s ∞ coefficients of .70 or greater in each scale, and 6) correlations between scales that are lower than internal consistency coefficients, thus demonstrating that each represents a distinct construct.

The authors found that the IRT distribution of item scores within each of the 8 scales were approximately parallel, with similar means and standard deviations. With the exception of two questions in the GH scale, items within each scale were generally found to measure a common underlying construct. There was an issue with the SF and GH scales in that within-scale intercorrelations were not sufficiently greater than between-

scale correlations, which is an indication that the constructs of social function and general health may not be fully distinct as hypothesized. Internal consistency reliability coefficients for most scales, ranging from 0.68 to 0.9, were acceptable. Again, the SF and GH scales were problematic, as their reliability coefficients did not meet the criterion. Floor effects were found in the RP and RE scales, and ceiling effects were noted in the RE, SF and BP scales. Finally, principal components analysis of intercorrelations among the SF-36 scales supported the two-construct model underlying the physical and mental components summary scores used with stroke patients. Nevertheless, the authors state that, “these 2 components explained less than 60% of the total reliable variance in all SF-36 scales and less than 75% of the reliable variable in 5 of the 8 scales...Therefore, a substantial amount of information from SF-36 scales is lost when summary measures are reported in stroke” (p. 1351).

In conclusion, Hobart and colleagues (2002) advised caution in the use of the GH and SF scales, as insufficient satisfaction of scaling assumptions pointed to the possibility of imprecision and confounding of scores. Three out of 6 scales that did meet scaling assumptions showed floor and/or ceiling effects, which would limit usefulness of the SF-36 in clinical trials because of possible underestimation of the impact of intervention. To mitigate this problem, the authors highlighted the importance of matching the measure to the population being evaluated. Further, Hobart et al. (2002) did not recommend computation of PCS and MCS summary scores with the stroke population. Study limitations named by the authors included small sample size, the wide range of participant's time from stroke onset, and diverse rehabilitation status.

A final consideration regarding the SF-36 is generation of a total score, which has come into use as a global HRQOL indicator. Lins and Carvalho (2016) conducted a scoping review to investigate the frequency and methodology of this practice in the scientific literature. According to the authors' report, developers of the SF-36 strongly noted that, "The components analyses showed that there are two distinct concepts measured by the SF-36... Therefore, it is not appropriate to try and come up with one overall score" (p.3). Nevertheless, in the final sample of 172 articles published between 1997 and 2015 and representing 36 countries and a variety of study designs, all had generated a total or overall SF-36 score. Though 75% did not specify the method used, calculating an average of the eight SF-36 scale scores, adding the eight raw scores, and averaging the physical and mental component scores were mentioned in the remaining 25%. The authors concluded by advising researchers and journal editors to question the trustworthiness and research integrity when the SF-36 total or global score is used in an investigation because valid scientific bases for such an approach have not been established.

World Health Organization Quality of Life Scale, Short Form (WHOQOL-BREF)

This questionnaire is a shortened form of the WHOQOL with 26 items rated by the respondent on a five-point Likert scale. They represent four domains measuring psychological health, physical health, social relationships and environment, plus two items addressing overall quality of life and general health respectively. (WHOQOL Group, 1998; Oliveira, Carvalho, & Esteves, 2016). The WHOQOL-BREF can demonstrate the impact of health problems on a patient's life, or it can help with

enhancing the communication between doctor and patient in monitoring of his or her progress after treatment (McDowell, 2006).

Chiu et al. (2006) examined the psychometric properties of the WHOQOL-BREF with patients who had sustained a traumatic brain injury (TBI), as well as the relationship between severity indicators of TBI and the four domain scores of this quality of life measure. Data were collected from 22 hospitals in northern Taiwan over a 6-month period. Information was gathered via hospital records and telephone interviews. Initial severity indicators were the Glasgow Coma Scale (GCS), post-traumatic amnesia, and the abbreviated injury scale to the head. Measures used to investigate convergent validity included the Glasgow Outcome Scale (GOS), Barthel Index (BI), Social Support Survey, and the Center for Epidemiologic Studies Depression scale (CES-D).

Internal consistency, test-retest reliability, known-groups validity, and responsiveness for each of the WHOQOL-BREF domains with the study population were supported by findings. There were low floor and ceiling effects. Cronbach's α internal consistency coefficients varied from 0.75 to 0.89, and the intraclass correlation test-retest coefficients varied from 0.74 to 0.95. With regard to known-groups validity, the four domain scores discriminated between those who were unemployed, dependent for daily activities, had weak social support, and showed signs of depression and contrasting counterparts. Interestingly, calculations of convergent validity revealed Spearman correlation coefficients less than or equal to .40 between the physical capacity domain and Barthel Index as well as between the social relationships domain and the Social Support Survey. The authors also noted low correspondence between domain scores and

the three initial severity indicators. The authors recommended use of the WHOQOL-BREF for the TBI population as a well-constructed generic measure of subjective health-related quality of life.

Oliveira, Carvalho, and Esteves (2016) evaluated the psychometric properties of the Portuguese version of the WHOQOL-BREF, including dimensional structure, construct validity, predictive validity and reliability, in a psychiatric population. Study participants were 403 adults that were recruited from inpatient and outpatient psychiatric facilities in Portugal. The main inclusion criterion was clinical diagnosis based on the Diagnostic and Statistical Manual of Mental Disorders. Interestingly, exploratory and then confirmatory factor analyses revealed that the best factor solution was comprised of five domains, as contrasted with the expected four domains of the WHOQOL-BREF. The fifth domain was named level of independence. Cronbach's α internal consistency reliability coefficient values were 0.85 for psychological health, 0.73 for physical health, 0.73 for the social relationships, 0.68 for environment and 0.77 for level of independence. Thus, adequate internal consistency reliability of the five-domain model of the WHOQOL-BREF for this sample was demonstrated. All items were correlated significantly within each domain. The correlation coefficients were high and ranged from 0.67 to 0.89 for the psychological domain, 0.62 to 0.71 for the physical domain, 0.69 to 0.81 for the social relationships domain, 0.73 to 0.89 for the environment domain, and 0.89 and 0.90 for the level of independence domain. No items showed strong correlations with outside domains.

The authors also used regression for calculating predictive validity. Regression

results showed that all domains had significant predictive effects on overall QOL, general health, and general QOL, with the exception of the physical domain. The psychological domain contributed most to overall QOL, general health and general QOL. Only the psychological and the level of independence domains predicted general health ($p < 0.001$). The psychological domain, the environment and the level of independence domains had significant predictive effects on general QOL ($p < 0.05$). The authors reflected on the importance of level of independence as a dimension of quality of life for individuals with a psychiatric illness. Though level of independence will vary over time in this population based on changing severity of illness and circumstances, the authors noted that qualitative research has revealed that ability to engage in work and other customary daily activities is a key aspect of well-being.

In a cross-sectional study of stroke patients in Brazil and their caregivers, de Lima, Santos, Sawada, and de Lima (2014) used the WHOQOL-BREF to assess their participants' quality of life. The study sample included 84 stroke patients that were 3 months or more from onset and without any cognitive or language impairments that may hamper their understanding and completion of the questionnaire. The authors found the WHOQOL-BREF to be a reliable quality of life measure with this sample. Internal consistency as measured using the Cronbach's α coefficient for stroke patients and their caregivers was 0.79. The average scores in the physical, psychological and environment domains were lower for participants with caregivers. In the social relations domain, the mean score for participants with caregivers (71.02) was slightly higher than the mean score of the participants without caregivers group (70.94). The authors concluded that the

WHOQOL-BREF was suitable for assessing this population and emphasized the need for more holistic assessment of stroke patients and their caregivers.

Chuluunbaatar, Chou, and Pu (2016), in a multicenter prospective study conducted at public hospitals in a region of Mongolia, addressed the quality of life of stroke survivors and their informal caregivers, who were defined as persons who provided the types of care needed by the patient without being paid. In their study, the authors' aim was to describe changes in the quality of life of stroke patients and their caregivers in the physical health, psychological health, social relationship, and environment domains of the WHOQOL-BREF. Another aim was to describe factors associated with the QOL of both stroke patients and their informal caregivers in the first year after stroke. Face-to-face interviews were conducted within 10 days after stroke onset, and telephone interviews one year later; The Barthel Index (BI), a measure of level of independence in activities of daily living, was also administered as an indicator of degree of disability.

In the authors' reported findings, change over one year for the patients was characterized by significant improvement in the environment domain of the WHOQOL-BREF, non-significant improvement in physical health, and non-significant declines in social relationships and psychological health. Predictors of lower QOL in the stroke patients were greater disability, older age, female gender, and being single. For the caregivers, there were significant improvements in the psychological health and environment domains and a non-significant decline in physical health. Predictors of lower QOL among caregivers were poor physical health, male gender, and financial difficulties.

The authors reflected on the broad features of the environment domain, which encompass healthiness and safety of the environment, financial and health care resources available, access to leisure activities and transportation, and satisfaction with place of residence. They concluded that giving more attention to the social, financial, and training needs of informal caregivers may be beneficial.

Pulses Profile

The Pulses Profile is a measure of functional dependence that was originally developed for a chronically ill and elderly institutionalized population by Moskowitz and McCann in the 1950s (McDowell, 2006). Factors that can be assessed using this instrument are physical condition, upper and lower limb functions, sensory components, excretory functions and mental and emotional status. The measure can be completed from medical records or via interview. Each item is scored from 1 to 4, where higher scores indicate worse ability or performance. The version in current use was revised in 1979 (McDowell, 2006).

The Pulses Profile has demonstrated test-retest reliability of 0.87 and inter-rater reliability that exceeded 0.95. Regarding its validity, patients who were discharged home had higher scores than those who were discharged to long-term care and the latter had higher scores than those who were referred for acute care (McDowell, 2006). O'Toole, Goldberg, and Ryan (1985) used the Pulses Profile to evaluate patients' physical, sensory, intellectual and functional changes after amputation. Their study results showed that, as expected, there was an initial decrease in patients' independence immediately following amputation, whereas 6 months after discharge when patients returned to the community

Pulses Profile scores indicated increase in their functional ability. Although not commonly used, because the Pulses Profile measures patient participation with or without residual impairment, this characteristic may be useful for assessing level of engagement.

Hospital Anxiety and Depression Scale, (HADS)

Zigmond and Snaith (1983) developed this self-assessment instrument for detecting a hospitalized patient's depression and anxiety and for discriminating between depression and anxiety. The HADS is comprised of two scales of 7 items each that address symptoms of depression and anxiety respectively. Higher scores indicate more severe symptoms, and anxiety and depression are each scored separately, though a HADS total score has been used clinically. A cutting point of 8 to 9 is recommended for detecting mild or borderline depression or anxiety and 11 to 21 for abnormal depression or anxiety (McDowell, 2006).

Buria et al. (2015), in a cross-sectional study, evaluated the psychometric properties of the Hebrew version of the HADS. Their research, which was conducted in Israel, assessed the reliability and discriminative, construct, and criterion validities of this instrument. The HADS was administered to patients with cardiac diseases in an outpatient clinic. The Hebrew version of the SF-36 was used to establish criterion validity

The authors found an internal consistency coefficient of 0.86 for the anxiety subscale and 0.89 for the depression subscale. Test-retest reliability was assessed with 11 participants 6-8 weeks after first completing the HADS. High correlations were found between the two test administrations, namely 0.97 for anxiety and 0.95 for depression. The authors also looked at correlations between the HADS anxiety and depression items

and the SF-36. Pearson coefficients revealed significant item correlations ($p < 0.01$) between the HADS, the eight SF-36 items and its two dimensions, the physical and the mental, ranging from -0.48 to -0.80. These results indicate that greater anxiety and depression, as measured using the HADS, was consistent with lower reported quality of life. The correlation of the SF-36 mental health subscale with the HADS depression subscale was -0.79, and with the HADS anxiety subscale was -0.64. The authors concluded that the Hebrew version of the HADS had acceptable psychometric properties for use with patients with cardiac diseases.

Vodermaier and Millman (2011), in a systematic review and meta-analysis, addressed the accuracy of the HADS as a screening tool for mental disorders in patients with cancer and to determine optimal cut-off values. Twenty-eight studies that addressed sensitivity and specificity of the HADS to screen for depression or other mental disorders were included in the meta-analysis. Each was evaluated using the 2003 version of the STARD statement, which provides a single-page checklist of areas that should be reported in diagnostic accuracy studies (Bossuyt et al., 2003). The STARD offers guidelines for readers to judge the bias, as well as the generalizability and applicability, of this type of research. It was updated in 2015 to incorporate recent evidence regarding sources of bias and variability (Cohen et al., 2016). Each investigation was assessed independently by both authors; when two studies did not provide a specific threshold score, they collaborated to determine the most suitable threshold.

The findings of Vodermaier and Millman (2011) revealed that a cut-off threshold of 10 or 11 for the total HADS score yielded sensitivity of 0.80 (CI 0.75–0.84) and

specificity of 0.74 (CI 0.71– 0.77). A higher threshold resulted in lower sensitivity for detecting mental disorders. For detecting syndromal depression, the best accuracy was achieved with a total score threshold of 15 resulting in a sensitivity of 0.87 (CI 0.73– 0.95) and a specificity of 0.88 (CI 0.84–0.90). A depression subscale cut-off threshold of 7 provided the best balance between sensitivity 0.86 (CI 0.76–0.93) and specificity 0.81 (CI 0.78–0.84) in detecting any depressive disorder. The anxiety subscale accuracy in detecting any mental disorder with a threshold of 7 or 8 resulted in a sensitivity of 0.73 (CI 0.68–0.77) and a specificity of 0.65 (CI 0.61–0.67). To identify depression using the anxiety subscale, a threshold of 10 or 11 resulted in a sensitivity of 0.63 (CI 0.53–0.73) and a specificity of 0.83 (CI 0.80–0.86). The authors concluded that the anxiety subscale was an inferior method for screening, while the depression subscale and total HADS score were adequate screening tools for detecting any type of mental disorder, as well as depression, in cancer patients.

Preljevic et al. (2012) compared the performance of the Hospital Anxiety and Depression Scale, including total score (HADS-total), depression subscale (HADS-D) and anxiety subscale (HADS-A), the Beck Depression Inventory (BDI), and the Cognitive Depression Index (CDI) as measures that could be used to screen for anxiety and depression in dialysis patients. Participants in their study were 109 consecutively admitted patients from four dialysis centers in different hospitals in Norway. Inclusion criteria were dialysis received for more than 2 months, stable medical condition, and ability to communicate in the Norwegian language. In determining screening cut-points, the standard for sensitivity was greater than 0.80 and for specificity was greater than

0.60. Receiver Operating Curve (ROC) graphs were plotted to assign optimal cut-points. Kappa coefficients were used to determine accuracy of the screening measures, given previously established diagnoses using the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I).

Prelievic et al. (2012) found high internal consistency for the BDI, HADS-D, and HADS-total (Cronbach's α of 0.89, 0.80, and 0.90 respectively). They also noted strong correlations between the BDI and the HADS-D ($r=0.71$, $p<0.01$) and the HADS-total ($r=0.77$, $p<0.01$). A cutoff of ≥ 7 for the HADS-D yielded sensitivity of 0.86 and specificity of 0.84 for depression screening. For the HADS-total, a cutoff of ≥ 14 yielded the best sensitivity and specificity of 0.82 and 0.86 respectively. High internal consistency was found for the HADS-A as well (Cronbach's $\alpha=0.87$), and a strong correlation with the HADS-total score ($r=0.92$, $p<0.01$). The best sensitivity and specificity for detecting anxiety (0.67 and 0.84 respectively) for the HADS total score was achieved with a cutoff of ≥ 14 . The authors concluded that the HADS is a useful screening tool for detecting depression in dialysis patients and recommend a cut-off score of 7 or greater for the HADS-D, and 14 or greater for the HADS-total to provide an optimal balance between sensitivity and specificity. They also noted, "Our findings of optimal cutoffs for the HADS-total are lower than previously suggested and are more in line with observations of stroke patients" (p. 142).

Aben, Verhey, Lousberg, Lodder, and Honnig (2002) examined the validity of four depression screening scales for stroke patients in terms of sensitivity, specificity, and predictive values. The scales were the Beck Depression Inventory (BDI), SCL-90 and the

Hospital Anxiety and Depression Scale (HADS). Only findings for the HADS will be reported in this section. Participants were patients consecutively admitted to a university hospital in the Netherlands following first ischemic stroke. After excluding patients that could not complete the questionnaire because of severe comorbidities, communication difficulties such as aphasia, and cognitive impairments such as dementia, 202 participants were included in their study. The depression section of the Structured Clinical Interview for DSM-IV (SCID) and the Hamilton Depression Rating Scale interview were used as diagnostic gold standards.

The internal consistency of the HADS was found to be good with values of Cronbach's alpha of 0.85. The correlation between the depression and anxiety subscales was high ($r=0.67$, $p<0.001$). Receiver operating characteristic curves were used for analyzing the performance of the HADS-D and HADS-total as screening tools to identify major depression. The areas under the curve for the HADS-D and HADS-total were 0.78 and 0.83, respectively. A cutoff of 8 for the HADS-D, yielded the best sensitivity (73.1) and specificity (81.6). For the HADS-total, a cutoff of 11 yielded sensitivity greater than 91.7 and specificity 65.3. The authors' findings confirmed the value of the HADS as a screening tool for post-stroke depression. It is noteworthy to mention that the performance of women was worse than men in all scales that were studied, possibly because women tend to be less specific in their complaints of distress.

Ayis, Ayerbe, Ashworth, and Wolfe (2018) employed item response theory (IRT) methods to assess the HADS as a screening tool for identifying depression and anxiety in stroke patients. In a prospective population-based cohort study that was conducted in

London, 1443 stroke patients completed the HADS questionnaire between 1998 and 2013 when each was three months after stroke onset. A second questionnaire administration was conducted one-year post-stroke, followed by annual evaluations up to five years post onset.

Factor analysis procedures confirmed that the HADS-total was comprised of two factors and that each of the subscales was unidimensional and represented one factor. Correlations between items within each HADS subscale and the underlying factor it measures were reasonably similar as expected, except the item, “I feel as if I am slowed down” from HADS-D had a lower correlation. The authors analyzed individual items, which were ranked in terms of difficulty and ability to discriminate. The former indicates the likely patient response to the item based upon the level of his or her anxiety or depression; the latter indicates how well the item separates patients with differing degrees of anxiety or depression. Higher discrimination means greater efficiency for identifying the presence of anxiety or depression in an individual case. The authors found that these properties were consistent throughout the follow-up period.

The properties of some individual items stood out. For example, in the depression domain, “I can laugh and see the funny side of things” showed the highest discrimination, while, “I feel as if I am slowed down” (Q5), showed the lowest. For the anxiety domain, “I get sudden feelings of panic” demonstrated the highest discrimination and “I feel restless as if I have to be on the move” had the lowest discrimination. Difficulty levels corresponded with discrimination properties. The authors concluded that their study represents the first use of IRT methods in a large sample of stroke patients to identify

item properties in the HADS. Moreover, the information the authors gathered on the specific properties of items contributed to a more “precise approach for screening patients” (p. 33).

Goal Attainment Scaling (GAS)

Goal Attainment Scaling is a widely accepted approach to evaluating an individual’s goal achievement that has been in use since the 1960s. This method of quantifying goal attainment has no predetermined standardized content, but rather is based on patient-derived outcomes (Shankar, Marshall & Zumbo, 2019; Turner-Stokes, 2009). The GAS process involves collaboration between the patient and the assessor to set realistic goals, followed by a standardized approach to scoring of these goals that reflects level of performance compared to the expected treatment outcomes. When calculating GAS scores, each goal is rated on a 5-point scale where a score of 0 represents achievement of the expected outcome. Performance that is somewhat or much more than the expected outcome is rated +1 and +2 respectively, while performance that is somewhat less or much less than the expected outcome is rated -1 and -2 respectively. A T-score representing overall goal attainment can be calculated for measuring degree of change according to a given formula. The challenge inherent in this process is accurate scaling of goals without gaps or overlaps, which calls for sufficient practitioner familiarity with the patient and his or her diagnosis (Turner-Stokes, 2009).

Lannin (2003) studied the clinical utility of GAS in evaluating home-based occupational therapy rehabilitation program outcomes. In this pretest-posttest quasi-experimental study, program goals for 12 consecutive adult patients referred to an

outreach rehabilitation service in Australia were identified and scaled on initial evaluation based on the GAS protocol. Reasons for referral varied and included deficits in memory, problem-solving skills, mobility, and community living skills. After administration of the occupational therapy program, rating of performance across all goals for each patient was used to calculate a T-score on a scale with a mean of 50 and standard deviation of 10. Results showed that 53% of participants achieved the expected level of behavioral performance, 33% performed above the expected levels, and 14% performed below expected levels. Mean program outcome results were 52.5 (± 8.74), which represented realistic goal setting. The author concluded that GAS was clinically useful for evaluating home-based occupational therapy rehabilitation programs and advised involvement of an OT practitioner whose knowledge and experience will most ensure accuracy of goal scaling with this population.

Malec (1999), based on a review of the literature, discussed the value of GAS in rehabilitation with brain-injured patients. The advantages of using GAS that were highlighted included enabling the clinician to individualize a patient's goals and monitor their progression, facilitating communication between the practitioner, patient and family, and involving the patient and family in rehabilitation planning. The author noted that impaired self-awareness would present a challenge when GAS methodology is applied to brain injured patients. However, it might offer "a systematic and concrete process for encouraging more accurate self-awareness and for retraining the capacity for goal setting in people with impairments in...metacognitive abilities secondary to brain injury" (Malec, 1999, p. 255).

Experiences with using Goal Attainment Scaling at the Mayo clinic brain injury outpatient program in Rochester, Minnesota, were incorporated into the discussion. Patients typically lacked self-awareness of their impairments and capabilities, and needed 4-6 weeks in a rehabilitation program with daily treatment before it was possible to set realistic treatment goals. The cited researchers used the Independent Living Scale, the vocational outcome scale and the Mayo-Portland adaptability inventory. Although the preceding measures are ordinal scale, calculation parametric (Pearson) and non-parametric (spearman) coefficients show considerably the same similar results. The GAS was found to have the same correlation with other measures as the correlation that was found between them without the GAS.

Krasny-Pacini, Evans, Sohlberg and Chevignard (2016) expressed concern regarding the differing levels of rigor in rehabilitation outcome studies where researchers used goal attainment scaling as a form of measurement. “The major drawback of GAS methodology is that it is highly dependent on the ability of the GAS setting team/person to generate valid, reliable and meaningful scales” (p. 158). The authors conducted a literature review and inclusive critical appraisal of outcome studies where GAS was employed in order to 1) increase awareness of sources of bias, 2) propose appraisal criteria that would enable practitioners to judge the quality of GAS used in rehabilitation studies, and 3) suggest methods to increase GAS validity and reliability in outcome research. From the initial pool of 179 articles published between 1990-2014, after exclusion for missing data, language or studies that addressed only GAS feasibility or sensibility to a change, 37 studies were subjected to analysis. It is noteworthy that the

authors included research from fields of practice other than those related to physical medicine and rehabilitation. Appraisal criteria that were recognized by Krasny-Pacini and colleagues (2016) included:

- 1) collaborative goal setting with the therapist, client and family,
- 2) verification by an external judge to establish goal relevance, GAS scaling that represents clinically meaningful change, specificity to the functional aims of therapy, roughly equivalent distance between scale levels, and difficulty or attainability,
- 3) verification of pre-intervention performance,
- 4) establishment of inter-rater reliability,
- 5) clearly defined context of performance rating.

The authors concluded that, given sufficient rigor aimed at reducing sources of bias, GAS methodology in a rehabilitation outcome study can detect clinically meaningful change across diverse rehabilitation domains.

For the evaluation of acute and sub-acute stroke patients' therapeutic engagement, a goal attainment scaling model was compiled by the writer. It is comprised of therapeutic engagement constructs found in the literature; these were presented earlier. For each construct, an expected behavioral outcome was described, and in relation to each of these goal behaviors, a 5-point scale was developed based upon levels of goal attainment much less than expected, somewhat less than expected, somewhat more than expected, much more than expected.

Part 4. Other Theories and Constructs

Recovery and occupational adaptation following stroke. Brands, Wade, Stapert, and van Heugten (2012) describe a dual mechanism of adaptation following traumatic brain injury. Their model integrates two processes of adjustment, namely biomedical and psychosocial. In the biomedical process, the patient focuses on participating in treatment to regain function. On the other hand, psychosocial adjustment becomes imperative when the patient begins to realize that the premorbid level of functioning is not going to be completely regained despite hard work. The process of building an entirely new perspective on life, which includes adjusting expectations about the future to restore self-concept or self-image, emerges over time. Optimal adjustment is reached if the individual can adapt his or her long-term perspective by choosing a set of realistic goals that will create feelings of wellbeing and satisfaction with life when attained (Brands, Wade, Stapert, & van Heugten, 2012).

Within the occupational therapy literature, several models have been proposed to address the process of adaptation following a catastrophic injury or illness. Of particular importance to occupational therapy rehabilitation of stroke survivors is the occupational adaptation theoretical frame of reference. Schkade and McClung, (2001) describe how a person can acquire competence in occupational functioning through a process of adaptation that enables him or her to achieve successive degrees of mastery over challenges encountered during engagement in occupation. The authors state that “both occupation and adaptation have been accepted as critical constructs within occupational therapy. It is proposed that integrating them into an interactive construct maximizes their

power, both as theoretic perspectives and as an approach to intervention” (p. 186).

Several subprocesses were described to represent potential points of intervention for the therapist (Schkade & Schultz, 2003). As “occupational adaptation is a normative process that leads to competence in occupational functioning [and] illness or trauma may disrupt this internal process and result in dysadaptive responses to daily occupational challenges” (Schkade, & Schultz, 2003, p. 532), the therapist’s role is to guide the individual’s engagement in personally meaningful occupational activities that will facilitate an adaptive response. Occupational adaptation theory emphasizes the role of the individual’s self-assessment of his or her attributes that support mastery. These are: efficiency in use of time, energy, resources, effectiveness as the extent to which the desired goal was achieved, and satisfaction with self and society, meaning the extent to which the person feels personally satisfied and perceives the satisfaction of others regarding his or her progress.

Jackson and Schkade (2001) compared the effectiveness of the occupational adaptation model versus the biomechanical rehabilitation model when applied to the treatment of patients with hip fractures. In the authors’ quasi-experimental research, dependent variables were changes in patients’ levels of independence in ADL, as measured by the FIM, and patient satisfaction with the treatment effectiveness. One finding of note was that the mean FIM change per day was significantly higher in the occupational adaptation group and the length of stay was shortened by 3.45 days. Moreover, patients in the occupational adaptation group reported significantly higher satisfaction with their intervention. The authors acknowledged that these findings may

have “a substantial fiscal importance for the facility and a personal and financial impact for the patient and family” (p. 535).

Exploration of the process of adjustment to chronic disease, major illness or injury from an occupational adaptation and occupational identity perspective was carried out by Walder and Molineux (2017) using a grounded theory synthesis of 37 qualitative studies. Although each participant had experienced the adjustment process differently, common major themes emerged in the area of movement from disruption and occupational loss to regaining occupational wellbeing. Themes connected with occupational adaptation included:

- Developing a sense of competence connected with adaptation to occupational demands, mastery of new occupations, and acceptance of changed levels of performance.
- Learning to overcome barriers to occupational engagement by developing the ability to manage emotions, symptoms, medications and physical health, access financial supports, and accept assistance.
- Finding new motivators for engagement in occupation, recognizing options, regaining a sense of personal responsibility and control, and setting goals and striving to achieve them.

During adaptation to new occupational demands and creation of a new occupational identity, participants reported “absence or low levels of competence, motivation and confidence in the initial part of the process and described how improvements in these areas contributed to their occupational adaptation and

reconstruction of an occupational identity” (p. 230). One of the key components in this process was developing competence in the ability to overcome occupational demands, “It embraced having all the necessary internal and external resources to enable engagement in occupations. This included having skills, knowledge, emotional stability, acceptance, physical health, finances, assistance, and ability to overcome barriers” (p. 232). This study supports therapeutic intervention that addresses the development of competence, motivation and confidence and that supports the stroke survivor as he or she strives to adjust to change and loss, reconstruct occupational identity and regain occupational wellbeing.

Occupational justice. The concept of occupational justice (OJ) is based on the premise that the right of every individual to exercise his or her capabilities to engage in occupations and to access to opportunities for participation is a matter of justice. Moreover, all occupations have a positive or negative influence on various aspects of health and wellbeing (Durocher, 2017). Nilsson and Townsend (2010) note, “The central point is that occupational injustice is an outcome of social policies and other forms of governance that structure how power is exerted to restrict participation in the everyday occupations of populations and individuals” (p. 58).

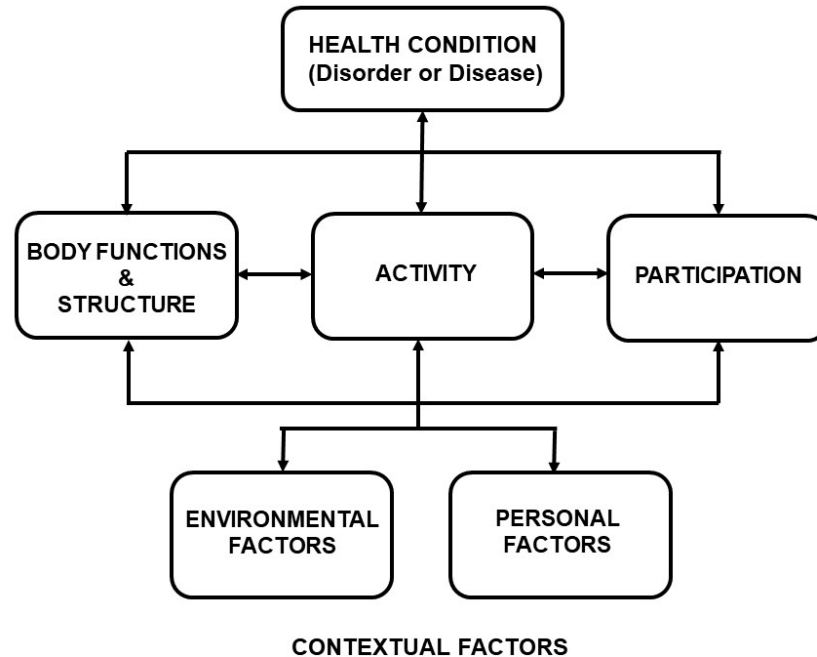
When individuals are unable to engage in occupations that are meaningful, necessary or expected by society, they experience a state of occupational deprivation (Whiteford, 2000). The same can be argued for patients in rehabilitation programs. A person who is recovering from stroke will find himself or herself restricted by internal factors such as sensorimotor, cognitive or emotional impairment, as well as by external

factors such as staff expectations or health care system regulations that favor improvement in what he or she considers to be non-meaningful occupations. The result can be deprivation of opportunities for engagement and participation in meaningful occupations, which amounts to denial of aspects of basic humanity (Gupta, 2016). Rehabilitation practice in developed countries such as the U.S that highlights medical contexts may not support the core values and beliefs of the occupational therapy profession (Gupta, 2016). Occupational therapy practitioners who work in settings emphasizing the biomedical model, where treatment is focused on improving bodily systems, can be conceptually removed from occupational justice, which demands supporting their patients' participation in everyday occupations and taking into account the social and cultural context in which these occupations occur.

International Classification of Functioning, Disability, and Health (ICF).

Another model that highlights the need for more holistic biopsychosocial approaches in rehabilitation is the International Classification of Functioning, Disability, and Health or ICF (World Health Organization, 2002). As depicted in Figure 2-1, the biopsychosocial ICF model supersedes the biomedical model by including consideration of contextual environmental and personal factors that moderate the influence of a health condition on body functions and structures, activity and participation. Disability, therefore, is determined by the interaction between factors both intrinsic and extrinsic to the person (Quintas et al., 2012). Use of the medical model alone would exclude contextual factors, and possibly the domains of activity and participation, from treatment planning and management.

Figure 2-1 A representation of the model of disability developed by the World Health Organization (which is the basis of the ICF)



The ICF, by offering a standard language and framework that can be used to describe health and health-related states, provides a basis for data collection. For example, Müller and colleagues (2011) examined the utility of comprehensive Core Sets that empirically described ICF domains in order to “define common standards for what should properly be measured and reported” (p. 93). The relevance and completeness of three comprehensive ICF Core Sets was tested in a multi-center study of 391 patients receiving post-acute rehabilitation at facilities in Austria, Germany and Switzerland. Data were obtained from medical records and interviews with patients and healthcare providers. Müller et al. (2011) explained the need for “an appropriate and early start to rehabilitation [as it] contributes importantly to the maintenance of functioning,

prevention of disability, and optimal recovery of patients in the acute situation” (p. 92).

The authors found that the Core Sets could be used to identify characteristics of participants with neurological, cardiopulmonary and musculoskeletal health conditions in terms of functioning and disability, activities and participation, and environmental factors. Body structures and body functions that were most impaired in patients with neurological disorders in their study, for example, were muscle power and endurance, control of voluntary movements, muscle tone, and structure of the brain and cardiovascular system. Limitations related to activity and participation were found to be caring for body parts, moving around using equipment, and hand and arm use. Environmental factors as facilitators or barriers for activity and participation in this same population were addressed by the authors. Facilitators included attitudes of health professionals, healthcare services, systems and policies, and immediate family, while frequently mentioned barriers were sound, social norms and practices, and assistive devices for personal use during daily living.

An ICF Brief Core Set for Stroke was developed and tested in Italy by Quintas and colleagues (2012). Using this instrument, profiles were developed for 111 patients with stroke based on empirically defined categories for body functions, body structures, activity and participation, and environmental factors. Participants completed questionnaires with a researcher. Categories comprising the Brief Core Set were as follows:

- Body functions and structures: consciousness, orientation, attention, memory, language, muscle power, brain structure, and upper limb structure.

- Activity and participation: communication and speech, ambulation, personal hygiene, toileting, dressing, and eating.
- Environmental factors: immediate family, health professionals, and healthcare services, systems and policies.

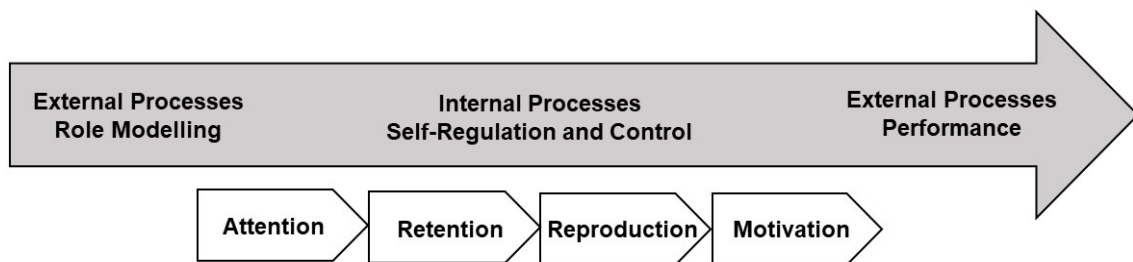
The authors reported the distribution of problems in each domain and concluded that their Brief Core Set provided a valuable representation of the needs of stroke patients beyond what could be inferred from diagnosis and made it possible to “plan intervention strategies that can increase the patient’s overall participation and improve his/her quality of life: (p. S21)

Social learning theory. The author’s method of teaching will incorporate principles of social learning theory. Braungart, Braungart, and Gramet (2019) define learning theory as a “coherent framework of integrated constructs and principles that describe, explain, or predict how people learn” (p. 70). *Social learning theory* is a theoretical approach to adult learning based on the work of Albert Bandura. “In health care, social learning theory has been applied to nursing education, to community mental health settings, to addressing psychosocial problems and to maximizing the use of support groups” (Braungart et al., 2019, p. 74). This framework is well-suited to education and staff development training in the social context of the healthcare environment and emphasizes two main principles, namely 1) the central role of social modeling and 2) the complexity of the adult’s internal dynamics and self-regulation in learning, in that individuals actively structure their experiences, perceptions, interpretations and reactions in a transactional relationship with the social environment

(Bandura, 1997; Bandura, 2001; Braungart et al., 2019).

Bahn (2001), as well as Braungart and colleagues (2019), describe a social learning model relevant for health professional education that includes occupational therapy practitioners. The basic elements are depicted in Figure 2-2. When applied in clinical practice, the teacher as facilitator has an active role in “include[ing] student participation in discussions, identifying innovative ways of implementing change and recognizing the need for careful analysis of the environment, considering realistic ways of using limited resources available, [plus exploring] effective measures to reduce resistance to change” (Bahn, 2001, p. 110)

Figure 2-2 A flow diagram of social learning theory processes.



The four internal processes of social learning theory, as described by Bahn (2001) and Braungart et al. (2019), function as a bridge between the external processes of role modeling by an instructor and subsequent performance. In the *attentional* processes, learners attend to the modeled behavior and absorb sensory information by means of observation and by engaging in self-directed exploration in which actions and procedures are analyzed. The instructor needs to be aware of how observational learning occurs. Although attention can be facilitated through verbal and non-verbal encouragement, the routines and demands of the rehabilitation setting may hamper attention, discourage

exploration, and interfere with application of learning to individual patients.

Observational learning is strengthened by *retention processes*, which can include use of imagery, adoption of verbal systems in the form of concise symbols or codes, rehearsal and repetition. In this phase, Bandura emphasizes the role of active learning versus passive observation, as well learner perceptions that the observed behavior is useful and has practical value. The *motor reproduction processes*, take place when the learner actively reproduces the modeled behavior and receives feedback on his or her performance, including where self-corrective adjustments are needed. If complex behaviors are to be mastered, support and guided practice are imperative, and aspects of the behavior can be hierarchically organized so that, as simpler components are mastered, more complex ones can be introduced. Video recordings can be used to highlight important aspects of the behavior.

The *motivational processes* are connected with external, vicarious and self-produced incentives to perform. These include rewards executed by an external source, observations or verbal sharing of the successes or failures of others as they perform the modeled behaviors, or self-attribution of achievement in light of personal standards. Currently, health care practitioners are often confronted with two different cultural environments, the educational classroom and the practice arena where they are called upon to apply learning. Bahn (2001) describes the shock that learners might experience in the transition to the social complexity of the practice setting, where interactions and initiation of new developments to intervention can be complicated. Negative attitudes and resistance to change can detract from the motivational climate. Therefore, Bahn (2001)

notes the importance of a collaborative approach to teaching and learning.

CHAPTER 3: DESCRIPTION OF THE PROPOSED PROGRAM

Basis of the Program

The author's proposed program is an educational webinar for occupational therapy practitioners working in post-acute stroke rehabilitation settings. A webinar is an interactive live-broadcasted lecture, seminar or workshop (McKinney, 2017). Since the 1990s, Internet-based instructional methods have proliferated in continuing medical education (Cook et al., 2008; Cook et al., 2010; Wong, Greenhalgh, & Pawson, 2010; McKinney, 2017), undergraduate learning (Al-Shorbaji et al., 2015), and inservice training of health care professionals (Wong & Greenhalgh, n.d.). The design of the author's webinar incorporates guidelines for optimal Internet-based learning from the literature.

Cook et al. (2008) conducted a meta-analysis in which they used effect size calculations to explore the *efficacy* of Internet-based instruction as a viable option for learners in the health professions when compared with no educational intervention and with non-Internet instructional modalities. Internet-based instruction was defined as "instruction in which computers play a central role as the means of information delivery and direct interaction with the learner... This include[s] Web-based tutorials, virtual patients, discussion boards, e-mail, and Internet-mediated videoconferencing" (p. 1183). First, the authors found a large pooled effect size favoring Internet-based instruction over no educational intervention. Next, small pooled effect sizes favored Internet-based learning compared to non-Internet formats in satisfaction with outcome, knowledge and skills. Finally, the authors noted statistically significant subgroup interactions favoring

short courses, greater interactivity, practice exercises, and peer discussion.

Inconsistencies across studies, plus heterogeneity of learners, instructional methods, outcome measures used, and educational context, were limitations in this study.

Nevertheless, the potential value of Internet-based education for health professionals was demonstrated, and subgroup analyses pointed to the need for further exploration of the learning setting and instructional design. In a subsequent systematic review and meta-analysis, Cook and colleagues (2010) continued this exploration and confirmed the key roles of interactivity, practice exercises, repetition and feedback in successful learning.

Wong, Greenhalgh, and Pawson (2010) addressed the real-world *effectiveness* of Internet-based medical education in light of the complexity of different human resources that "interact in a non-linear fashion to produce outcomes which are highly context dependent" (p. 2) by conducting a "realistic review." They used a qualitative systematic review method to find what aspects of Internet-based education actually work for medical professionals, for whom specifically, and in what circumstances. Another goal was to develop pragmatic guidelines for developers of Internet education programs.

Wong and colleagues found that participants' willingness to engage was influenced by their perceptions of the relative advantage of the technology medium over other formats. Relative advantage can be defined as the usefulness of the course content to the learners' everyday lives and is comprised of access to learning, access to consistent content, links with assessment, convenience, cost saving, interactivity and time saving. Based on the authors' findings, five questions were suggested that developers could use to assess their Internet-based courses. These questions referred to the usefulness of the

Internet technology and Interactivity.

Wong and Greenhalgh in a report for the WHO addressing e-learning, have also suggested a set of questions for course developers to ask and address when considering and designing an Internet-based learning course. In their review they have found that pedagogic principles (the educational theory), usefulness and interactivity (i.e. feedback for performance, discussions, questions and answers format) were factors that caused participants to commence and to complete an internet-based educational program. Thus, the questions referred to needs assessment, rational for use of internet-based learning, course design and content, and technical support. They state that as the evidence for Internet-based learning is cumulating, the greater challenge becomes " knowing when to use it, for whom and for which types of learning goals – in preference to traditional forms of education. In other words, the knowledge gaps in Internet-based learning are in implementation and no longer in proving efficacy" (Wong & Greenhalgh, n.d.). In compiling the webinar educational program for occupational therapists working in post-acute stroke rehabilitation the author will follow their recommendation and refer to these questions.

Following Wong and Greenhalgh's recommendations, a needs assessment was conducted by the author during the 12 months prior to compiling the webinar (the questionnaire is described in Appendix B). The assessment was comprised from 3 consecutives presentation to health-care providers, occupational therapy practitioners, nurses, and physicians addressing psychosocial readiness, therapeutic engagement, stroke rehabilitation, and the healthcare system. After each presentation feedback was gathered

by questionnaires or group interview. Two of the presentations were 'face to face' traditional educational setting. The latter was conducted as a webinar, using the Zoom application. From the questionnaire's feedback it is eminent that the information presented was relevant in some extent to participant's current or past patients and working environment. However, there were mixed answers regarding whether the model presented added to participants knowledge and its applicability. The occupational therapists that were participating in the presentation stated that the greater challenge is with communicating with other health-care professions beside the physical therapists. In open-ended questions participants noted that the information was simple and applicable on the one hand, on the other hand it was noted that there was too much theoretical background and less application. Although the information that was presented is relevant to occupational therapy practitioners and other health care providers role in stroke rehabilitation, participants questioned its applicability in the health care system as it is constructed currently. Finally, participants advice for more time to present the model and for adding case studies.

To match the above recommendation and participants feedback, an educational webinar program will be created. The program will be comprised from 4 webinar sessions. The Webinar will use synchronous and asynchronous communication. Synchronous communication is held in real time when the educator and the learners interact through video/audio platform and live chat (Zoumenou et al., 2015). In the authors' webinar the four sessions will be held through synchronous communication. Asynchronous communication, where communication is held in delayed time through

written materials, recorded video/audio and archives (Zoumenou et al., 2015) will be incorporated between sessions and with participants assignments and discussions. Other features of the webinar will be interactivity and applicability. Interactivity will be demonstrated through 3 ways feedback, educator-learner, learner-educator, and learner-learner during presentations, live group activities and assignments. Applicability will be demonstrated through case studies and assignments where the learners will need to upload videos of themselves applying the learning materials. This structure will take advantage of using a webinar for its affordability, availability and also the enablement of time management (Zoumenou et al., 2015). Finally, a survey before-after the educational program will be conducted. The survey questionnaire will be sent to participants before commencing the program and after the last session. Group oral feedback through group interview will be administered also in the last session.

Table 3-1 A case scenario that illustrates incorporation of a more holistic, psychosocial approach

Orly, a 62 years old female, married with 4 children was admitted to post-acute rehabilitation setting after having a right Hemispheric stroke. Before her stroke she was a housewife and was living independently in the community with her husband. She was responsible for the household activities and helped her daughter with her grandchildren. Orly was also a social person, that had many friends and was used to participate in social activities. When I first met her, she presented hemiplegia in her left side, with no active movement at the upper or lower extremity, she also demonstrated a sensory loss, lt. hemineglect and differentiation, talking to her hand in third person. When asked to move her left side of the body no effort was seen to produce movement. As I was trying to facilitate her attention to the left and to initiate

movement, I saw that her nail polish was rag. When I asked her about her fingernails' polish, she suddenly sat up tall, watches her hand and said, "I used to take care for my fingernails very carefully". Although treatment goals that include improving Orly's ability to take care of her fingernails polish seems to be far from the costumery biomedical and functional goals in post-acute rehabilitation. The following objectives will be addressed:

- Orly will increase her therapeutic engagement in the following sessions.
- supporting the three psychologic basic needs through self-care skills that will help Orly meeting her role as a social person. *Autonomy* will be supported when Orly choose this meaningful activity as the current objective of treatment, *competence* will be supported when Orly will increase her self-efficacy in taking care of her fingernails, and *relatedness* will be supported when her environment will reinforce her success in taking care to her fingernails polish.
- Orly will increase her awareness to her left side of the body.

In his proposed program, the author intends to address the above scenario by providing education and training to OT practitioners that will build upon their existing knowledge of stroke rehabilitation. The educational program will aim to increase their knowledge and skill in addressing stroke patients' psychosocial and basic needs to increase therapeutic engagement, compliance and the rehabilitation outcomes. For example, program participants will learn how to:

- Screen for patients who are at risk for low compliance and low therapeutic engagement using specific measures designed for this population (i.e. goal attainment scale for patient's therapeutic engagement).

- Identify psychosocial and psychological basic needs of patients in post-cute rehabilitation using questionnaires from the SDT that will be validated to this population and other well-known measures that can be used.
- Apply the 5A's model for behavior change counseling to facilitate autonomous motivation and perceived competence for health behavior change (Whitlock, Orleans, Pender, & Allan, 2002) and the MUST model for patient-practitioner communication that was developed by the author according to SDT principles (Ryan & Deci, 2017).
- Incorporate concepts from the SDT in occupational therapy treatment goals and for the creation of need supporting environment.
- Educate other health care providers and caregivers for needs-supporting environment in stroke rehabilitation.

Logic Model

The logic model depicted in Figure 3-1 is a visual representation that illustrates how the author's proposed program will work. It communicates the author's anticipated program resources, activities and outcomes and is intended to play an important role in clarifying and documenting the underlying theory and logic of the program's functioning. Moreover, the logic model will serve as a dynamic guidance document to support sound program implementation, evaluation efforts and ongoing critical reflection on performance.

Program Clients and Resources.

The primary clients for the program will be occupational therapy practitioners in Israel working in post-stroke rehabilitation settings. On the one hand, these stakeholders promote the concepts of occupational justice and occupational rights that defined as the rights of people to engage in meaningful occupations that have positive effect on their well-being (Whalley Hammel & Iwama, 2012). On the other hand, occupational therapy practitioners may be at risk of experiencing occupational alienation when they are not able to practice in a manner that alien with their personal and professional values, goals and identities (Durocher, 2017).

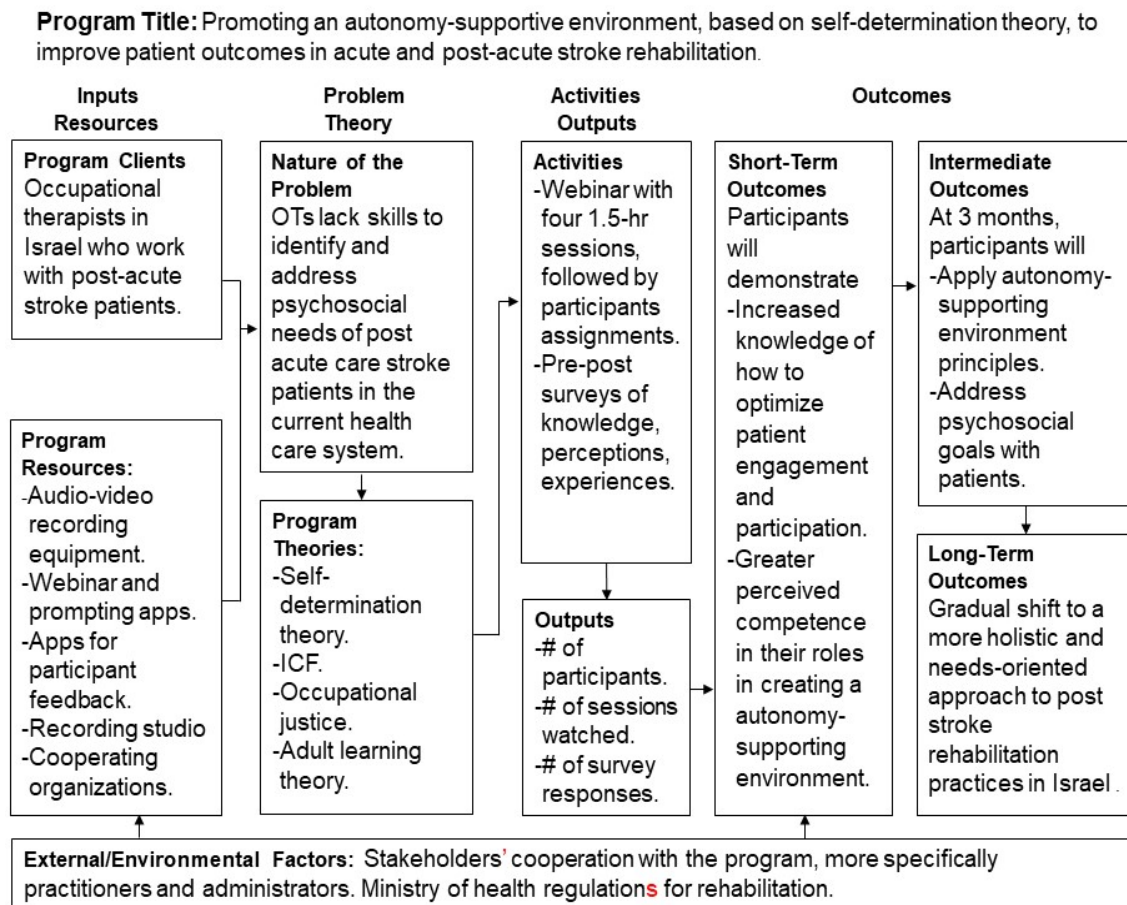
Practical resources essential for carrying out the proposed program will include webinar platform and application. The World Health Organization has provided an ehealth toolbox that list several recommended applications for developing an online learning sites (retrieved from: <https://www.swisstph.ch/en/about/scih/health-technology-and-telemedicine/ehealth-toolbox/>).

From this resource list the author uses the *Moodle* platform that is an open Learning platform for creating online dynamic web sites (retrieved from: https://www.swisstph.ch/fileadmin/user_upload/SwissTPH/Documents/Institute/eHealth_Toolbox/Moodle_factsheet.pdf). The Moodle enables synchronous and asynchronous learning for educator-participants interaction and chats and blogs to facilitate participants interaction and feedback. Face-to-face presentation will be recorded and will be enabled for offline use. Clinical scenarios demonstrating the utilization of the learning material in the clinical setting will be recorded using recording application for mobile phones and

will be uploaded in the Moodle.

For applying the educational program, the author will need the cooperation of several organizations including hospitals, 'Kupot holim', private rehabilitation settings and Occupational therapy faculties.

Figure 3-1 Logic model



Program Initiation

The author's aim will be to create a prototype program that can be carried out through an e-learning environment in four consequent learning sessions. The program is

interactive, mixed synchronous and asynchronous learning that enable the learners to incorporate the learning materials through the learning process on the one hand and is affordable and not time consuming on the other hand.

Resources and activities that will be employed include active participation in four synchronous webinars, reading the learning materials and watching the attached videos, completing 4 assignments addressing the lesson objectives, responding to other participants and completing pre-post surveys about the knowledge acquired, participant's perception about the objectives learned and their own experience applying this knowledge.

Program implementation will begin with participants recruitment that will be distributed on two paths. The first will be applied specifically to administrators of occupational therapy services in post-acute settings. The author will create an electronic information brochure that will be send through email to these administrators offering the educational program to all of the occupational therapy practitioners working in the specific setting as a group. The second, will be promoting the educational program through social media addressing occupational therapy practitioners as Facebook groups, what's up and the Israeli Society of Occupational Therapy web site. When interest is expressed by 10 to 16 participants the first educational session will be commenced.

Overview of Instruction and Setting

The author's proposed program would be open to occupational therapy practitioners that are currently working or have past experience with stroke patients in the post-acute phase of their rehabilitation. Attending the program and completing its

assignments require that participants can apply the learning material with stroke patients.

Thus, participants need to engage stroke patients during the educational program.

Program Content

The content of the educational program will follow the theoretical background that was given in chapter 2.

Screening tools. A full description of the recommended screening tools that will be part of the proposed program is depicted in chapter 2. The author will recommend number of screening tools that will help occupational therapy practitioners to identify patients that are at risk to poor therapeutic engagement, intervene to support patients' psychosocial needs and enhance the rehabilitation outcomes. The measures are the *Health Care Climate Questionnaire (HCCQ)* and the *Basic Psychological Needs Satisfaction and Frustration Scale – Daily Version* which are measures that were developed from the self-determination theory. These measures are aimed to identify the person's satisfaction in fulfillment of the three basic needs for autonomy, competence, and relatedness. Other measures that will be used are *the Short Form 36 (SF-36)* for Physical and mental health dimensions, feelings and emotions., *the World Health Organization Quality of Life Scale (WHOQOL)* for Psychological health, physical health, social relationships and environment and general quality of life, *the Pulse Profile* for Physical condition, upper and lower limb functions, sensory components, excretory functions and mental and emotional status and *the Hospital Anxiety and Depression Scale* which assesses anxiety and depression. table 2-1 summarize the psychometric properties and application for each measure that will be used. The author will use also *the goal attainment scale* for

therapeutic engagement. Participants will learn the psychometric properties of the measures and their application. For future research and clinical use, the Health Care Climate Questionnaire (HCCQ) and the Basic Psychological Needs Satisfaction and Frustration Scale – Daily Version will be translated to Hebrew and the psychometric properties of the translation will be established. The author has received the questionnaire's author consent for translating them into Hebrew.


Downloadable resource(s). For each webinar session participants will be able to download:

The presentation handouts (power point file converted to pdf's). figure 3-2 demonstrate one page from the first session handout.

A recording of the live session.

A reference list addressing each session. Individual reference will be sent through email prior to the relevant subject.

Figure 3-2 Example of a downloadable handout page that will be given for each session

<p>Learning objectives:</p> <p>By completion of the first module participants will:</p> <ol style="list-style-type: none"> 1. Recognize two main approaches in rehabilitation namely the Biomedical approach and the Psychosocial approach. 2. Identify at least four constraints for patients after a stroke to their recovery. 3. Be familiar with the concept of therapeutic engagement and how it applies to their clinical practice. 4. Describe the three basic psychological needs according to the SDT, namely the need for autonomy, competence and relatedness. 	<p>The Self Determination Theory (Ryan & Deci, 2016)</p> <ul style="list-style-type: none"> • The SDT is a model of human behavior which views human beings as having three fundamental needs: Autonomy, Competence, and Relatedness. • Social and environmental support of these three needs will facilitate autonomous motivation and will lead to psychological growth and well-being. • Personal and meaningful goal setting will increase intrinsic motivation, which is internal to the person, and the feelings of competency and self-determination.
<p>Barriers to a successful rehabilitation process</p> <ul style="list-style-type: none"> • The time patients spend in rehabilitation, and the services provided, may be limited in order to manage costs. • The patient must demonstrate motivation and active engagement while he or she is adapting to adverse life changes. • Treatment goals may emphasize the biomedical model and underrepresent psychosocial factors and the basic needs of the patient • Unmet basic psychological needs may lead to a lack of autonomous motivation, therapeutic disengagement and eventually rehabilitation failure. 	

Live webinar sessions. Four live webinar sessions will be planned. The instructional approach will be matched to participants' current knowledge and understanding. The author's approach will make use of the principles of the social learning theory and will be gradually developed according to its process. At each session, participants will be actively exploring and engaging the learning content and the educator will play a facilitator role and as a role model will demonstrate the expected behaviors. After each session participants will need to demonstrate their understanding and skill through completing assignments (some of them written assignment and the others requires video/audio assignments).

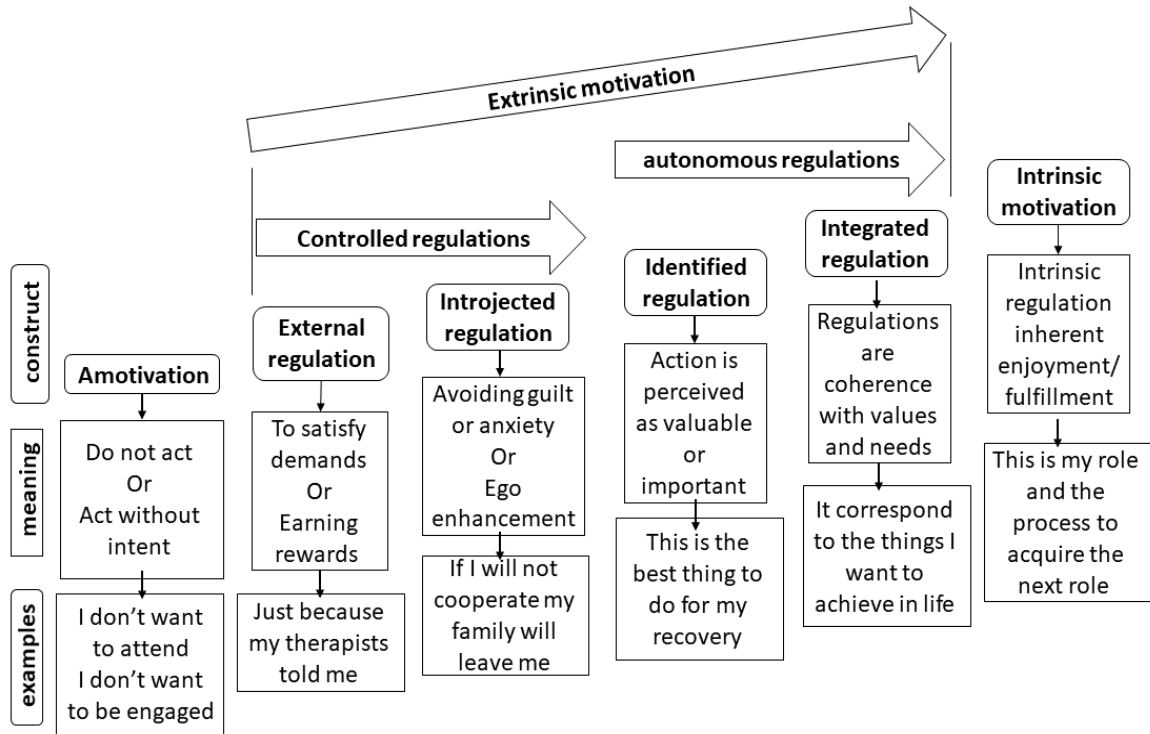
The webinars sessions will include the following components (a full description of the program content is described in Appendix A):

- **First webinar session.** *Discussion:* participants own knowledge and experience of supporting patients' needs in their current environment. *Lecture:* Introduction to stroke patients psychosocial and basic psychological needs and the gap of supporting these needs in the current health care system and environment. *Demonstration:* the continuum of motivation according to the self-determination theory demonstrated by patient's responses at each construct. Figure 3-3 illustrates this continuum as will present to participants. *Activity:* participants will be asked to list measures, tools and therapeutic activities that they currently use and address the psychosocial needs of their patients. *Assignment:* participants will be asked to: • list treatment goals for 3 stroke patients, • state to which of the ICF components these goals address, • state how achievable these goals in their clinical realm and • what will they change accordingly.
- **Second webinar session.** *Discussion:* what is missing that we need to know based on our assignment. *Lecture:* measures to assess psychosocial needs and therapeutic engagement *Demonstration:* how to choose the right measure. *Video presentation:* presenting engagement with patient that demonstrate poor therapeutic engagement. Participants will be asked to fill the Goal Attainment Scale addressing therapeutic engagement for this patient. *Assignment:* participants will be asked to choose one patient and to use the learned measures with his assessment.
- **Third webinar session.** *Lecture:* the use of the 5A's model, the SHOW, and the MUST to facilitate autonomous motivation and perceived competence for health

behavior change. *Demonstration:* practicing clinical scenario's using these models. *Activity:* for each A' write an example of phrase to use with patients and state to which of the SDT basic needs it is applying. *Video presentation:* presenting clinical scenario using the 5A's model. After viewing this video participants will write a SMART goal using the information that was given. *Assignment:* choose one patient and apply one of the models. Write or recorded feedback for using the model.

- ***Fourth webinar session.*** *Discussion:* how to change the human and non-human environment to meet practitioner-therapist and therapist-practitioner expectations. *Lecture:* creating a need supporting environment in post stroke rehabilitation. *Activity:* list the characteristics of the role of being a patient and how OT's can facilitate this role. *Assignment:* create a treatment plan for one of your patients considering his or her: • psychosocial needs • experience of the three psychological basic needs • the role of a patient • goals that are relevant to this phase of the rehabilitation.

Figure 3-3 An illustration of the continuum of motivation according to the SDT (with an example of a patient's response at each construct)



Key concepts that will be taught. In the learning process as was created in the above program, one of the authors' aims is to emphasis models of implementation as the MUST and the 5A's.

The 5A's are: Ask, Assess, Advise, Agree, and Assist. As a psychosocial and environmental determinant, they intend to produce a change in person's behavior through a change in his or her knowledge, attitudes, motivations, self-confidence, skills and social support that is needed for the behavioral change or maintenance (Whitlock et al., 2002).

Fortier, Sweet, O'Sullivan, and Williams (2007) used a 7A's model into primary care intervention that examined self-determination theory and changing individual's physical activity adoption. Their study was conducted in Canada and was a part of an

RCT, community-based trial, the physical activity counseling trial (PAC). they report on the exploration whether adding as intensive autonomy support counseling will yield greater perceived basic needs of support and competence and increase physical activity habits endorsement in comparison to a brief counseling. Included in their study adults aged between 18 to 69, that had less than 150 minutes of weekly physical activity and without any unstable medical condition.

In their study, Fortier, Sweet, O'Sullivan, and Williams (2007) randomly allocate the participants to two groups. The first, received brief intervention that included *Asking* about participants current levels of physical activity, *Advising* to increase physical activity levels in relation to the participants current health condition, and collaborating to *Agree* on achieving realistic goal. Participants in this group received written recommendation for physical activity to be meet at 4 weeks period. The second group received in addition to the former another six intervention in the following three months. The health-care provider added another 3A's to the intervention, namely, *assess* participants physical activity habits; *assist* in adjustments of goals, changing behaviors and problem solving; *arrange* for future counseling and feedback.

The authors found that adding the intensive intervention increases significantly patients' autonomy support. These participants had also a significantly greater time spend on physical activity when evaluated at 13 weeks with a large effect size. Though autonomous motivation at 6 weeks from trial commencement tends to be higher in the more intensive intervention group, this result was not significant and with a small effect size. It is interestingly to note that in a series of three regressions the authors have found

that both autonomous motivation and perceived competence at 6 weeks are significantly associated with physical activity as evaluated in 13 weeks in the intensive intervention group but not in the brief intervention group.

Using the SDT and the 5A's was also studied with other healthcare providers. Lonsdale et al. (2012) proposed a single-blinded randomized control trial that will examine the effect of physical therapists' communication skills training on their needs supporting behavior with patients with chronic low back pain. The therapists will be trained according to the self-determination theory and use of four A's from the 5A's model (Ask, Advise, Agree, and Assist). To help with the standardization of the intervention, the physical therapists from the intervention arm will participate in 2 additional training sessions of 4 hours each. In this training, they will learn about the SDT, the 5A's and specific strategies of implementation. For example, for Advise, the SDT construct that was related to is the basic need for autonomy. participants were trained to " Explain to the patient the rationale behind your advice" [as example] "As we discussed earlier, your back needs support from the muscles around. So, if you can do these exercises you can really provide your back with extra support. or research shows that physical activity such as walking is a great way to " (p. 812).

Murray et al. (2015) have initiated the above planned study in a multi-center randomized controlled trial. 24 physiotherapists participated in their study. These physiotherapists participated in two instructional sessions of 4 hours each about SDT and its implementation strategies. Another series of training was conducted using discussions and video demonstrating controlling versus supporting behavior. Participants in the

intervention arm were also followed at 4 and 10 weeks from the second training for program attainment and implementation. Their study results demonstrate that patients perceived the physiotherapists in the intervention arm significantly more needs supporting than the control arm.

Another model that was designed to increase health care providers- patients communication is the MUST model. The MUST model was developed by the author to guide clinicians how to deliver the information needed to patient in clinical scenario based on the SDT (Ryan & Deci, 2017). The aim of this model is to use the most effective and efficient content of information that will bring to patient understanding, awareness and motivation to complete a given activity. The MUST guidelines were chosen by the author to meet the following challenges encountered when treating stroke patients:

M – provide the minimal information that is needed to complete the activity. on the one hand, stroke patients need to receive, process, adjust and adapt to great amount of information in their rehabilitation process. On the other hand, their resources are limited because their sensorimotor, cognitive, or emotional impairments. Thus, therapists can control and grade the amount of information and enable their patients to use this information effectively.

U – use an understandable wording, do not use medical concepts or jargon. Patients are not educated to understand medical jargon and instead of medical concepts they need information that can be useful for them. For example, instead of "you have neglect " tell the patients " you are not aware of your left side" or "you are missing details

from your left side".

S – information needs to be given in a supportive communication. Thus, the therapist needs to demonstrate in his behavior that he believes that the patient will succeed in a specific activity and in the rehabilitation process. Currently, because there is uncertainty regarding the stroke rehabilitation outcomes, therapists are not expressing any commitment to their results and patients may perceive their rehabilitation as a trial and error.

T – patients' needs to know that their therapists have a plan. This intend to increase patients' motivation when the treatment or activity results are not seen here and now. Thus, patients need the approval that if they are not experiencing any change currently, it is a process and their therapist has a treatment plan for their rehabilitation process.

Table 3-2 shows the program timetable as it will be introduced and implemented to occupational therapy practitioners. The author anticipate that the program will be completed during 4 consequences intensive training weeks.

Table 3-2 Webinar schedule

Promoting a needs-supportive environment in acute and post-acute rehabilitation, webinars schedule:
First Live Session: <i>introduction</i> . Dilemmas in stroke rehabilitation provision in Israel. Assignment submission at the third day of week 1. Discussion: day six of week 1.
Second Live Session: psychosocial needs and therapeutic engagement, concepts and their measures. Assignment submission at the sixth day of week 2. Discussion: second day of week 2

<p>Third Live Session: from theory to application. The 5A's model and the MUST model for health behavioral change.</p>

<p>Assignment submission at the sixth day of week 3.</p>
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<p>Fourth live session: creating a need supporting environment for post-acute stroke patients.</p>

<p>Discussion: second day of week 4.</p>
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<p>Assignment submission at the sixth day of week 4.</p>
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Costs of Implementing the Proposed Program

To implement the proposed program the anticipated costs will be:

The costs for using the Moodle and its resources.

Costs for any copyrights for given sources

Costs of external resources for recording the clinical scenarios

Anticipated Program Outputs

Countable aspects of program delivery will include the four webinar sessions, each seminar anticipated participants will be a minimum of 10 and maximum of 16 occupational therapy practitioners. Each participant will fill two assessment pre and post the educational program. To accomplish successfully the program participants will need to participate in the four webinar sessions and complete the four assignment that will be given.

Desired Outcomes

The program outcomes are the occupational therapy practitioners' knowledge and skill foundation in addressing their patients basic and psychosocial needs. Outcomes will be evaluated gradually from knowledge acquiring to its application. Nevertheless, the program is not intended to measure improvement in patient's therapeutic engagement nor the rehabilitation outcomes. These measures will be applied in future studies.

After completion of participation in the webinar, the author would like to determine the degree to which participants have acquired knowledge about the following concepts and their measures: therapeutic engagement, psychosocial needs and needs supporting environment according to the self-determination theory. The author also anticipates growth in awareness of intervention models addressing these subjects.

Three months after completion the program, the desired outcomes are positive changes in practitioners' skills applying need supporting environment principles and using the learnt models effectively and efficiently with their patients. participants are expected to incorporate patients' psychosocial needs in their assessment, intervention and treatment management. Participants will be able to identify and to problem solve cases of therapeutic disengagement.

Six months to a year, the author would like to see his educational program incorporated in the clinical training of occupational therapy practitioners from the academia to the clinical fields. The author expects to develop his introductory educational program and expand it to post professional training that will encompass more sessions and more practice and will be recognized by occupational therapy organizations (Israel society of occupational therapy, academia and ministry of health). OT's will develop their skill to a more holistic approach that eventually will promote stroke rehabilitation and other health care providers practice.

Potential Barriers and Challenges

The author anticipates a number of barriers and challenges that should be addressed as part of the process of setting up the webinar. These barriers and challenges

will be divided to barriers that relate to the educational program and barriers that relate to the program content.

Barriers that relate to the educational program will be: first, the author will need the cooperation of administrators and occupational therapy services managers in order to gain access to their human resources and apply the educational program. Administrators and managers may be suspicious and not to collaborate with a new educational program that might present their current treatment less positively. Second, the timeframe for the program is very short, nevertheless the expectations from the learners are to complete all the courses assignments in this period of time. Third, participants are requested to try and implement the program content while learning the program. Thus, participants need to have the access to post-acute stroke patients. fourth, successful implementation of the intervention models is not time consuming and implementing the models' assessments and intervention may exceed or interrupt the rehabilitation period that patients are entitled to.

The barriers that relate to the program content are: first, the above program can be considered as an introductory course as the content that is developing is wider. Thus, participants at the end of these four weeks of training will have only part from the all knowledge available. This needs to be taking into consideration when applying new information, second, in acquiring and implementing new knowledge, it will be advisable to first apply this knowledge on patients with more intact cognitive and communicational abilities. the author would mitigate these potential barriers by compiling an explanation brochure and electronic information page that will be send to administrators and

managers, explaining about the program, its objectives and modules. For participants, prior to commencing the program the author will administer a coordinating expectation meeting. In this meeting, participants will be given an overview about the program and how they are expected to implement it. They will sign an agreement to participate and not to disclose anything from it.

Summary and Conclusions

Stroke rehabilitation is a process that involves an active engagement of the patient and the therapists that act together and collaborate to achieve its goals. Of major importance is therapeutic engagement that is the precursor for establishing the occupational engagement (Kennedy & Davis, 2017). Patients' motivation was found as one of the main factors that affects therapeutic engagement (Tetley, Jinks, Huband, & Howells, 2011). The author conducted a series of presentations for occupational therapy practitioners, nurses and physicians working with stroke patients to study the program relevance and his model applicability. After having their feedback, and with accordance to the literature a program was developed. The program uses concepts from the self-determination theory that provides an explanation for how social-contextual factors affect satisfaction of basic psychological needs and motivation and the use of other theories to construct an effective assessment tools for identifying patients at risk for therapeutic disengagement and their psychosocial needs. Another aim is to present an applicable model for intervention to increase patients' engagement, for creating a need supportive environment and enhance the rehabilitation process alliance and outcome. The

educational program will be presented through elearning with a webinar session. A four sessions program was compiled and will delivered to the practitioners. To enhance learning and according to published recommendations and adults learning theory the program is interactive, synchronous and asynchronous and each of its sessions is comprised from a lecture, discussion, activity and assignment. Program construct and program content will be evaluated through qualitative and quantitative measure. The program will be adapted according the evaluation for future research and application.

CHAPTER 4: PROGRAM EVALUATION PLAN

Program Scenario and Stakeholders

The author's project is an educational program designed for occupational therapy practitioners that are working in acute and post-acute stroke rehabilitation in Israel. This e-learning based introductory course will guide practitioners in the use of tools for identifying patients' psychosocial needs, creating a needs supportive environment, and resolving cases of therapeutic disengagement. The course will be delivered by the author through a series of 4 webinar sessions. The information will be presented in a live classroom using an online conferencing application followed by asynchronous discussions and assignments. The program is intended to be interactive, where feedback will be given from instructor to participant, participant to instructor and participant to other participants.

Program participants will be recruited from occupational therapy departments in rehabilitation and organizational settings, including hospitals, sick funds, and private health care providers. There will be two recruitment routes. In the first, an overview of the aims of the program, as well as planned educational content and method of delivery, will be sent to occupational therapy department managers. The program will be delivered to all the OT's in a setting after administrative approval. In the second, program specifics will be published through social media. The program will be commenced after recruitment of 16 participants.

Currently, practitioners are impacted by health care system regulations regarding duration of rehabilitation and payment, plus there is an emphasis on addressing treatment

goals that are based on the biomedical model with focus on functional improvement.

Table 4-1 describes a common clinical scenario that therapists may encounter and illustrates how issues can be resolved using the program model taught in the author's course. Practitioner education can promote early identification of patients at risk for therapeutic disengagement, prevent unnecessary early discharge from rehabilitation, and improve patient outcomes.

Table 4-1 A case scenario demonstrating the justification for the proposed program

Mr. B, a 65-year-old male, was admitted to the post-acute rehabilitation ward of an Israeli hospital 4 days after having sustained a stroke with non-dominant hemiparesis. He is currently independent in toileting, hygiene, and self-feeding, uses a wheelchair for mobility, is able to transfer, and requires moderate assistance for dressing and bathing. Mr. B has attended his first week of rehabilitation therapies and other activities on the ward; however, the therapists report that he demonstrates lack of motivation, low compliance, and poor initiation for exercising and following instructions. Ward staff also report signs of depression. As the patient's Functional Independence Measure (FIM) score has plateaued, discharge planning for the patient is being initiated early because of the conclusion that he has no further inpatient rehabilitation potential.

This outcome for Mr. B could be different, given education of therapists on an alternative program model. Another possible scenario is described below.

The occupational therapy manager recognizes that Mr. B's behaviors signal therapeutic disengagement and conducts a staff meeting in which the following questions are asked:

- Is there a mismatch between therapist expectations and Mr. B's goals?
- What psychosocial needs of this patient are not being addressed?
- Is there a way to better match Mr. B's goals and meet his psychosocial needs?
- How can we, as his therapists, improve this patient's therapeutic engagement, motivation and rehabilitation outcome?

Armed with knowledge of Self Determination Theory (SDT), the therapists discuss Mr. B's basic needs for autonomy, competence, and relatedness, which guides creation of an individualized autonomy supportive environment for the patient. Implementation of this modified environment leads to better communication with the patient and enhances his self-regulation and autonomous motivation. Therapeutic engagement is enhanced, leading to continuation of inpatient rehabilitation. The result is an opportunity for Mr. B to increase occupational engagement and participation according to his specific needs for meaningful occupation.

Primary stakeholders that will be interested in the data gathered by the author in his program evaluation research will be occupational therapy department managers that wish to promote their approach to provision of rehabilitation. Other stakeholders will be members of faculty in occupational therapy college and university programs. As the author believes his proposed program to be innovative in its content and its planned method of delivery, depending on the results of program evaluation research, it could be offered to occupational therapy practitioners in a post professional continuing education curriculum.

Finally, healthcare administrators in the field of rehabilitation and the Ministry of Health would also be stakeholders in the author's program evaluation research. The author anticipates that, assuming the outcomes of the proposed educational program provide support for its effectiveness, policymakers will recognize the implications for future stroke rehabilitation service provision. If a decision is made to adopt the author's proposed program model at the policy level, this may entail adding more hospitalization days as needed for each patient. However, patients who demonstrate greater motivation and increased engagement in meaningful occupations at the completion of inpatient rehabilitation may show improved psychological and occupational well-being after discharge, which over time is likely to counterbalance the investment in early rehabilitation.

Vision

The author's long-range vision is to provide ongoing program evaluation research that will contribute to the body of evidence and serve as a basis for fundamental changes

in the inpatient stroke rehabilitation process that are consistent with currently verified holistic models of care. In the clinical realm in Israel, occupational therapists are often part of a multidisciplinary team that deviates from the biopsychosocial conceptual model, which is more in keeping with the occupational therapy practice framework, in favor of the biomedical approach in which treatment is focused on improving body systems and basic function (Stamm, Cieza, Machold, Smolen, & Stucki, 2006). Thus, occupational therapists are conceptually distanced from helping their patients participate in everyday occupations within their customary social and physical environments, thus optimizing their patients' well-being (Gupta, 2016). In recent years, the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) model has been more commonly used by multidisciplinary teams in rehabilitation, as it addresses disability and functioning in the context of social and environmental interactions (Quintas et al., 2012). Stamm et al. (2006) found strong conceptual connections between the ICF and occupational therapy conceptual models. The authors concluded that using occupational therapy conceptual models can add a valuable perspective to ICF application.

In the short term, the vision connected with the author's program evaluation research is to fine-tune the pilot educational program with both formative and summative approaches to data collection. Based on the model of Self-Determination Theory (SDT) (Ryan & Deci, 2017), program participants will be guided to acquire the skills and knowledge needed to identify and address stroke patients' three basic needs, as delineated by this model, and to create a needs supportive environment, leading to an autonomy-

supportive environment, that promotes increased patient motivation and participation.

Upon completion of this program, the objectives are for participants to be able to:

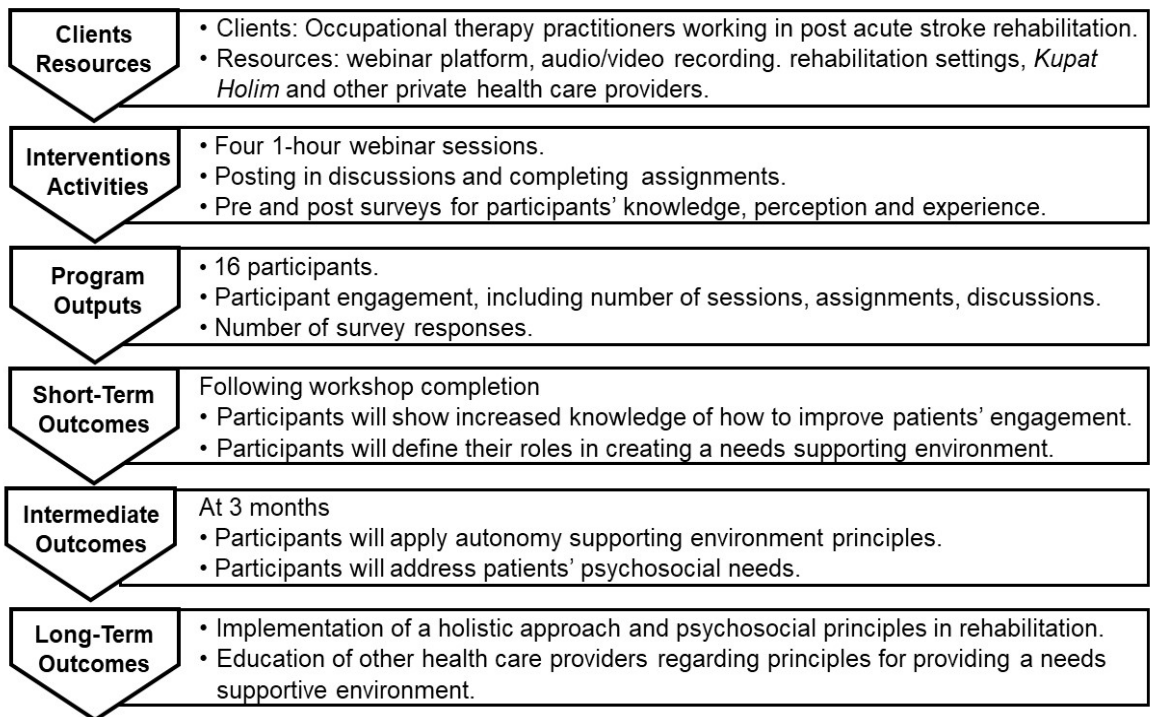
1. Explain the three basic SDT needs, namely autonomy, competence, and relatedness.
2. Create a needs supportive environment that optimizes their patients' engagement and participation, and more specifically that addresses their patients' individual needs.
3. Develop a sense of competence in applying the information that they have acquired.

Use of holistic biopsychosocial models in stroke rehabilitation is consistent with a patient-centered, or client-centered, approach that takes into account the individual's roles, goals, and meaningful occupations. Siegert and Taylor (2004) found that, in the context of inpatient rehabilitation, typical goals addressed basic activities of daily living such as mobility, hygiene, eating and dressing, while the areas of functioning and psychosocial issues were neglected. In contrast, Schiavi et al. (2018) used the Canadian Occupation Performance Measure (COPM) to describe patterns of occupational needs in complex post-stroke inpatients during rehabilitation. The authors concluded, "Client-centered rehabilitation programs should firstly address self-care needs and, later on, they should also focus on the recovery of family and social roles" (p. 1026).

Preliminary Exploration and Confirmatory Process

The author will recruit a program evaluation research team to provide input on planned program content and delivery, as well as research questions, and to confirm that the logistics of data collection and analysis will support optimal execution of the study. It will be comprised of the author, a physician specializing in physical medicine and rehabilitation who is experienced with post-stroke patients, an occupational therapy practitioner from the academic community with expertise in Self-Determination Theory and research, and a senior occupational therapist who is currently working in acute and post-acute stroke rehabilitation. Figure 4-1 shows a simplified logic model that depicts the flow of program components for presentation to stakeholders.

Figure 4-1. Basic program logic model



Using Zoom or another Internet video conferencing application, the team will convene for one or two meetings with the aim of reviewing the logic model, supporting literature, research questions, and study methodology. Based on their respective areas of expertise, team members will discuss the needs and concerns of stakeholders who will be reviewing the data, consider options, and reach an agreement on research methodology that will meet those needs and address concerns. They will compare program goals and research questions to envisioned inputs, activities, outputs and outcomes. Any discrepancies will be discussed in light of the literature review; then, a written recommendation for the program and its evaluation research revision will be made accordingly. The program revision process will continue until agreement is made between members of the team prior to commencing the program evaluation research.

Program Evaluation Research Questions by Stakeholder Group

The author envisions a range of stakeholders that would be interested in reviewing the results of the program launch evaluation study. Preliminary question ideas are provided in Table 4-2. These would be refined during the preliminary exploration and confirmatory process.

Table 4-2 Anticipated formative and summative research questions from stakeholders that reflect what each group would be interested in learning from the study results. (Summative research questions will be addressed using pre- and post-testing)

Stakeholder Group	Research Questions
Occupational therapy department managers	<p>Formative/qualitative:</p> <ul style="list-style-type: none"> • Was the program delivery, including live presentations, assignments, discussions and activities, acceptable to participants? If not, what needs to be changed? • Were program assignments and activities relevant to each participant's clinical situation? If not, what needs to be changed? • Were the models presented applicable in each participant's field of practice? If not, what needs to be changed? • Were session objectives clearly defined and met? If not, what needs to be changed? • To what extent did participation in this program format interfere with each participant's everyday clinical work? <p>Summative/quantitative:</p> <ul style="list-style-type: none"> • Did program participation effectively improve knowledge and skills related to the content areas covered? • Did program participants improve in their self-confidence for addressing the content areas covered in their clinical practice? <p>Other considerations</p> <ul style="list-style-type: none"> • Did program participants feel that they acquired all the information needed for successfully addressing the content areas covered in their clinical practice?
Faculty in occupational therapy college and university programs	<p>Formative/qualitative:</p> <ul style="list-style-type: none"> • Does the content of the program match participants' goals? If not, what needs to be changed? • Did external factors impede execution of the research methodology? • Does the course content align with faculty needs and the existing curriculum in occupational therapy college and university programs? If not, what needs to be changed? <p>Summative/quantitative:</p> <ul style="list-style-type: none"> • Does participation in the program increase participants' knowledge and skills in the content areas taught? <p>Other considerations:</p> <ul style="list-style-type: none"> • Are outcomes consistent with the proposed theoretical justification?

	<ul style="list-style-type: none"> • Is the course delivery format applicable for post-graduate students? If not, what needs to be changed?
Healthcare administrators in the field of rehabilitation	<p>Formative/qualitative:</p> <ul style="list-style-type: none"> • Were the evaluation questions administered to program participants suitable for gathering the needed information? • Does the course content match the knowledge needed to close the clinical gap the program is addressing? If not, what needs to be changed? <p>Summative/quantitative:</p> <ul style="list-style-type: none"> • Did program participation effectively improve knowledge and skills related to the content areas covered? <p>Other considerations:</p> <ul style="list-style-type: none"> • Is delivery of the educational program more costly than other means of educational delivery? • What were the rates of program withdrawal?
Ministry of Health	<p>Formative/qualitative:</p> <ul style="list-style-type: none"> • Are the long-term goals of the author's educational program realistic and achievable? <p>Summative/quantitative:</p> <ul style="list-style-type: none"> • Did program participation effectively improve knowledge and skills related to the content areas covered? <p>Other considerations:</p> <ul style="list-style-type: none"> • In light of the health care system in Israel, is the program justified based on study findings?

Core Purposes

The core purposes of the pilot program evaluation research will be descriptive, relational, and causative. For the descriptive core purpose, qualitative formative information will be obtained from participants following program completion. They will be asked to share their reflections regarding program delivery, activities, and resources and provide constructive suggestions. Other descriptive information will be gathered

regarding number of viewers during each session and overall degree of program satisfaction. Correlation of two or more descriptive aspects, for instance selected participant characteristics, level of engagement in the program, and outcomes, will represent the relational core purpose. A quasi-experimental quantitative design will establish the preliminary degree of causation as the result of program participation.

Scope of the Study

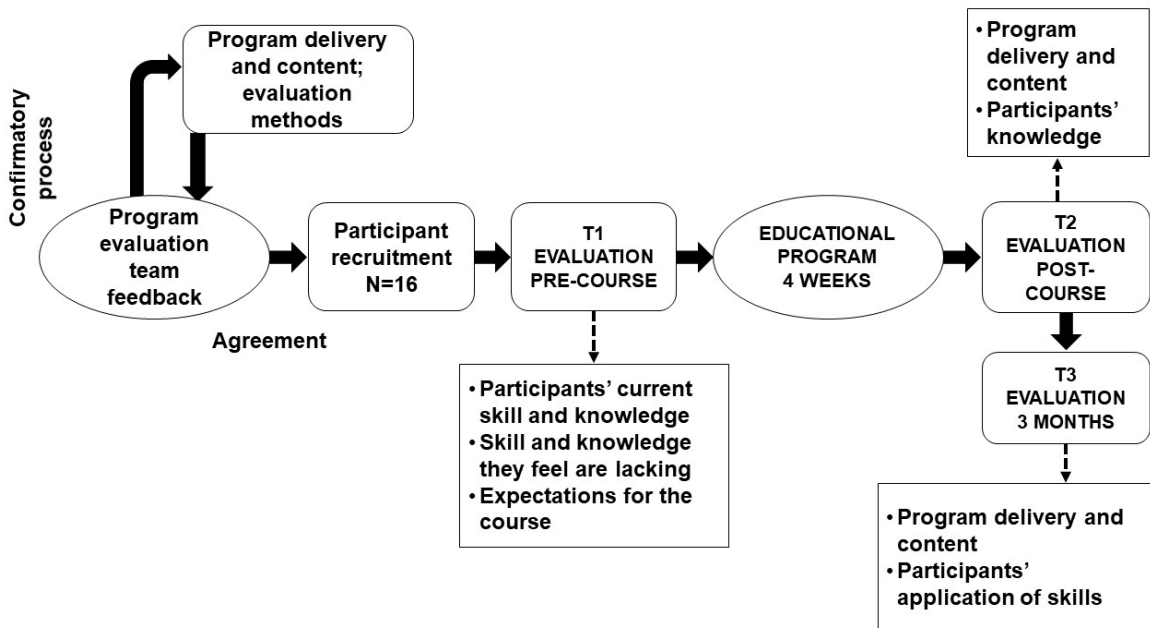
In each live session there will be 16 participants. Occupational therapists in Israel who work with stroke patients in the acute or post-acute stage will be accepted into the pilot educational program and included in the study if they are willing to cooperate by completing all surveys, providing feedback during semi-structured interviews, and possibly permitting observation in a future long-term study. Exclusion criteria include individuals that are not native Hebrew speakers, as the sessions will be recorded in Hebrew, and inability to commit to viewing all sessions. The time frame to complete the educational program is 4 weeks from T1 to T2. As the webinar can be viewed from any computer anywhere, there is no set place for the program.

Research Design and Methodology

The author will use a mixed-methods research design that includes concurrent qualitative and quantitative data gathering prior to the start of the educational program (Time 1 or T1), following completion of the four-week course (Time 2 or T2), and three months post course completion (Time 3 or T3) to follow how the participants apply the information and to gain more feedback for program modification. Interaction with participants and data collection will take place electronically through the webinar

applications and email. Structured interviews may be completed in person or using a web-based conferencing application. Two qualitative methods will be used. Open-ended survey questions will be administered, plus the author will conduct semi-structured interviews in Time 3. Quantitative methodology will be based on a quasi-experimental single group repeat measures design where each participant serves as his or her own control. The independent variable will be participation in the educational program and the dependent variables will be participants' knowledge, skills and confidence relevant to their work with post-acute stroke patients. Quantitative measurement be based on surveys with items requiring Likert-style and multiple-choice responses. Figure 4-2 illustrates the flow of the proposed program evaluation study.

Figure 4-2 Flow of the proposed program evaluation process



Measurement

Figures 4-3 and 4-4 depict samples of open-ended questions and items asking for 1-to-10 ratings that will be used for formative program evaluation, whereas Figures 4-5 and 4-6 provide samples of 1-to-10 rating and multiple-choice items respectively for pre-post summative program evaluation.

Figure 4-3 Items that consist of open-ended qualitative questions to be incorporated into formative program evaluation

<p>1. Was the information taught in a way that was clear and easy for you to understand? Yes/No. Please explain your answer _____</p> <p>2. Was engaging in the course content, presentation, assignments, discussions and activities easy? Please explain your answer _____</p> <p>3. Was the program content relevant to your everyday clinical practice? Yes/No. Please explain your answer _____</p> <p>4. In your opinion, what was the best feature of this program? Please explain _____</p> <p>5. What did you like the least about the program? Please explain _____ _____</p> <p>6. What did you find to be most useful in the program? Please explain _____ _____</p> <p>7. Has participation the program increased your skill and confidence for treating post stroke patients? Yes/No. Please explain your answer _____</p> <p>8. Were the program activities matched to the stated objectives? Yes/No. Please explain your answer _____</p> <p>9. Was the theoretical background and explanation of the nature of the problem relatable? Yes/No. Please explain your answer _____</p> <p>10. Were the objectives of the program clear, realistic and applicable to you? Yes/No. Please explain your answer _____</p> <p>11. What are your suggestions for improving this program? _____ _____</p> <p>12. Are you willing to be available for interviews in the field during the planned evaluation time period? Yes/No. Please explain your answer _____</p>
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Figure 4-4 Sample items for formative program evaluation that require quantitative rating on a 1 to 10 scale. Appendix C describes more questions for post-course evaluation.

For questions 1 through 5, please mark your response to each question by circling the number on the 1 to 10 scale that best represents your answer. 1 indicates "not at all" and 10 indicates "a great deal."										
1. How relevant was the information provided to your current clinical situation?										
1	2	3	4	5	6	7	8	9	10	
2. How suitable was the model that was presented for past or present patients that you have seen in therapy?										
1	2	3	4	5	6	7	8	9	10	
3. To what extent does the information provided add to your current knowledge?										
1	2	3	4	5	6	7	8	9	10	
4. How confident are you that you would be able to implement aspects of the information presented with your next patient?										
1	2	3	4	5	6	7	8	9	10	
5. To what extent this program will be suitable for application concurrently with other team member's treatment?										
1	2	3	4	5	6	7	8	9	10	

Figure 4-5 Items for pre-post investigation that require quantitative rating on a 1 to 10 scale

For questions 1 through 13, please mark your response to each question by circling the number on the 1 to 10 scale that best represents your answer. 1 indicates "not at all" and 10 indicates "very much so."

1. I currently have sufficient knowledge to effectively work with post-acute stroke patients who are having difficulty fully engaging in therapy.

1 2 3 4 5 6 7 8 9 10

2. I currently feel that my workload enables me to deal effectively with my more challenging cases of post-acute stroke patients.

1 2 3 4 5 6 7 8 9 10

3. I believe that a course delivered using a webinar format can be applicable to my needs and effective for occupational therapy continuing education.

1 2 3 4 5 6 7 8 9 10

4. I feel confident that I can effectively treat a post-acute stroke patient who is non-cooperative.

1 2 3 4 5 6 7 8 9 10

5. I feel confident that I have sufficient knowledge to recognize the underlying reasons for low motivation in a post-acute stroke patient that I am treating.

1 2 3 4 5 6 7 8 9 10

6. I have the skills needed to address poor attendance, reluctance to participate, and expression of disinterest when I observe one or more of these issues in a post-acute stroke patient.

1 2 3 4 5 6 7 8 9 10

7. I know how to recognize signs of therapeutic disengagement.

1 2 3 4 5 6 7 8 9 10

8. I am confident about my ability to work with a post-acute stroke patient who is initially noncompliant.

1 2 3 4 5 6 7 8 9 10

9. I have a basic understanding of the reasons a stroke survivor may not feel psychosocially or physically ready for the acute or post-acute rehabilitation process

1 2 3 4 5 6 7 8 9 10

10. I understand how to apply Self Determination Theory as a relevant psychosocial model in my clinical practice

1 2 3 4 5 6 7 8 9 10

11. I know how to create an autonomy supportive environment for post-acute stroke patients.

1 2 3 4 5 6 7 8 9 10

12. I believe that it is essential to understand theoretical models that provide a basis for understanding post-acute stroke patients that seem to be struggling with psychosocial issues.

1 2 3 4 5 6 7 8 9 10

13. I know how to use effective communication to increase a patient's therapeutic engagement.

1 2 3 4 5 6 7 8 9 10

Figure 4-6 Sample case scenario followed by items requiring multiple-choice responses. Appendix D introduces more questions addressing summative program evaluation

Case Scenario A

Mrs. G, an 83-year-old female and a retired physician, was admitted to the post-acute rehabilitation ward 5 days after having sustained a stroke with non-dominant hemiparesis. Prior to her stroke, she was independent in all her activities of daily living. As a sociable person, she was accustomed to engaging in social events, meeting with her friends, and traveling together. She is currently dependent in activities of daily living, uses a wheelchair for mobility, and requires moderate assistance for transfers, dressing and bathing. She is independent in self-feeding, toileting and hygiene. Her cognitive abilities are intact without any noticeable cognitive impairments. During the occupational therapy sessions, Mrs. G. demonstrates good compliance and therapeutic engagement. She attends all treatments, follows instructions, and completes all the needed activities. Her therapists were impressed by her optimistic approach and motivation.

Please answer the following questions addressing this case scenario.

1. When asked about her expectations, Mrs. G has expressed her expectation that she will be able to travel to Europe next month with her friends. You are the supervisor of her therapist. How will you advise him to respond to her expectations?
 - A. According to the patient's current functional abilities and our experience with and knowledge of similar cases, we are confident that she will not gain enough functional independence in one month that will allow her to travel with her friend. I will advise the therapist not to pursue this goal with Mrs. G.
 - B. If the patient believes that she will be able to travel in one month, I will advise the therapist to support her competence and not deprive her of this expectation, thus avoiding her becoming upset and depressed
 - C. I will advise the therapist to share thoughts with Mrs. G and work together with her to set realistic treatment goals that will serve as the building blocks of the process through which she will acquire the ability to travel.
 - D. I will advise the therapist to remind Mrs. G that, as a physician, she should acknowledge that it takes time to recover from stroke and that she needs to have patience and not pressure her therapists.

2. As Mrs. G's primary therapist, you are encouraged by her compliance and you plan an approach to achieving the next treatment objective, which is to address her more affected upper extremity. However, you are surprised when she refused to engage in the activity you prepared. What should be your response?
 - A. I understand that Mrs. G was a physician, but I am the stroke rehabilitation therapist and she is the patient. I have the skill and knowledge to provide the appropriate therapy program and I will communicate that she needs to cooperate or else I cannot help her.
 - B. I will encourage Mrs. G to choose another activity that will be more motivating. Thus, I will ask her to name the activity in which she would prefer to engage.
 - C. I will refer Mrs. G to my supervisor regarding approval to continue therapy.

D. I will explain to Mrs. G why this specific activity was chosen and how it relates to her impairment and functional restrictions. Then, I will explore her attitudes toward this activity, and only then I will provide her with an opportunity to choose another activity.

3. What will best predict Mrs. G's rehabilitation outcomes?

- A. The severity of her functional disability.
- B. The quality of communication between Mrs. G and her therapist.
- C. Her degree of therapeutic engagement.
- D. All of the above.

For the next questions, please mark the answer that is the best match to your knowledge.

4. Therapeutic engagement can be considered as

- A. The precursor to occupational engagement.
- B. Undertaking an activity that is considered to be therapeutic.
- C. Commitment to therapy.
- D. A+C.

5. The 5A's model (Ask, Assess, Advise, Agree, and Assist) refers to

- A. A model intended to produce a change in person's behavior.
- B. A model that guides clinicians to choose the appropriate treatment tools.
- C. A biomedical model to address patients' impairments.
- D. Multidisciplinary communication tools.

Data Management and Analysis

At program launch, initial pre-webinar and post-webinar surveys at T1 and T2 will be completed online. The link allowing the participant to complete T3 surveys online will be emailed to each. For semi-structured interviews, participants will be contacted by phone or email and arrangements will be made for a live or web-based appointment. Rules of confidentiality will be observed. In the data set, each participant will be identified by a numerical code. The author will set up a document, stored in a secure location, that connects each survey code with a participant's name for follow-up

purposes. The completed surveys with participants identified by codes will be stored electronically,

Quantitative data will be organized in spreadsheet format. The author will review the data set to check for incomplete or inconsistent data. An appropriate statistics application will be used for quantitative data analysis, possibly with the assistance of a statistician. Descriptive statistics, including frequency, central tendency, standard deviation, and correlation will be calculated using the appropriate parametric or nonparametric formula. Applicable statistical calculation of degree of change over repeat measurements, as well as effect size, will also be carried out. Given sufficient data, regression analysis will be used to generate a predictive model.

Hermeneutic methods will be applied to qualitative information provided by open-ended survey questions and interviews. Thematic analysis will be used in which the author will review the material to identify recurring language in the form of phrases or words, which will be organized by means of codes, categories and themes. A qualitative computer analysis application such as NVivo or ATLAS.ti will be employed as available. Frequency of occurrence of each recurring theme will be calculated.

Report of Research Findings

The author will present the research findings to the designated stakeholders in different formats according to their respective characteristics, information needs, and interests. For occupational therapy department managers and healthcare administrators in the field of rehabilitation, he will use what Grob (2015) defines as *the killer paragraph*. According to Grob (2015), this short summary paragraph is an effective means to deliver

the core findings of the research. The paragraph format was chosen to attract and hold the attention of this group of stakeholders and to provide the essentials of research results most relevant to program strengths, effectiveness and efficiency. Given that a stakeholder expresses interest in learning more about the research, they will be provided with the executive summary.

A two-page executive summary will be used to present the study findings, strengths, limitations and recommendations to faculty in occupational therapy college and university programs and to the Ministry of Health. Grob (2015) recommends using this format for a more influential audience who will find the additional information meaningful. As the long-term goal of the author's educational program is to promote a more holistic approach to post-acute stroke rehabilitation and to educate healthcare providers regarding how to create a need supporting environment, the alignment of these stakeholders will be crucial. In the two-page executive summary, Grob (2015) recommends emphasizing findings and recommendations, highlighting the main points and summarizing the methodology. These will comprise the sections that policy makers and faculty in academia will find most important.

The reports for each stakeholder group will be sent to a key representative by means of emails. Recipients will be asked for their feedback, with a suggestion that an oral presentation by the author at a meeting or conference might be organized. The author intends to present his program at a conference for occupational therapists in Israel. Any feedback that will be received through email or other will be examined and suggestions for the pilot launch of the author's project will be incorporated into the presentation. The

author anticipates that the educational course will be dynamic, with the potential for development from an introductory course to a more comprehensive core skill and knowledge building program for occupational therapists.

CHAPTER 5. FUNDING PLAN

Project Description

Occupational therapy practitioners working in post- and acute stroke rehabilitation are influenced by pressures in the system to achieve the best functional gain for their patients within a specified time period (Ministry of Health, 2009). At the same time, there are inducements to meet expectations for progress in therapy, including rapid rehabilitation commencement, as well as full engagement and participation, with patients who are adapting to massive changes in their lives (Peoples, Satink, & Steultjens, 2011). These expectations may not be met when rehabilitation is delivered in an unsupportive environment characterized by uncondusive communication, which leads to therapeutic disengagement by the patient (Pillay, 2011; Taylor, Todman, & Broomfield, 2011).

The author's proposed program focuses on educating these occupational therapy practitioners on the theory and practice of creating an autonomy-supportive environment to promote patients' therapeutic engagement and thus improve rehabilitation outcomes. The program is an introductory level course consisting of four 2-hour webinar sessions. Course participants will learn to identify the occurrence of low compliance and low motivation in individual patients that signify therapeutic disengagement, as well as models of intervention to help solve this consequential barrier in rehabilitation (Kennedy & Davis, 2017). Among the topics covered in the course are: 1) current stroke rehabilitation in Israel, 2) its strengths and limitations, 3) the biomedical model versus the psychosocial model, 4) emphasizing the *International Classification of Functioning, Disability and Health (ICF) model* of the World Health Organization (WHO), 5)

intervention models such as *the 5A's*, and *the MUST model* developed by the author according to Self Determination Theory, and 6) guidelines for creating a needs-supporting environment. The emphasis will be on the application of knowledge and moving from theory to practice.

The use of a webinar format for the author's educational program was chosen because of the demonstrated efficiency and effectiveness of e-Learning in facilitating interactive learning. Specifically, the current program was compiled with attention to the value of e-Learning that involves short courses and is characterized by interactivity, practice exercises, and peer discussions. Other advantages for using the e-Learning environment are easy access, convenience, cost savings, and time savings (Wong, Greenhalgh & Pawson, 2010).

Successful implementation of the author's program requires attention to the costs of its development, delivery, and evaluation. Funding sources that might help offset these expenses need to be taken into consideration. This chapter will address the expected expenses and measures taken to explore available funding sources for successful creation and implementation of the program, with a two-year outlook.

Available Local Resources

The author will serve as the primary developer for compiling the program, designing the approach to program delivery and conducting program evaluation research. The estimated time for delivering and evaluating the initial program launch, followed by adaption of the next program iteration based on evaluation findings, is 10 months. One month will be needed for program delivery, three additional months to complete data

gathering in Time three, and another six months for analyzing program outcomes. Thus, the author will need funding that is equivalent to an estimated time of two paid working months during this period. One month for program delivery and the second for its evaluation. A number of activities connected with the project will be carried out by the author voluntarily. The author will use his own laptop computer and Microsoft Office software, including Word, Excel, and PowerPoint, as needed. Other computer software and applications that could incur cost will be discussed later in this chapter. For dissemination of information, the author will use his personal Gmail and Facebook accounts. Additional resources that will be needed are as follows:

- **Library access.** Currently, the author uses the Boston University Online Library subscription connected with his enrollment. A local medical and social sciences library subscription will also be essential for compiling, editing, and updating the course content. Copyrights permission will be needed for sharing downloaded materials.
- **Program implementation and research consultation.** Dr. Iuly Treger, head of Soroka Medical Center's Rehabilitation Department in Israel and former Chairman of the Israel Association of Physical and Rehabilitation Medicine has expressed willingness to serve as consultant for project implementation and program evaluation research. Dr. Treger has many years of experience in leading stroke rehabilitation settings in Israel and as a researcher in this field. He was awarded a prestigious prize at Moscow's international conference on neurological rehabilitation three years ago. The prize was awarded by the Ministry of Health

and the Russian Association of Rehabilitation. Dr. Treger was involved in Russia's national program for the formation of stroke treatment and rehabilitation. One of the program's goals is the founding of early rehabilitation units for stroke patients.

- **Webinar development consultation.** Mr. Carmeli Ariel is the founder and owner of Carmelogic, a company that develops Internet programs and web pages. The company can be involved from the design through maintenance phases. Mr. Carmeli has experienced working with a variety of companies and organizations and he will assist in developing any Internet-based material that will be used outside the virtual class. Also, his help will be needed for the dissemination of the program using the Internet.

Projected Income

Course launch, which includes program evaluation research, will be held in the first year. Participation in this course will be free of charge in return for completion of study surveys and interviews. Pre- and post-program data will be collected, with additional data collection from the same participants 3 months after course completion. See Figure 5-2 for an overview of the flow of program evaluation research. The author estimates that an additional six months will be needed for fine-tuning and updating content of the next iteration of the program according to the research findings.

After completion of the updated educational program and dissemination of research findings, the course will be marketed to occupational therapists in Israel. To the author's knowledge after searching for similar programs on the Internet, there is no

comparable course for occupational therapists in Israel. Online courses were found for diverse populations in a variety of popular subjects that did not represent areas of interest in occupational therapy. The only similar service that was located was the <https://www.hartza-ot.com/> website, which offers single, or up to three consecutive, online lectures for Israeli occupational therapists. Thus, calculation of the program fee at this site was the reference for determining the fee for the author's webinar. An average of 80 Israeli Shekels, equal to approximately \$22, is charged for 1 contact hour, or 60 minutes, of lecture on the reference website. As the author's program is more interactive and requires between-sessions activities, the planned cost for one contact hour will be 100 Israeli Shekels, which equals approximately \$28. Therefore, the enrollment fee in the author's webinar will be \$280 per participant. As the author plans to enroll no more than 16 participants per course cycle to allow the needs of each participant to be addressed, the income for each course will be \$4480.

Expenses

Table 5-1 summarizes program expenses for two years of implementation. For program creation and evaluation during the first year, the primary expense will be the salary for the primary developer (the author), who will be allocating all his available time for the program over two months. In accordance with his current salary the expected expense will be \$2000 per month. Other expenses during program development will be the use of the Moodle platform application for compiling the course modules and its content. The Moodlecloud plan that was chosen is the starter plan, which best matches the program needs as it is suitable for a single class, enables the needed file storage and

web conferencing. The expenses for using this plan will be \$80 per year through <https://moodlecloud.com/app/en/>. For qualitative data analysis and organization, the author will use the NVIVO software, which is available through <https://www.qsrinternational.com/nvivo/products?pm=Student>. The version that will be used is the 12pro limited use license. This version in a student plan, limited for 24 months, and will cost \$114. Survey delivery will be conducted using Gmail and GoogleDocs, which will add no additional expenses to the project. The author will use his preowned Microsoft Word, Excel, and Power point software to generate reports, quantitative data analysis and presentations.

Table 5-1 Program expenses

Budgeted item	1st Year	2nd Year	Justification
Salary	Creation phase: \$4000 (\$2000 per month for 2 months) Implementation phase from second program: \$50/hour, \$400 per program. Total: \$4400	Implementation phase: \$50/hour, 400 per program. Total: \$400	The primary investigator will need to allocate the needed time for creation and evaluation of the program and take the time off from his work. In the implementation phase the expenses are the lecturer fees for program delivery, according to the author's experience of average lecturer salary per an hour.
Equipment/supplies	Microsoft Word, Excel and PowerPoint \$69.99 (use of preowned) Laptop computer \$1000 (use of preowned) Communication: Internet \$230 (use of existing connection)	Microsoft Word, Excel and PowerPoints \$69.99 (use of preowned) Communication: Internet \$230 (use of existing connection) Phone \$100 (use of existing line)	The primary investigator will make use of his already existing resources. Thus, not adding costs on the program.

	Phone \$100 (use of existing line)		
eLearning platform	Moodlecloud, the starter plan \$80 Total \$80.	Moodlecloud, the starter plan \$80. Total \$80	This platform was chosen as it enables an interactive learning environment. The plan was chosen as it best matches the program needs and one class program. https://moodlecloud.com/app/en/
Program evaluation	NVIVO software, 12plos version \$114 Total \$114		The software will allow to organize and evaluate qualitative data from questionnaires and the semi-structured interview. https://www.qsrinternational.com/nvivo/products?pm=Student
Dissemination	Electronic brochure suitable to use as a landing page \$300 Meeting or conference room and facilities for one-hour lecture \$200, for 3 meetings \$600 Presenting in Conference costs \$120 Travel expenses \$100 Designing and printing executive summary as handout \$100 Total \$1220	Updating the electronic brochure suitable to use as a landing page \$50 Meeting or conference room and facilities for one-hour lecture \$200, for 3 meetings \$600 Conference costs \$120 Travel expenses \$100 Designing and printing executive summary as handout \$100 Total \$970	For program dissemination, a landing page and electronic brochures will compile and delivered through social media and web sites addressing occupational therapists. The estimated costs are from the author prior experience with using landing pages.
Total costs	\$5814	\$1450	Total for 2 years: \$7264

Potential funding sources

An Internet search was conducted for available and relevant grants and other funding resources. Table 5-2 summarizes the relevant sources that were found.

Table 5-2 Potential funding sources

Grant title	Description and relevance
The Israel national institute for health policy research (NIHP)	<p>The NIHP facilitates and promotes research that evaluate the implementation of the national health insurance law in Israel and its influence on health service provision. One of the main fields of research is the quality of health services and can be related to the gap the current program address.</p> <p>http://www.israelhpr.org.il/e/86/</p>
Israel science foundation	<p>The Israel science foundation supports research proposal in a variety of research fields including Life Sciences and Medicine, Humanities and Social Sciences. The grant is awarded according to the quality and scientific excellence of the proposal. There is no upper limit to the amount of funding, in 2017 the average funding was 228,565 NIS approximately \$63500.</p> <p>https://www.isf.org.il/#/support-channels/1/10</p>
Agency for healthcare research and quality (AHRQ)	<p>The AHRQ prioritizes research in health services research for achieving a high value healthcare system with the focus on empowering patients, shared decision making to promote informed decision, increasing patient's engagement and improving outcomes.</p> <p>https://grants.nih.gov/grants/guide/notice-files/NOT-HS-19-011.html</p>
The U.S.- Israel Binational Science Foundation (BSF)	<p>The BSF promotes the collaboration between researchers from the U.S and Israel in a variety of basic and applied scientific fields. In the area of health sciences and medicine the BSF supports research in social and rehabilitative medicine. The maximal grant amount for one research is \$230000 for four -years research.</p> <p>It is important to note that applying for this grant requires two investigators, one from Israel, and the other from the U.S.</p> <p>http://www.bsf.org.il/BSFPublic/DefaultPage1.aspx?PageId=11&innerTextID=11</p>
The Dudley Allen Sargent Research Fund (DASRF)	<p>The purpose of DASRF is to help Sargent college students that have difficulties with completing their doctoral project due to lack of financial resources. Application review will be competitively according to their relevance and importance.</p> <p>Funding amount \$5000</p> <p>https://www.bu.edu/sargent/research/research-funding-administration/dudley-allen-sargent-research-fund/doctoral-candidate-application-guidelines/</p>

Conclusion

An educational program for occupational therapy practitioners will be compiled, evaluated and implemented to promote application of current knowledge and an updated skill set for working with post- and acute patients with a stroke who exhibit therapeutic disengagement. Enhancing occupational therapy practitioners' ability to address the psychosocial needs of patients will improve their autonomous motivation and therapeutic engagement, and thereby rehabilitation outcomes. The program was developed as a series of interactive webinars to increase its efficiency and effectiveness and reduce expenses.

A detailed description of the costs and expenses that will be needed for successfully creating, evaluating and implementing this educational program was presented. First year expenses are estimated to be \$5814, reduced to \$1450 in the second year. Most of the expenses in the first year are based on the cost of materials and the working hours needed for program development. It is anticipated that, following program evaluation research, the updated version of the webinar will be delivered to occupational therapists in Israel, and with additional sources for relevant grant funding that were discussed, the proposed budget can be met.

CHAPTER 6: DISSEMINATION PLAN

Introduction

Therapeutic disengagement is one of the main barriers that healthcare providers encounter in acute and sub-acute stroke rehabilitation. Signs include lack of motivation, decreased initiation and persistence, poor patient-practitioner communication, and depression (Kennedy & Davis, 2017). The result is typically feelings of frustration by both patients and therapists and poorer rehabilitation outcomes. A patient who exhibits these characteristics may be labeled as a rehabilitation failure and referred to a long-term care facility. Most importantly, therapeutic engagement is recognized as an essential precursor to occupational engagement. Based on his experience as an occupational therapy and administrator in the public rehabilitation in Israel, and based on his experience as the owner and manager of a private rehabilitation center for individuals with stroke or brain injuries, the author resolved to address this obstacle to successful stroke rehabilitation by creating a continuing education webinar for occupational therapists working with stroke survivors. Using Self-Determination Theory and other relevant models as a basis, this 8-hour program will guide clinicians through a practical, applicable, step-by-step thinking process that will promote a needs supportive environment, effective patient-therapist communication, and increased patient self-regulation and motivation.

Dissemination Goals

The author's dissemination plan will commence following initial launch and program evaluation research. It will address primary and secondary target audiences, key

messages for each of these audiences, influential spokespeople, dissemination activities, and expenses. In the long term, the goal of dissemination is to support adoption of a need supportive environment in acute and post-acute inpatient stroke rehabilitation settings in Israel within 5 years. The author anticipates that dissemination of information demonstrating that growth in practitioner skill and knowledge for creating a needs supportive environment and communicating effectively with patients is associated with improved rehabilitation outcomes, this will eventually lead to change in standard rehabilitation processes and Ministry of Health regulations. Three short-term goals to reach the long-term goal that comprise steps in the process are as follows:

- Short-term Goal 1: Dissemination of program processes and data to the primary audience will lead to webinars delivered to the staff of two occupational therapy departments within the first year.
- Short-term Goal 2: Dissemination of program processes and data to the secondary audience will lead to incorporation of the webinar in the OT continuing educational program of one occupational therapy college or university program in Israel.
- Short-term Goal 3: Dissemination of the program processes and data to both the primary and secondary audiences will lead to implementation of concepts from Self Determination Theory and the needs supportive environment in the occupational therapy treatment approach for inpatients with stroke within the first two years.

Primary Target Audience

The primary target audience for the author's dissemination efforts will be occupational therapy department managers in acute and post-acute inpatient rehabilitation facilities in Israel. A department manager is responsible for the quality of occupational therapy services, treatment outcomes, and service delivery for each patient that is admitted to rehabilitation. The department manager is also responsible for providing occupational therapists in the department with opportunities for continuing education and professional growth. Thus, an occupational therapy department manager is the individual empowered to offer the author's educational program to staff.

Key message for the primary target audience. Occupational therapists that participate in the author's educational webinar will learn how to recognize acute and post-acute stroke patients at risk for poor rehabilitation outcomes because of therapeutic disengagement. The signs of therapeutic disengagement include low motivation, lack of commitment to working toward rehabilitation goals, distress and depression. Occupational therapists who provide services to these patients may feel at a loss to facilitate engagement and deliver successful rehabilitation. Therapist's frustration may lead to inadvertent disrespectful, threatening, patronizing or belittling behaviors toward the patient.

Webinar content and delivery methods will provide participants with theoretical and practical knowledge, as well as useful skills, to improve therapist effectiveness in resolving therapeutic disengagement and achieving better outcomes with this challenging population. Areas of instruction will include promoting a needs supportive environment,

optimizing patient-practitioner communication and collaboration strategies, addressing unrealistic expectations, and improving patients' autonomous self-regulation. It is expected that in the program evaluation study, participants will report better understanding of methods to support patient therapeutic engagement, improvement in their clinical practice, and greater satisfaction with therapeutic outcomes.

Primary influential spokesperson. Eldad Grinberg, M. Sc. OT, the developer of the educational webinar, will be the primary spokesperson. His 22 years of experience as an occupational therapist practicing in stroke rehabilitation, 7 years as the owner and manager of a private Israeli center for stroke and brain injury rehabilitation, and as an instructor in post graduate level, equip him to interact effectively with department managers. Participants who have completed the webinar may be called upon to share their experiences.

Activities. Dissemination activities for the primary target audience will consist of the following activities:

- Creation of an electronic brochure and executive summary document.
- Compilation of a list of OT department and administrator email addresses from a number of sources, including the Israel Society of Occupational Therapy, occupational therapy supervisor in the Ministry of Health and the Sick Funds Administration.
- Distribution of the electronic brochure and executive summary via email to department heads or administrators one from each of three organizations, namely the Ministry of Health, Sick Funds, and selected hospitals. Contact and

registration information will be included in the emails. After receiving their feedback, the brochure and the executive summary will be sent to another set of three administrators, one from each of the organizations.

- Dissemination of the electronic brochure in the social media, using Facebook groups for Israel occupational therapists, to provide a wider exposure of the program and its content.
- Face-to-face presentations in a forum of occupational therapy administrators from clinical settings that are regulated by the Ministry of Health, and in similar forums for occupational therapy administrator from clinical settings that are regulated by the sick funds. This presentation will include a short description of the subject matter, content and mode of delivery of the proposed intervention, the advantages of using the webinar and the e-learning environment, and feedback from the program evaluation.

Secondary Target Audience

The secondary target audience for the dissemination efforts will be faculty members in college and university occupational therapy programs. As the author's webinar is innovative in its content and its delivery by means of an e-learning environment, these faculty will likely recognize the benefits of offering the webinar to occupational therapists in post-graduate and continuing education. There are a number of features of the webinar model that would attract occupational therapy practitioners to register for the program at a college or university. E-learning is a cost-effective method, it

is interactive, and access to educational material is simplified. It is a practical, applicable, and effective model that can promote development of communication and clinical skills. Although the current program is at the introductory level, a future more advanced program can be created to meet expanded faculty needs.

Key messages for the secondary target audience. Program evaluation surveys will be administered to occupational therapists that will participate in the educational webinar. Positive outcomes are expected to show increased participant knowledge useful for improving the effectiveness of rehabilitation for stroke patients. Learning content includes methods for identifying the presence of therapeutic disengagement and risk for rehabilitation failure, promoting patient autonomy in a needs supportive environment, optimizing patient-practitioner communication and collaboration strategies, addressing unrealistic expectations, and improving patients' autonomous self-regulation. Participants will also expect to report increased skills for effectively applying the knowledge acquired to deal with these difficult cases.

The author expects that participants in the educational program will react favorably to the educational program delivered through a series of webinars. He anticipates that they will report that the interactive environment was conducive to learning and that the use of discussions, assignments and live classrooms combined with ongoing instructor-learner and learner-learner feedback will be most helpful in their learning process. This will lead to the conclusion that program delivery as an interactive webinar can be suitable and effective for the use in occupational therapy continuing education in colleges and universities.

Participants in the educational program delivered through a series of webinars will report that using the e-learning environment enabled them to combine continuing education with their current workload. As the learning material is open and accessible to each participant throughout the program, it will be easy to engage with the material when most amenable to busy schedules. Another feature that will be favorable by participants will be that they can attend from home, work, or any convenient location. Thus, this approach to program delivery will attract occupational therapists that otherwise would not have the time to travel to a college or university to participate in continuing education.

Primary influential spokespersons. Karen Jacobs, Ed.D., OT, OTR, CPE, FAOTA, Karen is a clinical professor and the program director of the online post-professional doctorate in occupational therapy (OTD) program at Boston University. Dr. Jacobs can share from her extensive experience of offering an e-learning environment in a university program. Eldad Grinberg, OTD, M. Sc. OT, the developer of the educational webinar, will serve as co-spokesperson. He has many years of experience as an occupational therapist practicing in stroke rehabilitation, as owner and manager of a private Israeli center for stroke and brain injury rehabilitation, and as an instructor in post graduate level courses. Dr. Grinberg completed his occupational therapy doctorate in the post-professional on-line program in Boston university. He is well-equipped to share his practical knowledge with faculty as well as the theoretical background that led him to create the program. In addition, participants who have completed the webinar may be invited to share their experiences.

Activities. Dissemination activities for the secondary target audience will consist of the following approaches intended to enhance the academic validity of the program for use in educational facilities:

- Submission of findings from program evaluation research for publication in a journal for occupational therapists in Israel.
- Presentation of the webinar content, delivery, and program evaluation findings in the next annual occupational therapy conference in Israel.
- Face-to-face presentation to faculty members in each of the five occupational therapy educational facilities in Israel. This presentation will include detailed description of the program content, evaluation, and delivery. After the presentation, an executive summary will be distributed as a handout and will be made available to the faculty for future reference.

Dissemination Budget

To enable carrying out of the dissemination plan, a budget for its execution was calculated. Table 6.1 summarizes the expenses for two-years of dissemination. Monetary cost in Israel have been converted to U.S. dollars.

Table 6-1 Expenses for two-years of dissemination

Audience	1 st year	2 nd year
primary	Electronic brochure suitable to use as a landing page \$300 Meeting or conference room and facilities for one-hour lecture \$200, for 3 meetings \$600 Total: \$900	Updating the electronic brochure suitable to use as a landing page \$50 Meeting or conference room and facilities for one-hour lecture \$200, for 3 meetings \$600 Total: \$650
Secondary	Conference costs \$120 Travel expenses \$100 Designing and printing executive summary as handout \$100 Total \$320	Conference costs \$120 Travel expenses \$100 Designing and printing executive summary as handout \$100 Total \$320
Total	Total Expense for two years of Dissemination= \$2,190	

Evaluation of the Success of the Dissemination Process

The number of webinars delivered during the first and the second year of dissemination will be one indicator of the success of the dissemination efforts on the primary target audience. Ideally, 16 occupational therapists will be enrolled in each webinar, though the number of occupational therapy staff in some facilities will be smaller. Other determinants of the success of dissemination will be the number of department managers or administrators who request more details about the program, ask to schedule a meeting to discuss it, or invite program presentation. In order to determine the success of the dissemination efforts on the secondary audience, the number of faculty who ask to engage in a face-to-face conference will be used as well as the number of educational programs that are initiated by the faculty.

Conclusion

This dissemination plan was compiled for a webinar program aimed at providing essential continuing education for occupational therapists in Israel who work in acute or post-acute inpatient stroke rehabilitation. The program content and delivery are designed to guide occupational therapists in this field to create an effective needs supportive environment and to resolve cases of therapeutic disengagement and low motivation that may lead to rehabilitation failure. The dissemination plan addresses the primary target audience of occupational therapy administrators in rehabilitation settings, and the secondary target audience of occupational therapy faculty in colleges and universities. For each target audience, key messages, primary spokespersons and activities were described. The dissemination budget was also described and was calculated for \$2190 in U.S. dollars. Number of programs initiated during the first and second years of dissemination will be measures of success for this program.

CHAPTER 7: CONCLUSION

The project introduced was created from the author's experience of patient's difficulties in meeting their therapists' expectations that may lead to therapeutic disengagement, poor motivation, poor attendees and persistence. The notice that applying more time for adjustment and adaptation, better acknowledge of patients' psychosocial needs encourage better motivation, better therapeutic engagement and better rehabilitation outcomes led to a scientific review and recognition of the gap between our current theoretical knowledge and its application in the clinical realm and to the creation of an educational program that addresses this gap.

The educational program is an e-learning based webinar that was created at the introductory level. In the four modules, practitioners will be familiar with the problem and will learn key assessments for patients that are at risk for poor rehabilitation outcome as a result of lack of motivation or therapeutic engagement. participants will be also introduced with some clinical reasoning sequences to serve as a starting point for effective communication and a creation of a needs-supportive environment.

As stroke rehabilitation can be considered as a complex system, with many stakeholders involved in the process, the evaluation program was developed to address stakeholders in the macro, mezzo, and micro level. The research questions will be the basis for program justification in each level. After confirmatory process and program launch, a mixed qualitative and quantitative research design were proposed to be implemented in three measurement times.

Needs assessment that was conducted, scientific review, program fund and

dissemination plans indicate that the program is feasible. The author envisions that by confirming the research questions, the program will be disseminated and will be learnt in continuing education for occupational therapists, and other health-care providers, and help changing the rehabilitation environment to meet the patients' needs and improve stroke rehabilitation outcomes.

APPENDIX A. LESSON PLAN

Webinar 1 – Introduction to dilemmas in stroke rehabilitation provision in Israel.

Overview:

The first Webinar is designed to build the theoretical background that will enhance participants' awareness of their own practice patterns for providing inpatient rehabilitation services to individuals with acute or post-acute stroke. Participant discussions, activities and assignments will be used to shift focus from the biomedical to a broader model of care. This will facilitate participants' understanding of gaps in stroke rehabilitation service provision as well as the discontinuity between the knowledge inherent within occupational therapy as a humanistic and holistic profession and their current clinical environment.

Learning Objectives:

Following completion of the first module, participants will:

1. Recognize the discrepancies between two main approaches in rehabilitation, namely the biomedical and psychosocial.
2. Identify at least four constraints experienced by patients following stroke that may impede their recovery.

3. Define the concept of therapeutic engagement and how it applies to their clinical practice.
4. Describe the three basic psychological needs according to Self-Determination Theory, namely the need for autonomy, competence and relatedness.

Live classroom content: Instruction will be delivered synchronously.

- **Introduction.** Participants will share their experiences with the prevalent approach to stroke rehabilitation in their respective facilities, particularly the focus of treatment.
- **The rehabilitation process in Israel.** Stroke rehabilitation is a process in which there are multiple phases, each with different goals, which can lead to fragmentation and hamper success. For example, in acute care the goal is to stabilize the patient and save his or her life, as contrasted with the post-acute phase, where the goal is resolving impairments. Moreover, as the patient progresses toward returning to his or her role in the community, the frequency and duration of rehabilitation services decline at a time when intervention that addresses psychosocial issues would be most beneficial. Figure X is an example of a slide that will be presented that describes this process.
- **The psychosocial approach versus the biomedical approach.** Following description of the essential features in each approach, the biomedical dominance in health care will be discussed in light of the ICF model. As stroke progresses

from an acute event to a more chronic condition, the patient needs a more holistic, multidisciplinary, and psychosocially oriented approach. Figure A-2 is an example of a slide that will be presented during introduction of the differences between the two approaches.

- **What patients need in order to succeed in rehabilitation.** Therapeutic engagement will be introduced as an essential construct that is fundamental for successful rehabilitation. Active engagement of the patient is crucial in this process. Participants will learn about the features of therapeutic engagement, which include communication, awareness, and persistence, as well as barriers that may lead to disengagement.
- **From therapeutic disengagement to motivation and the role of Self-Determination Theory (SDT).** The three basic psychological needs for autonomy, competence and relatedness, as described in SDT, will be explained as the core theory of the proposed program model. These three basic needs will be introduced in the context of their clinical implication in stroke rehabilitation. Figure A-3 is an example of a slide that will be presented introducing Self-Determination Theory.

Group Activities: participants will be asked to list measures, tools and therapeutic activities that they currently use and address the psychosocial needs of their patients.

Reading(s):

Kennedy, J. & Davis, J.A. (2017). Clarifying the construct of occupational engagement for occupational Therapy, *Occupational therapy journal of research*, 37(2), 98-108

Ministry of Health (1994). National Health Insurance Law 5754-1994, Article 23, Second Schedule, Hospitalization of a Rehabilitative Patient. Retrieved from https://www.health.gov.il/legislationlibrary/bituah_01.pdf

Ryan, R.M. & Deci, E.L. (2017). *Self-determination theory, basic psychological needs in motivation, development and wellness*. New York, NY: The Guilford Press.

Wade, D. (2015a) Rehabilitation – a new approach. Overview and Part One: the problems. *Clinical Rehabilitation*, 29 (11) 1041-1050.

Wade, D. (2015b) Rehabilitation – a new approach. Part two: the underlying theories. *Clinical Rehabilitation*, 29 (12) 1145-1154.

Wade, D. (2016a) Rehabilitation – a new approach. Part three: the implications of the theories. *Clinical Rehabilitation*, 30 (1) 3-10.

Wade, D. (2016b) Rehabilitation – a new approach. Part four: a new paradigm, and its implications. *Clinical Rehabilitation*, 30 (2) 109 –118.

Demonstration: During the live classroom, the continuum of motivation according to Self-Determination Theory will be demonstrated by means of a video recording. Characteristic patient responses related to each construct will be illustrated, showing the effect of various therapist responses. This demonstration is intended to highlight the role of the therapist as a proactive facilitator of motivation versus a reactive inhibitor of unwanted behaviors.

Group Discussion: Using an asynchronous online platform, participants will provide feedback to each other. They will be asked to apply what they've learned in the Webinar, in light of their own knowledge and experience, to improve support of patients' needs in their current work environment. This discussion will help the

participants to relate the Webinar information to their own clinical realm, facilitated by feedback from other participants, which will lead to sharing of ideas for the change that is needed.

Participant Assignments: A synchronous in-person, hands-on practice, assignment will be completed at home or in the practice setting.

Assignment 1: Matching a patient's goals to his or her psychosocial needs

After completing this module and understanding its theoretical background, we will move from a system perspective to the patient's perspective.

Choose three post-stroke patients with whom you are currently treating or have previously treated. Answer the following:

- What are (or were) the treatment goals for these three patients according to their perspectives?
- Which of the ICF components are (or were) addressed by these goals?
- How achievable are (or were) these goals in their clinical environment?
- What do you anticipate will change as the result of rehabilitation? *OR* What changes did you observe as the result of rehabilitation?

Summary: In this lesson, participants have learned about the stroke rehabilitation process in Israel in light of the common approach and the gap between the health care system expectations and patient adaptation processes. Differences between the biomedical and psychosocial perspectives were used to illustrate how assessing a patient's basic psychological and psychosocial needs is key to successful

rehabilitation. Guidelines were provided for the recommended intervention. The next Webinar will focus on identifying patients at risk for therapeutic disengagement.

Figure A-1 Example of a slide describing the rehabilitation process in Israel

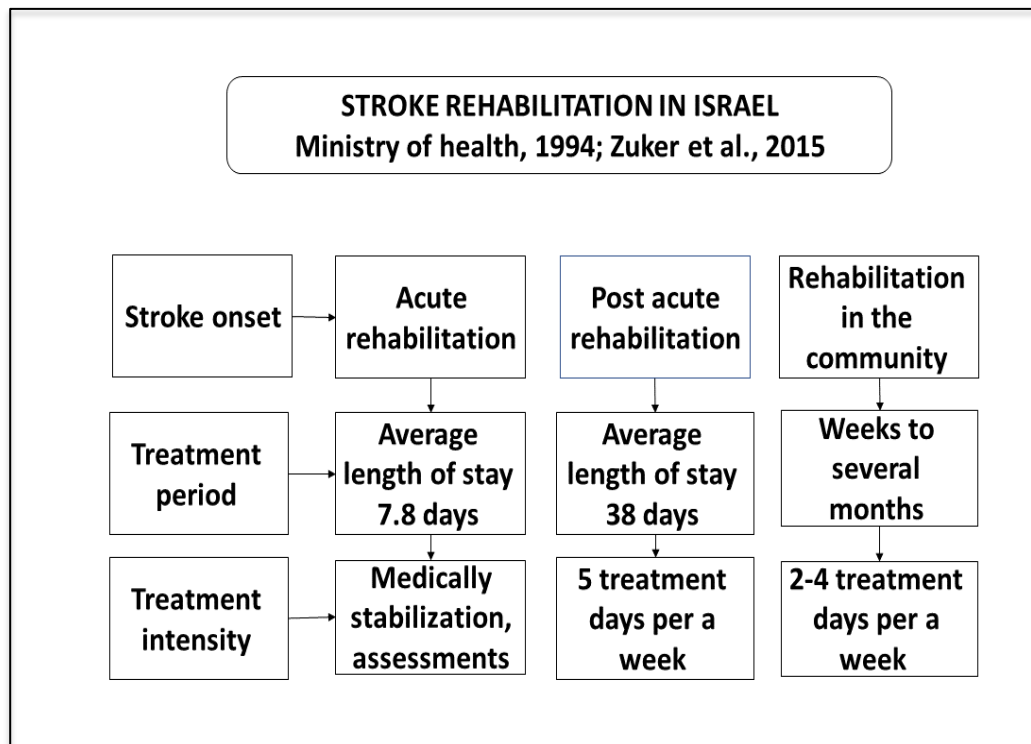


Figure A-2 Example of a slide describing the biomedical approach features

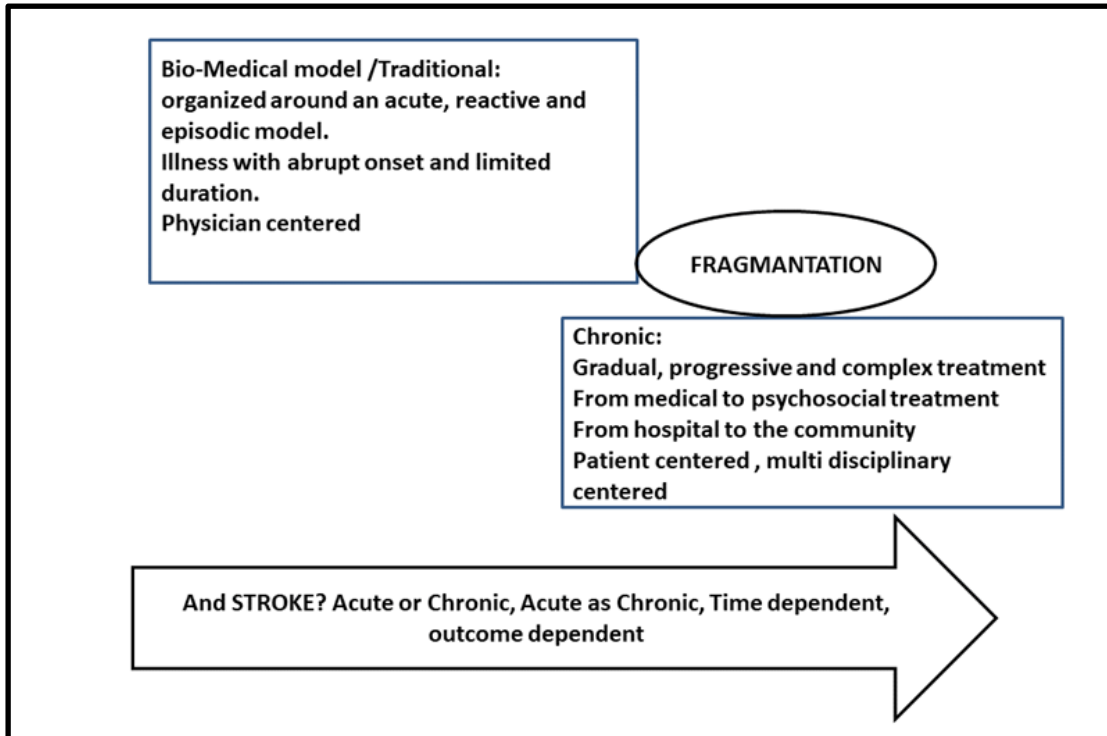
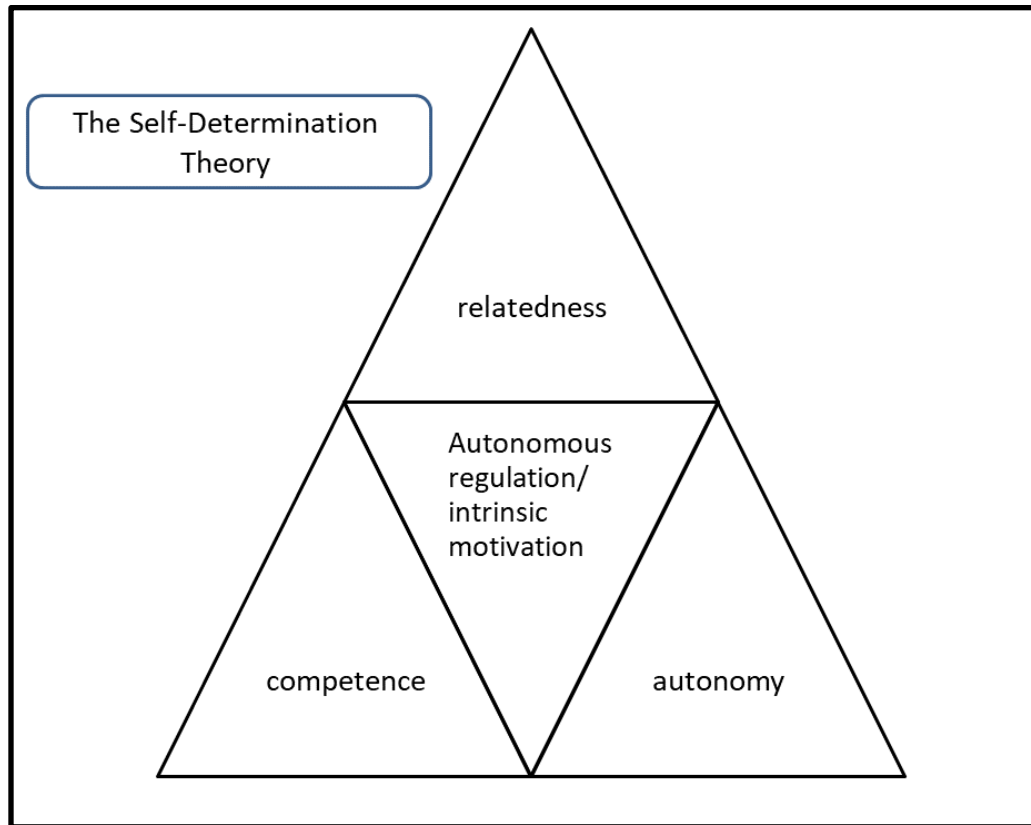


Figure A-3 Example of a slide illustrating the Self-Determination Theory constructs



Webinar 2 – Measures for identifying patients at risk for therapeutic disengagement

Overview:

After participants have expanded their knowledge about stroke rehabilitation service provision in Israel, they will be ready to examine in greater depth the construct of therapeutic engagement and barriers that may compromise patient success. The second Webinar is designed to increase participants' skill in assessing patients that may be at risk for low motivation, therapeutic disengagement and poor rehabilitation outcomes.

Participants will learn the psychometric properties and clinical utility of five assessment and screening measures, plus Goal Attainment Scaling, that are potentially applicable for this population. Strengths and limitations of each tool will be discussed.

Learning Objectives:

Following completion of the second module, participants will:

1. Identify constructs that are potential indicators of risk for therapeutic disengagement, lack of motivation, and inability to adapt.
2. Name the five assessment or screening measures that can be used to identify patient risk factors as described above.
3. Discuss the clinical usefulness of each measure, particularly important strengths and weaknesses for the participant's clinical setting.
4. Demonstrate the skill to administer each of the measures presented in the Webinar.

Live classroom content: Instruction will be delivered synchronously.

• **Introduction.** Participants will receive instruction regarding the theoretical construct of therapeutic disengagement, including contributing factors and consequences, which will be supported by typical clinical scenarios

• **Applicable Measures.** The following measures will be presented: the Health Care Climate Questionnaire (HCCQ) for assessing patients' perceptions of autonomy support provided by the health care provider, the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) for measuring satisfaction versus frustration of

psychological needs for autonomy, competence, and relatedness, the SF-36 and WHOQOL-BREF for measuring patients' quality of life, the Hospital Anxiety and Depression Scale (HADS) as a screening for depression and anxiety, the Pulse Profile as a measure of functional dependence, and a set of Goal Attainment Scaling (GAS) behavioral goals scaled for the construct of therapeutic disengagement. Figure A-4 illustrates an example of two items from the GAS content that will be presented to participants.

- psychometric properties of each measure will be provided following a demonstration of administration

Group activity: The participants will be divided to dyads and each will choose one measure to practice administration and scoring. Participants will share their experiences and discuss the strengths and weaknesses of each measure for use with patients with stroke in acute and post-acute rehabilitation.

Reading(s):

- Buria, L., Drori, Y., Geulayov, G., Schwammenthal, E., Kobaliov, A. & Dankner, R. (2015). The psychometric properties of the Hebrew version of the Hospital Anxiety and Depression Scale (HADS) in cardiac patients / (HADS — Hospital Anxiety and Depression Scale). *Gerontology & Geriatrics*, 42(1), 41-58.
- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E.L., Van der Kaap-Deeder, J... Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, 39 (2), 216-223. DOI 10.1007/s11031-014-9450-1.
- Chiu, W.T., Huang, S.J., Hwang, H.F., Tsauo, J.Y., Chen, C.F., Tsai, S.H & Lin, M. (2006). Use of the WHOQOL-BREF for evaluating persons with traumatic brain injury. *Journal of Neurotrauma*, 23 (11), 1609- 1620. <http://doi.org/10.1089/neu.2006.23.1609>

- Czajkowska, Z., Wang, H., Hall, N. C., Sewitch, M., & Körner, A. (2017). Validation of the English and French versions of the brief Health Care Climate Questionnaire (HCCQ). *Health Psychology Open*, 4 (2), 1-9.
- McDowell, I. (2006) *Measuring health. A guide to rating scales and questionnaires*. Third Edition. New York: Oxford University Press.
- Shankar, S., Marshall, S. K. & Zumbo, B. D. (2019, April 4). A systematic review of validation practices for the Goal Attainment Scaling measure. *Journal of Psychoeducational Assessment*, 1-20.
- Tetley, Jinks, Huband & Howells (2011). A systematic review of measures of therapeutic Engagement in psychosocial and psychological treatment. *Journal of Clinical Psychology*, 67, 927–941.

Demonstration: Asynchronous video presentation on assessment and intervention with a patient who demonstrates poor therapeutic engagement. Participants will be asked to fill in one GAS form for this patient according to behaviors observed during the video demonstration

Group Discussion: Using an asynchronous online platform and based on the first assignment, participants will discuss missing information about the patient that should be known and how the patient could be assessed.

Assignment 2. Assessing patients at risk for therapeutic disengagement.

Given learning about selected measures for use with patients at risk for therapeutic disengagement, participants will be asked to practice these measures with their own patients.

Choose one post-stroke patient that you have encountered in your clinical setting, preferably a patient that was already been assessed.

- Use each of the learned measures for reassessing this patient.

- Be prepared to answer the following: What have you learned about the patient based upon these measures? Would you change the patient's treatment plan accordingly?

Summary. Early identification of patients with poor motivation and those at risk for therapeutic disengagement is essential for enhancing their rehabilitation outcomes. In this lesson we first identified the constructs that constitute the term therapeutic engagement, and then listed measures with the potential to help practitioners in assessing these constructs. Use of these measures as an addition to the traditional occupational therapy evaluation will assist the occupational therapy practitioner addressing their patient's psychosocial needs. In the next Webinar we will learn and apply models for resolving this clinical scenario.

Figure A-4 Example of two items from the Goal Attainment Scale as compiled for therapeutic disengagement

Level of Attainment	Initiation	Persistence
Much less than expected: Score of -2	Therapist is initiating the activity for the patient using physical facilitation.	Patient discontinues activity when 49% or less is completed
Somewhat less than expected: Score of -1	Therapist is initiating the activity for the patient using verbal facilitation.	Patient discontinues activity when 50–90% is completed
Expected level of outcome: Score of 0	After being instructed, patient initiates the activity without the need of further facilitation	patient discontinues activity when encountering problem. Or complete the activity when not encountering problem
Somewhat more than expected: Score of +1	Patient initiates the activity without the need of any instruction from the therapist	When encountering problem patient self-refer to therapist for problem solving and instruction
Much more than expected: Score of +2	Patient asks for the specific activity	Patient complete activity and self-problem solve

Webinar 3 – models for interventions.**Overview**

Stroke rehabilitation is a process in which the patient is asked to cooperate and to actively engage in his or her therapeutic activities during and outside of treatment hours. The role of the healthcare provider is to facilitate and maximize his or her patient's engagement.

Literature review and needs assessment that were conducted by the author revealed a gap in knowledge and practical tools that clinicians can implement when addressing cases where therapeutic disengagement is demonstrated (MacDonald, Cayes & Bright, 2013).

This Webinar will highlight the role of the occupational therapist as an active facilitator of the patient's engagement by demonstrating models for intervention in cases of therapeutic disengagement.

Learning Objectives:

Following completion of the third module, participants will:

1. List 3 possible clinical reasoning process for effective communication. Namely the 5A's, M.U.S.T, and S.H.O.W.
2. Explain the rationale for selecting each of the models presented.
3. Demonstrate the application of each model with patients after a stroke.

Live classroom content: Instruction will be delivered synchronously.

• **Introduction.** Why do we need a model? Participants will be asked to name models that they are applying in their clinical practice and to describe whether they use each as a method or as an approach.

- **Presenting the 5A's.** The 5A's are: Ask, Assess, Advise, Agree, and Assist. This model was initially used in programs where the objective was change in health behaviors such as weight-loss and smoking cessation. It will be discussed in terms of implementation in acute and post-acute stroke rehabilitation environments. The 5A's will be taught within the framework of Self-Determination Theory.

- **Presenting the M.U.S.T model.** The author created this model to guide clinicians in achieving effective and efficient communication with their patients. As patients after a stroke need to deal with a great amount of information on the one hand, on the other hand they have limited available cognitive, emotional and sensorimotor resources. The information that is presented to them needs to be graded to their ability to cope and process it. Figure A-5 illustrates the M.U.S.T wording and meaning.

- **Presenting the S.H.O.W. model.** S.H.O.W stands for setting goals and expectations, assessing how the patient performs given his or her condition, discussing anticipated outcomes, and deciding on the treatment plan. The model was developed by the author to be implemented in various phases of the rehabilitation process. At the initial phase, it can help the therapist in choosing treatment goals and explaining their rationale to the patient. At the treatment level, it helps the therapists to plan their treatment and relate it to patients' goals. Table X expands the set the expectations or goals in relation to the therapist's role and the SDT concept.

Group activity: Each participant will be asked to write an example of a phrase that can be used with patients and then explain its application to SDT basic needs.

Reading(s):

- Fortier, M.S., Sweet, S.N., O'Sullivan, T.L. & Williams, G.C. (2007). A self-determination process model of physical activity adoption in the context of a randomized controlled trial. *Psychology of Sport and Exercise*, 8 (5), 741–757.
- Lonsdale, C., Hall, A.M., Williams, G.C., McDonough, S.M., Ntoumanis, N., Murray, A. & Hurley, D.A. (2012). Communication style and exercise compliance in physiotherapy (CONNECT). A cluster randomized controlled trial to test a theory-based intervention to increase chronic low back pain patients' adherence to physiotherapists' recommendations: study rationale, design, and methods. *BMC Musculoskeletal Disorders*, 13(104), 1-15.
- MacDonald, G.A., Kayes, N.M & Bright, F. (2013). Barriers and facilitators to engagement in Rehabilitation for people with stroke: a review of the literature. *New Zealand journal of Physiotherapy*, 41(3), 112-121.

Demonstration: Asynchronous video presentation. In this video, a clinical scenario will be presented using the 5A's model.

Assignment 3. Model implementation.

- Participants will be asked to choose one model and to apply it with one of their patients.
- After applying the model selected, they will write or record feedback for using this model.
- The feedback will be shared for another participants response.

Summary. Participants were presented with three clinical reasoning step-by-step problem-solving exercises to enhance their patients' understanding, awareness, motivation and engagement. Each participant used acquired knowledge and skills for implementing the three models with his or her patients. In the next Webinar we will look at creating a needs-supportive environment that will make use of the above models to

implement Self Determination Theory and promote improved patient adaptation in post-acute stroke rehabilitation.

Figure A-5 The M.U.S.T model: abbreviation and meaning

Just the MUST information

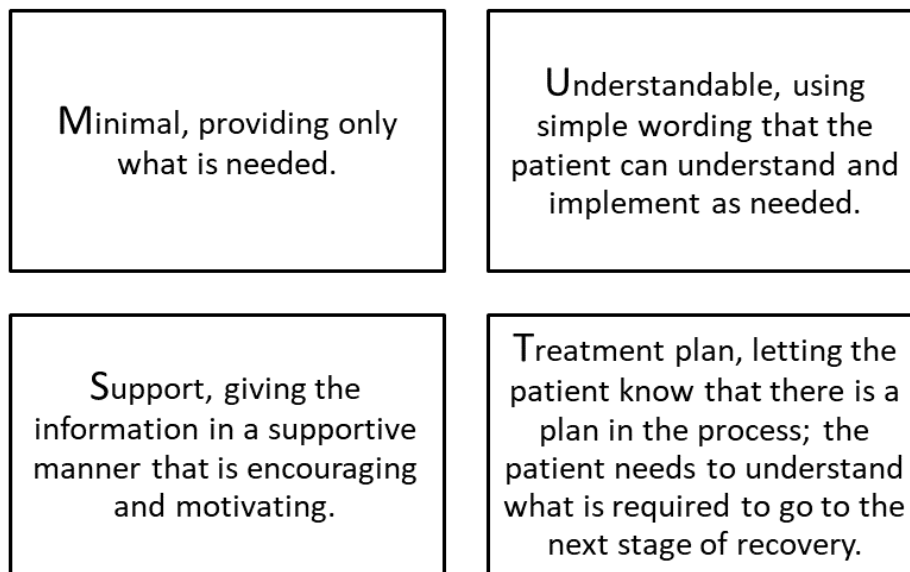


Table A-1 Set the expectations/goals from the S.H.O.W

The process	Objective	Therapist role	SDT concepts
Set the expectations/Treatment goals	The process of active collaboration and communication to set the treatment goals and expectations.	<ul style="list-style-type: none"> • Support and give assurance for patient's feelings and emotions • Ensure patient's understanding of: the rehabilitation process and its necessity for his or her recovery his role and what are expected from him or her. • Give information as needed about stroke, its consequences and the rehabilitation process. • Assess patient's awareness of his or her impairments and their implications. • emphasize patient abilities and give feedback for any effort to engage. • facilitate, encourage, support 	<p>Autonomy: the patient is an active participant in selecting the treatment goals. In light of client-centered approach the patient determines the treatment goals.</p> <p>Competence: will be supported by emphasizing patients residual functional or other abilities. Emphasize goals that are achievable in short term and can highlight success.</p> <p>Relatedness: the therapist is conducting an open communication, in a respectful and supportive manner. The therapist is not judgmental but accept patient ideas.</p>

Webinar 4. Creating a needs-supportive environment.**Overview**

After assessing patients at risk for therapeutic disengagement and applying intervention models for facilitating motivation and engagement it is time to implement Self Determination Theory and create a needs-supporting environment. In this Webinar, participants will be given guidelines to apply SDT and will discuss clinical applications.

Learning Objectives:

Following completion of the fourth module, participants will:

1. List interventions that relate to the three basic psychological needs.
2. Describe behaviors that demonstrate an intervention to meet each basic psychological need.
3. Demonstrate the application of the intervention with patients after a stroke.

Live classroom content: Instruction will be delivered synchronously.

- Review of the Determination Theory concepts and the three basic psychological needs.
- Creating a needs-supportive environment, including behaviors that are expected from the practitioner in order to facilitate each basic need.
- Participants will be presented with examples of applicable behaviors. Silva, Marques & Teixeira (2014) summarized the fundamental ingredients for needs supportive techniques, according to the three basic psychological needs described in Self Determination Theory (SDT). For autonomy support they advised healthcare practitioners to provide relevance,

demonstrate respectful behavior, offer choices and avoid controlling behaviors. For supporting competence, their advice was to coordinate expectations, ask for the right challenge, provide feedback, and promote the patient's skills. The basic psychological need for relatedness is supported through demonstration of empathy and affection, learning about the patient, allocating sufficient treatment time, and being available for the patient when a need arises. Table A-2, which organizes and expands upon the “how-to” of creating a needs supportive environment for occupational therapy practitioners that work with acute and post-acute stroke patients, will be made available during the author’s webinar-based course

Group Activity: list the characteristics of the role of being a patient and how OT's can facilitate this role.

Reading(s):

Ryan, R.M. & Deci, E.L. (2017). Self-determination theory, basic psychological needs in motivation, development and wellness. New York, NY: The Guilford Press.

Silva, M.N., Marques, M.M.& Teixeira, P.J. (2014). Testing theory in practice: The example of self-determination theory-based interventions. *The European Health Psychologist*, 16(5), 171-179.

Group discussion: Using an asynchronous online platform, participants will share their thoughts about changing the human and non-human environment to meet practitioner-therapist and therapist-practitioner expectations.

Assignment 4. Creating a needs-supportive environment.

Participants will be asked to use the downloadable handout to create a treatment plan for one

of their patients considering his or her: • psychosocial needs • experience of the three psychological basic needs • the role of a patient • goals that are relevant to this phase of the rehabilitation.

Summary. In this Webinar, live classroom, activities, discussion and an assignment were used to support participants' in-depth understanding of Self-Determination Theory and its application with post-acute patients after a stroke. Participants were provided with a beginning set of desirable behaviors that should be employed when treating these patients. Participants practiced the desired behaviors and were given feedback accordingly. They are encouraged to continue acquisition of knowledge and skills that will expand their own ability to effectively treat patients after a stroke.

Table A-2 Illustration of a downloadable handout that participants can use when implementing the SDT in their clinical environment.

Creating a Needs Supportive Environment in Stroke Rehabilitation		
SDT	Objective	Intervention Description
Supporting Autonomy	Provide relevance	<p>At the activity level, explain to the patient how engaging in a therapeutic activity will lessen his or her impairment or activity restriction.</p> <p>At the participation level, explain how lessening impairment will allow greater participation.</p>
	Demonstrate respectful behaviors	<p>Recognize that the patient will have prior attitudes and feelings toward a therapeutic activity, the tools that are being used, and/or the context.</p> <p>Acknowledge the patient’s feelings and engage him or her in dialog. The patient may feel that he or she need better understand why any therapeutic activity, tool, and/or context would be beneficial.</p>
	Promote opportunities for choice	<p>If the patient does not wish to engage in a specific activity, even with further explanation of its therapeutic value, provide options that he or she might find to be more acceptable.</p> <p>Consider options for the therapeutic activity, the tools that are being used, the context, and treatment time if possible. If the patient does not want to attend his or her treatment at the designated time, give him or her the option to attend at a more preferable time.</p>
	Avoid controlling behaviors	<p>Recognize that a patient may have limited resources to adapt, understand and respond to expectations. His or her learning is likely based on trial-and-error and cause-and-effect. Allow sufficient time for the patient to initiate, respond and change behaviors. Do not urge or communicate blame or guilt. Instead provide the needed time and support.</p>

SDT	Objective	Intervention Description
Supporting Competence	Set realistic expectations	<p>Collaborate with the patient to set realistic treatment goals that are consistent with his or her personal goals and expectations. Apply professional skills and knowledge to take into consideration existing activity restrictions, impairments, projected length of rehabilitation, and treatment frequency.</p> <p>During treatment, introduce graduated therapeutic activities that are consistent with the patient's current ability and that can be successfully performed. Adjust goals and coordinate with the patient's personal goals and expectations throughout the process as indicated.</p>
	Give the appropriate level of challenge	<p>Aim to provide the patient with a positive experience of success. Avoid an activity that might lead to an experience of failure or incompetence. Grade the activity to a level in which the patient CAN engage and CAN succeed. Start with goals that relate to the patient's role in rehabilitation, and when he or she experiences success, progress to goals that relate to life roles.</p>
	Provide feedback	<p>Understand that the therapist is a mirror that reflects a patient's behaviors and outcomes, and that a patient needs feedback and approval to change, adjust, adapt, and grow. Lack of feedback can cause uncertainty and confusion as well as reinforce unwanted behaviors.</p> <p>Deliver feedback using supportive and effective communication.</p>
	Promote relevant life skills	<p>Recognize that a patient must progress during treatment and acquire skills that he or she can use in rehabilitation and activities of daily life. Whether through rehabilitation approaches or compensatory strategies, mastery of physical and interpersonal environmental demands is imperative.</p>

SDT	Objective	Intervention Description
Supporting Relatedness	Demonstrate empathy and affection	Understand that a patient's subjective experiences mediate his or her reactions to interpersonal and environmental inputs and ability to adapt. Provide support and assurance and seek to establish empathy.
	Learn about the patient	Use a person-centered approach in which you see each patient as a unique individual. Discover his or her life roles, personal goals, needs, and values. Learning about the patient will help you to tailor goals, therapeutic activities and contexts in ways that are motivating.
	Allocate the needed treatment time	Plan to allocate sufficient time to support therapeutic engagement and eliminate the need to urge the patient. Creating a supporting and enabling environment requires collaboration and effective communication. This dynamic process should not be rushed.
	Be available to meet patient needs	A patient may need your support, not only during treatments, but also before, after, and between sessions. Avoid having the patient wait for his or her treatment session to resolve what he or she perceives as urgent. Ensure that the patient feels confident that, whenever he or she is in need, there is someone available to listen and respond. Explain when it is appropriate to address the nurse, nursing assistant or other health care provider when a need arises. Remember that most patients are not medically educated, and that what you as a health care provider perceive as a routine issue, a patient may perceive as urgent and critical.

APPENDIX B. NEEDS-ASSESSMENT SURVEY

For questions 1 through 5, please mark your response to each question by circling the number on the 1 to 10 scale that best represents your answer. 1 indicates "not at all" and 10 indicates "a great deal"

1. How relevant was the information provided to your current clinical situation.									
1	2	3	4	5	6	7	8	9	10
2. How suitable was the model that was presented for past or present patients that you have seen in therapy?									
1	2	3	4	5	6	7	8	9	10
3. To what extent does the information provided add to your current knowledge									
1	2	3	4	5	6	7	8	9	10
4. How confident are you that you would be able to implement aspects of the information presented with your next patient?									
1	2	3	4	5	6	7	8	9	10
5. To what extent do you believe this model is suitable as part of the team process with nurses, PTs and physicians? In other words, would the holistic approach to working with patients be									
1	2	3	4	5	6	7	8	9	10

Please respond to questions 6 through 10 below by writing in your short answer:

6. What did you like best about the information provided ?

7. What did you like the least?

8. What did you find to be most useful?

9. What did you find to be least useful?

10. What are your suggestions for improving this educational presentation

APPENDIX C. POST-COURSE SURVEY

Promoting an autonomy-supportive environment based on self-determination theory, to improve patient outcomes in acute and post-acute stroke rehabilitation.

Purpose: this survey is aimed to evaluate the knowledge and skills that you have acquired from participating in this introductory-level course and will help us with the development of future courses.

Instructions: For questions 1 through 5, please mark your response to each question by circling the number on the 1 to 7 scale that best represents your answer. 1 indicates "not at all" and 7 indicates "a great deal".

	Not at all \longrightarrow a great deal						
1. How relevant was the information provided to your current clinical situation?	1	2	3	4	5	6	7
2. How suitable was the models that were presented for past or present patients that you have seen in therapy?	1	2	3	4	5	6	7
3. To what extent does the information provided add to your current knowledge?	1	2	3	4	5	6	7
4. How confident are you that you would be able to implement aspects of the information presented with your next patient?	1	2	3	4	5	6	7
5. what extent this program will be suitable for application in your current environment?	1	2	3	4	5	6	7

In questions 6 through 14, please grade your confidence about the knowledge you have gained by circling the number on the 1 to 7 scale. 1 indicates "not at all" and 7 indicates "a great deal".

	Not at all \longrightarrow a great deal						
7. knowledge about stroke rehabilitation process according to the NHL in Israel	1	2	3	4	5	6	7
8. knowledge about the biomedical and the psychosocial approaches	1	2	3	4	5	6	7
9. knowledge about therapeutic engagement	1	2	3	4	5	6	7
10. knowledge about properties of the self determination theory and the three basic psychological needs	1	2	3	4	5	6	7

11. knowledge about adaptation process following stroke	1	2	3	4	5	6	7
12. knowledge about assessment of patients at risk for therapeutic disengagement.	1	2	3	4	5	6	7
13. knowledge about models of intervention for effective communication	1	2	3	4	5	6	7
14. knowledge about creating a needs-supportive environment.	1	2	3	4	5	6	7

In questions 15 through 19, please grade your confidence about the skill you have acquired by circling the number on the 1 to 7 scale. 1 indicates "not at all" and 7 indicates "a great deal"

	Not at all \longrightarrow a great deal						
15. skill of identifying patients at risk for therapeutic disengagement	1	2	3	4	5	6	7
16. skill in using selected measures for the assessment of patients at risk for therapeutic disengagement.	1	2	3	4	5	6	7
17. skill in using the learnt models namely the 5A's, the M.U.S.T, and the S.H.O.W for creating an effective communication with my patients and resolving cases of poor motivation and therapeutic disengagement	1	2	3	4	5	6	7
18. skill in creating a needs-supportive environment in acute and post-acute stroke rehabilitation	1	2	3	4	5	6	7
19, skill in educating for a holistic, psychosocial approach in stroke rehabilitation provision.	1	2	3	4	5	6	7

APPENDIX D. POST-COURSE KNOWLEDGE EXAM

Purpose: the following questionnaire will evaluate the knowledge you have acquired during this course. These data will help us in adjusting the course content to meet occupational therapists' needs.

1. For each of the following statement please state whether it describes:

A – the biomedical approach

B – the psychosocial approach

acute, reactive episodic model.

suitable for more chronic illness

was constructed to deal with abrupt event with limited duration.

physician-centered

patient- centered

multi-disciplinary-centered

2. which of the following **IS NOT** considered as a barrier for patient's therapeutic engagement according to the approach that was learnt in the course.

A. according to the National Health Law rehabilitation after a neurologic event will be no less than 25 days.

B. the rehabilitation process is an active, dynamic process where each one of its participants have a role for its success.

C. In the rehabilitation environment the therapists determine the daily or weekly schedule for their patients' treatments, activities, meals and resting time.

D. the rehabilitation structure is constructed from several health-care providers in two to three rehabilitation settings.

3. Therapeutic engagement can be considered as:

- A. The precursor to occupational engagement.
- B. Undertaking an activity that is considered to be therapeutic.
- C. Commitment to therapy.
- D. A+C.

Please read this clinical scenario and answer the following questions:

Mr. V. a 51 years old male, was admitted to your post-acute rehabilitation ward 3 days after experiencing an ischemic stroke affecting his rt. Frontotemporal lobe. After the stroke Mr. V. uses a walking cane and an ankle-foot orthosis for ambulating with supervision and needs assistance with his other ADL's activities. His orientation is intact, and he demonstrates good communications abilities. Mr. V. is attending his therapy sessions and follows his therapists' recommendations; however, he expresses difficulty with emotional and self-regulation exhibit by yelling, crying and expressing pain not correlated with any circumstances.

As Mr. V. behavior started to disrupt other patients being in the occupational therapy room, his therapists presented less tolerance towards this behavior urging him to "behave himself". Eventually, Mr. V. treatments were carried out in a different, more isolated room.

4. according to the Self-Determination Theory which basic psychological need was not supported in MR. V. treatment.

A. the basic psychological need for relatedness.

B the basic psychological need for autonomy.

C. the basic psychological need for competence.

D. all the above.

5. According to the Self-Determination Theory what seems to motivate Mr. V.

A. Mr. V. is amotivated.

B. Mr. V. is externally motivated by external motivation.

C. Mr. V. is externally motivated by integrated motivation.

D. Mr. V. is motivated by intrinsic motivation.

6. your manager has asked you as a "motivational expert" to become Mr. V. case manager. What information is missing for you to better manage this case scenario?

7. name at least 4 measures that will help you assess the above missing information and explain the rationale for choosing these measures.

8. if you were to use the GAS that was compiled for therapeutic engagement with Mr. V. which of its constructs was marked as MORE AFFECTED

- A. self-awareness.
- B. initiation.
- C. persistence.
- D. level of communication.

9. using the S.H.O.W, how would you communicate with Mr. to create a more effective communication and enhance his engagement.

S _____
H _____
O _____
W _____

In the next questions write best answer that represents the information that you have learnt in this course.

10. for each of the 5A's give an example of a phrase demonstrates behavior that you would use with patients after a stroke.

Ask _____
Assess _____
Advise _____
Agree _____
Assist _____

11. use the above phrases and adjust them to the M.U.S.T

M _____

U _____

S _____

T _____

12. for each of the following statements mark to which of the SDT constructs they refer to

A autonomy, **B** competence, **C** relatedness.

_____ Provide relevance.

_____ Set realistic expectations.

_____ Give the appropriate level of challenge.

_____ Allocate the needed treatment time.

_____ Be available to meet patient needs.

_____ Promote relevant life skills.

_____ Avoid controlling behaviors.

_____ Promote opportunities for choice.

APPENDIX E. EXECUTIVE SUMMARY

Promoting an autonomy-supportive environment, based on self-determination theory, to improve patient outcomes in acute and post-acute stroke rehabilitation

Introduction

It is well-recognized in Israel and other Western countries that stroke is one of the leading causes of mortality and morbidity in older adults. According to the Israel Center for Disease Control, the incidence rate for stroke in this country from 2014 to 2016 was 3.2 per every 1000 people (Ram et al., 2019). Individuals who have suffered a stroke are sent to inpatient rehabilitation programs to be treated for the physical and cognitive abnormalities resulting from this condition. Stroke rehabilitation is a process that involves multiple stakeholders, from service providers to administrators and policymakers, who coordinate their efforts to enable the patient to adapt to this life-changing event and to regain his or her functional abilities as much as possible while controlling costs. The current trend in rehabilitation is to address impairment and to teach compensatory strategies, with the patient's ability to participate in society as the desired outcome (National Institute for Care and Excellence, 2013).

Rehabilitation service provision and the human resources involved in the process, coupled with the medical and personal support that the stroke survivor needs for his or her everyday function, add a significant financial burden to the public health and welfare systems (Wang et al., 2014; Winstein et al., 2016; WHO, 2011). Thus, the time patients spend in rehabilitation, and the services provided, may be limited in order to manage costs (Ministry of Health, 1994; Ministry of Health, 2009). This can lead to undesirable outcomes, such as greater functional limitation, activity restriction, chronic health issues,

and decreased quality of life when the patient's needs in rehabilitation are not met (WHO, 2011).

For the rehabilitation process to be judged as being successful, the patient must demonstrate motivation by attending therapy sessions, being fully and actively engaged, understand and follow the healthcare providers' instructions, and progress in his or her functional abilities (Kennedy & Davis, 2017; MacDonald, Cayes, & Bright, 2013). All of these demands and requirements occur at the same time that patients are adapting to adverse life changes (Peoples, Satink, & Steultjens, 2011). Problems can arise when healthcare providers focus on the person's biomedical issues and neglect his or her psychosocial needs, which can promote poor motivation and disengagement from therapy. This person may demonstrate depression, decreased participation and limited functional abilities, and eventually he or she might be regarded as a rehabilitation failure (Kennedy & Davis, 2017; Lequerica & Kortte, 2010; MacDonald, Cayes, & Bright, 2013).

The author has created an educational program for occupational therapy practitioners working in acute and post-acute stroke rehabilitation in Israel to enhance their ability to identify and provide effective intervention for patients that demonstrate low motivation and therapeutic disengagement, and therefore are at risk for rehabilitation failure. The aim is to teach practitioners methods for creating a rehabilitation environment that supports a patient's basic psychologic needs, increases his or her feelings of autonomy, competence, and relatedness, and promotes effective communication. After completing this educational program, participants will have gained

the knowledge and basic skill foundation for improving their patients' motivation and engagement in the rehabilitation process in a way that can optimize rehabilitation outcomes.

Project overview

The proposed educational program will be delivered through a series of webinars. This platform was chosen because of its accessibility to practicing occupational therapists who may find it difficult to balance their work demands with continuing education. There is also evidence literature to support that e-learning provides an efficient and effective interactive learning environment that can produce outcomes equivalent to traditional instructional approaches (Cook, et al., 2008; Wong, Greenhalgh, & Pawson, 2010). The program objectives are to:

- 1) Increase participants' knowledge for screening stroke patients to identify individuals at risk for rehabilitation failure because of low motivation and disengagement. The author will introduce selected measures translated from English to Hebrew and evaluated to confirm psychometric properties. The original authors of these measures have given approval for translation.
- 2) Provide the means whereby participants can develop a more in-depth understanding of patient's individual psychological needs, which when met will promote motivation.
- 3) Teach a clinical reasoning, step-by-step problem-solving process, and intervention model that will lead to more effective communication with patients that will enhance their motivation.

4) Instruct participants in practical approaches for creating a needs supportive environment.

The author has developed a series of four introductory level instructional modules for a course that is intended for occupational therapy practitioners. Program content is based on integration of known theories such as Self-Determination Theory, which is a model of motivation, and the 5 A's model for self-management support, plus other theories from occupational therapy. He has also created the prototype models for effective therapist-patient communication (the MUST) and clinical reasoning (the SHOW) to guide clinicians in a step-by-step problem-solving approach to clinical reasoning. The building of these models was based on literature review followed by a series of presentations and needs assessment inquiries with occupational therapists, physical therapists, nurses and physicians.

Teaching methods will include lecture, video presentations, discussion, demonstration, activities, and assignments. The author will employ aspects of social learning theory found to be relevant for health care professionals to enhance learning (Braungart, Braungart, & Gramet, 2019). First, social modeling will be provided through live classroom presentations, videos, and case studies, to illustrate methods for application of the module content. Second, to enhance active learning through experience, participants will be asked to exemplify their understanding and skills by implementing the knowledge they have acquired. The author and colleagues will then offer feedback. Other activities for participants to demonstrate their comprehension will be group discussions and assignments that will be included in each module. The

instructional materials will be accessible to all the participants throughout the learning period and will include downloadable resources.

Execution plan

After a confirmatory process in which a team of experts will evaluate the planned content and delivery, research questions and design, the course and accompanying program evaluation research will be launched. Sixteen practitioners from occupational therapy departments in post-acute stroke rehabilitation settings in Israel will be recruited to participate in the webinar. Inclusion criteria will be Hebrew language native speaker, agreement to fulfill all course requirements, and commitment to complete all requested program evaluation surveys and interviews. Qualitative and quantitative data will be gathered in the surveys to explore the effectiveness, utility and applicability of program content and delivery, as well as increase in participants' knowledge and skills. Surveys will include open-ended questions, rating scales and multiple-choice items. Information on participant characteristics, number of live classroom views, and discussion posts will be also collected for descriptive analysis.

Online surveys will be administered prior to and immediately following webinar delivery, to be designated as T1 and T2 respectively, and three months post program completion at T3. During T3, the author will conduct a semi-structured interview with each participant, which will be scheduled by email or phone and executed using the Zoom virtual conference application. Appropriate quantitative analysis will provide descriptive statistics and determine change over repeated measurements. The qualitative interviews will be recorded and transcribed, then organized for thematic analysis using a

designated software. Reports of findings will be generated with attention to the information needs of different stakeholder groups, ranging from a condensed paragraph to a more comprehensive executive summary or prospectus.

A funding plan for program implementation was developed for presentation. According to this plan, expenses over two years will be \$7264 (U.S. dollars) converted from Israel's local currency. This will cover salary for the primary investigator, equipment and supplies, set-up and maintenance of the e-learning platform, program evaluation research, and dissemination of findings.

Considerations

Some barriers to program implementation need to be taken into consideration. These will be communicated to prospective participant in the introductory letters and consent forms. First, program commencement is dependent upon the cooperation of occupational therapists being asked to participate in an educational program that may highlight difficulties in their current stroke rehabilitation settings. Second, the planned four modules to be administered over a four-week period may be too short of a timetable to demonstrate sufficient improvement in participants' knowledge and skills. Third, program participants will need a means of access to stroke patients during the program to implement and demonstrate the learned content. In some rehabilitation settings, practitioners treat diverse populations, and stroke patients are not always on their caseload. Fourth, changing patient motivation by creating a needs-supportive rehabilitation environment is a gradual and time-consuming process. Thus, program participants who take steps to implement what they have learned may not see positive

results during the time period of the webinar or even three months later.

About the Developer

The program developer is an occupational therapist in Israel and an occupational therapy clinical doctorate candidate with 22 years of experience working with stroke patients at various stages of the rehabilitation process. He has been teaching post professional courses in stroke rehabilitation to occupational therapists and physical therapists for many years.

Conclusion

A person with a stroke experience of loss after this sudden event, including his or her sense of autonomy, competence and relatedness, coupled with demands for engaging in time consuming rehabilitation within the cost-effectiveness constraints of the health care system, can lead to mismatched expectations. The result may be insufficient patient motivation, frustration, therapeutic disengagement and ultimately the pronouncement of rehabilitation failure. The author proposes a web-based educational program designed to address this dilemma. Clinicians will be guided in step-by-step methods to create a needs-supportive environment, with effective practitioner-patient communication, that addresses patients' therapeutic engagement and motivation. The program is to be delivered over four weeks in a e-learning environment to enhance its accessibility, effectiveness and efficiency. Program evaluation and funding plans were introduced. The author envisions his program to be a starting point in facilitating fundamental change in the rehabilitation of stroke patients in Israel.

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APPENDIX F. FACT SHEET

Educational program for
Promoting an Autonomy-Supportive
Environment In Stroke Rehabilitation

Eldad Grinberg, M.Sc.O.T, OTD candidate

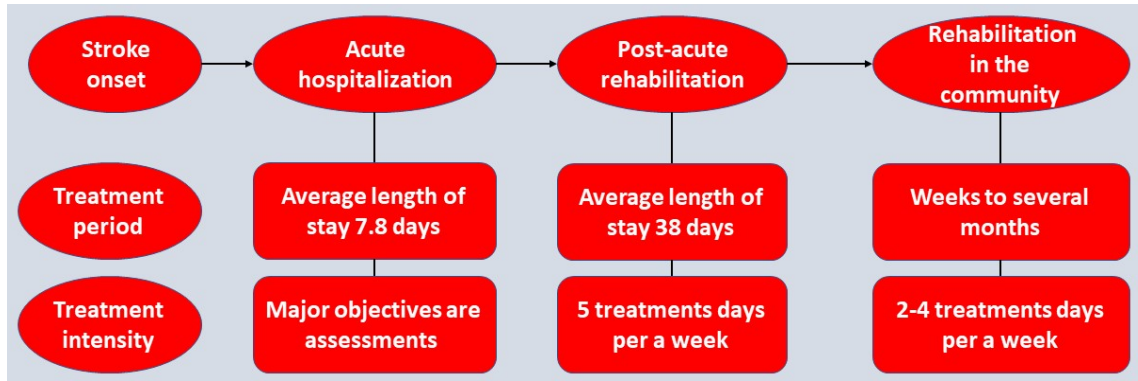
Program description

An introductory course in a four-lesson e-learning environment-based webinar for occupational therapists working in acute and post-acute stroke rehabilitation. To enhance learning efficiency and effectiveness, this educational program has the following characteristics: active engagement in the learning activities using assignments, discussions and live classrooms, educator demonstration of learning content implementation following by participants' application, and both educator-participant and participant-participant feedback.

Stroke rehabilitation overview

- Stroke is known as one of the leading causes for disability in Israel and other Western countries (Ram, et al., 2019).
- Patients after having a stroke are sent to rehabilitation, which was found to have a positive effect on patients' impairments, activity restriction, and social participation (National Institute for Care and Excellence, 2013).
- Rehabilitation service provision, and the human resources involved in the process, add a significant financial burden to the public health and welfare systems (Wang et al., 2014).

Flow of the rehabilitation process in Israel



Barriers to a successful rehabilitation process

- The time patients spend in rehabilitation, and the services provided, may be limited in order to manage costs (Ministry of Health, 1994).
- The patient must demonstrate motivation and active engagement while he or she is adapting to adverse life changes.
- Treatment goals may emphasize the biomedical model and under-represent psychosocial factors and the basic needs of the patient.
- **Unmet basic psychological needs may lead to a lack of autonomous motivation, therapeutic disengagement and eventually rehabilitation failure.**

Course content

A unique application of an existing theory of motivation, Self Determination Theory, is integrated with occupational therapy models and other theoretical backgrounds to create a step-by-step approach to clinical reasoning and problem solving that includes:

- Specific measures for identifying patients at risk for therapeutic disengagement.
- Guidelines for effective therapist-patient communication.
- Methods to enhance the patient's role as a participant in the rehabilitation process.
- Creating a needs supportive environment in stroke rehabilitation.

Implications for occupational therapy practice

- Therapeutic engagement will be recognized as the precursor for occupational engagement.
- As members of a holistic profession that embodies psychosocial models, occupational therapists will enhance their knowledge and skills in stroke rehabilitation that traditionally has emphasized the biomedical model.
- Effective communication with patients, needs-supportive environment and increased therapeutic engagement will improve occupational therapy treatment outcomes.

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