Self-management for chronically ill older people

Elzen, Henrike Anje

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General introduction

1.1 Background

The Dutch population is ageing, and it is estimated that in 2025, 20.1% of the Dutch population will be 65 years of age or older [1]. Many older people experience health problems. Moreover, they are often confronted with one or more chronic diseases, i.e. comorbidity [2]. In 2000, 70% of people aged 65 and over in the Netherlands suffered from a long-term illness, and in 2002, people aged 65 years and over in the Netherlands had, on average, 1.48 diseases [3]. The most common chronic diseases among older people in the Netherlands are cardiovascular diseases, diabetes, lung diseases, neurological diseases, and diseases of the locomotive apparatus [3]. It is expected that the number of diseases that mainly occur at a higher age, such as coronary heart diseases, heart failure, stroke, dementia, lung diseases, and diabetes, will increase between 1994 and 2015 [4].

The impact of chronic conditions on health is substantial, it varies according to condition, and, for most conditions, it involves all aspects of functioning and well-being [5-10]. Chronic diseases may lead to severe and immediate disability, as well as progressive disability that slowly decreases the ability of older people to care for themselves [11].

Comorbidity is associated with an increase in the costs and the utilization of health services [2;12]. In the Netherlands, 42% of the health care budget is spent on patients of 65 years of age and older [4]. It is expected that in the period from 1994 to 2015, health care utilization will increase as a result of demographic developments, among which the increasing number of older people [4]. Hospitalization is expected to increase by 26%, visits to outpatient clinics by 19%, pharmaceutical use by 27%, expenditures on aids (such as walking aids, hearing aids, etc.) by 30%, home care by 30%, and district nursing by 26%.

The current focus of the health care system in the Netherlands is mainly on acute care and on cure, with treatment usually aimed at correcting biological abnormalities and preventing overall deterioration [13-15]. The care that is provided is often fragmented, because for each disease patients usually see a different medical specialist. Health care is thus physician-centered, and the physician is the expert. However, chronically ill patients have to cope with their disease on a day-to-day basis and are, therefore, on their own for most of the time. Moreover, in general, patients with chronic diseases do not only have biomedical problems, but also psychosocial and societal problems, to which the current health care system pays relatively little attention. Therefore, chronically ill patients might need a more patient-centered approach, in which the patient is the expert with regard to his or her own health care.

Given a certain discrepancy between the focus of the health care system and the specific needs of chronically ill older patients, there is a need for additional means of delivering care. These additional means may include developing new therapies, building more nursing homes, stimulating volunteer aid, or developing new technologies with regard to housing or care. However, most of these means are rather costly, and mainly focus on the physical aspect of a chronic disease. Furthermore, the active involvement of the patient in these issues is usually minimal. It seems, however, important to enhance the active involvement of chronically ill patients in their own health care, because they themselves are responsible for the daily management of their disease. Older patients, in particular, are often less actively involved in the management of their disease, because they might perceive their chronic disease as part of the aging process and therefore do not take action. Moreover, older people have many years of experience with a medical system in which the professional was usually regarded as the expert and the patient only passively adhered to treatment prescriptions and was therefore not actively involved.

One way to promote a more active involvement of older people with chronic diseases in their own health care is to offer them self-management programs that teach them how to manage their chronic disease. Given the impact of a chronic disease on various aspects of life, it is important that these self-management programs not only focus on the physical aspects of the chronic condition, but also on the psychosocial and societal aspects.

Self-management programs do not only provide information, but also teach patients to follow the advice of their clinicians at home and how to cope with the physical and psychosocial impairment a chronic disease may cause in daily life. Many types of interventions have been developed for the management of chronic diseases, such as face-to-face counseling, group sessions, telephone care, interactive computer interventions, postal interventions, and health care policies [16;17].

A great deal of research work has been carried out to investigate the effects of self-management approaches and patient education on chronic disease. Studies carried out by Cooper et al. [18], Barlow et al. [17], and Newman et al. [19] show that there is evidence that patients benefit from self-management and patient education interventions. However, the reported effects vary. In the literature reviewed by Cooper et al. [18] effects were largest for knowledge about diet, exercise and/or stress management and smallest for self-care activities and psychological outcomes such as depression, anxiety, and emotional adjustment to diabetes. In their study, Barlow et al. concluded that

"self-management approaches can provide benefits for participants particularly in terms of knowledge, performance of self-management behavior, self-efficacy, and aspects of health status" (p. 183, [17]). These benefits are over and above what is already being achieved with medical treatment, because patients generally continue to take their medicine while taking part in self-management programs. Data from arthritis patient education studies suggest that, in addition to a 20-50% improvement resulting from arthritis care, including the use of medication, a further 15-30% improvement in symptoms can be obtained through education interventions [20].

The word "self-management" is attached to many health promotion and patient education programs [21]. Wetzels and colleagues [22] refer to self-management as "patient behavior that keeps illness under control and minimizes its effect on health and quality of life"(p. 918). According to Barlow and colleagues [17], "self-management refers to the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and life style changes inherent in living with a chronic condition. Efficacious self-management encompasses the ability to monitor one's condition and to affect the cognitive, behavioral and emotional responses necessary to maintain a satisfactory quality of life." (p. 178). Corbin and Strauss [23;24] have suggested that living with a chronic disease involves three types of tasks: (a) medical management, such as taking medication; (b) role management, i.e. maintaining everyday life, chores and family responsibilities; and (c) emotional management, i.e. coping with the emotional consequences of having a chronic condition. Apart from these core self-management tasks, core self-management skills can also be defined. These are: problem-solving, decision-making, resource utilization, partnership with health professionals, action-planning, and self-tailoring [21;24]. In conclusion, self-management programs should not only focus on the physical aspects of a chronic disease, but also on the psychosocial and societal aspects.

The majority of self-management programs are not suitable for older patients who often have more than one chronic disease, because these programs are disease-specific, i.e. they only focus on people who have one specific chronic condition. From a literature review of Barlow et al. [17], for example, it becomes clear that a great majority of the publications concerning self-management programs mainly focus on asthma, followed by diabetes and arthritis. Older patients with more than one disease would therefore have to participate in several disease-specific self-management programs, which would probably overlap. The combination of more than one chronic disease in older

patients requires self-management programs that address general management problems that are the same for different chronic conditions, such as fatigue, pain, mobility problems, feelings of anxiety or depression, etc., rather than programs that only address the problems related to one specific disease. Besides, as mentioned before, it is important that such programs address not only the physical aspects, but also the psychological and social aspects of a chronic disease, i.e. all aspects of well-being.

The concept of well-being has often been used to refer to overall life satisfaction and quality of life. In the literature the concepts of quality of life (QoL), health-related quality of life (HQoL), well-being (WB) or subjective well-being (SWB) are used, but often not, or, if so, only briefly, defined. Therefore, the exact difference between these concepts is unclear. To illustrate this, a literature review of 20 articles shows that of the five articles dealing with quality of life indicators, only one defined the concept [25]. Studies on quality of life often focus on aspects such as physical functioning, social and role functioning, mental health, subjective health perceptions, and vitality.

A chronic disease can affect several aspects of quality of life. Physical functioning (i.e. activities such as climbing stairs, washing, dressing, and lifting shopping bags), in particular, varies per chronic disease, and depends on the severity of the disease [26]. Emotions such as frustration, fear, anger, and depression are commonly experienced by a person who has a chronic disease [21]. There is also a clear association between the number of chronic diseases and the severity of these psychological symptoms [9]. Self-management programs should not only increase healthy behavior and health status, but also improve quality of life.

Participants in self-management programs are often recruited from specific populations (for instance people aged 65 and over with arthritis), the so-called intended sample. Various studies have found it difficult to include participants in self-management programs [27-34]. It has also been reported that people who do not wish to participate are usually older [28;30-32], have less education [27-29;31], are less likely to be non-smokers [29] less often use seat belts [33], have poorer physical or mental health [27-29;31;33;34], are more likely to live further away from the study location [30;32], are more likely to experience time constraints [28;32], and perceive more social support in everyday and problem situations [35]. The results with regard to gender are less consistent; some studies report that refusers are more likely to be male [28] while others report that they are more likely to be female [27;29]. Therefore, participants in self-management programs, who are the actual subjects of a study [36], seem to be a

specific selection of the intended study sample. This makes it difficult to draw any general conclusions about the effectiveness of a self-management program.

To summarize, what is needed for a population of chronically ill older patients are self-management programs that (a) focus on general management problems instead of disease-specific ones; (b) focus not only on physical aspects of the chronic disease, but more on quality of life and well-being in general. The research questions that were addressed in the present study were (1) Are there self-management programs that are suitable for older people with one or more chronic diseases, that focus not only on the physical aspects of a chronic disease, but more on quality of life and well-being in general? (2) What is the value of such programs for maintaining physical health and improving the quality of life and well-being of older patients, and for the provision of health care to such older patients?; (3) Are the actual subjects of such studies, i.e. people who agree to participate in the program, a specific selection of the intended sample?

1.2 Literature search

We conducted a literature search to identify self-management programs that not only enhance the health, but also the overall well-being of chronically ill older patients with comorbidity. The keywords *well-being/well-being/quality of life/QoL* in combination with *self-management program* and *older patients/elderly/elders/ older persons*, and *chronic disease/chronic illness/chronic condition*, and *comorbidity/co-morbidity* were applied to all available International Bibliography of the Social Sciences (1981-) and Silverplatter/Medline (1988-) databases running until week 1/2 of January 2006. No publications were found. When the keywords comorbidity/co-morbidity were left out, one article was found, but this article was disease-specific (low back pain). We then decided also to leave out the keywords *older patients/elderly/elders/older persons*, because there might be self-management programs that, although not specifically developed for older patients, could also be suitable for older patients. Ten articles were found, eight of which were excluded because they were disease-specific (four articles about lung disease, three about chronic pain, and one about heart disease). The two remaining articles described the chronic disease self-management program (CDSMP) developed by Kate Lorig and colleagues [37;38]. One article described a study on the CDSMP in a heterogeneous group of chronic disease patients (heart disease, lung disease, stroke, or arthritis) aged 40-90 years [38], and the other article described a study in which the CDSMP was compared to a disease-

specific program for patients with arthritis [37]. The CDSMP was, among other things, aimed at enhancing aspects of quality life, such as self-rated health, disability, limitations in social/role activities, energy/fatigue, physical discomfort, and psychological well-being. It seems to be very beneficial for older patients with chronic conditions in particular, because: (1) it is a general program, and not disease-specific, (2) it has been proven to be effective among older people, and (3) it is also aimed to enhance several aspects of quality of life and well-being, and not only the physical aspects of a chronic disease.

1.3 The Chronic Disease Self-Management Program (CDSMP)

The CDSMP was developed by Lorig and colleagues in the Center for Patient Education Research at Stanford University (USA). Their aim was to develop and evaluate, through randomized controlled trials, a community-based self-management program that assists people in coping with a chronic disease [38-41]. In personal correspondence, Lorig wrote: "We developed the program because of the large amount of comorbidity in older people and the need to treat the person not just the disease" (September 2002). Three principal assumptions underlie the CDSMP [38]:

1. Patients with different chronic diseases have similar self-management problems and disease-related tasks.
2. Patients can learn to take responsibility for the day-to-day management of their disease(s).
3. Confident, knowledgeable patients practicing self-management will experience improved health status and will utilize fewer health care resources.

Two additional assumptions are:

4. Patient self-management education should be inexpensive and widely available.
5. Trained lay-persons with chronic conditions could effectively deliver a structured patient education program. Such lay instructors would be acceptable to both patients and health professionals.

The CDSMP is based on prior experience (Arthritis Self-Management Program, ASMP), literature review, needs assessment (by so-called "focus groups"), and the theoretical framework of self-efficacy. It includes the following components: how to develop an exercise program; cognitive symptom-management techniques; breathing exercises; nutritional change; fatigue and sleep management; use of medication; coping with the emotions of chronic illness

(fear, anger, frustration and depression); communication skills (with family, friends, and health care providers); health related problem-solving; and decision-making [39-41]. The program content has been published in a book entitled "Living a Healthy Life with Chronic Conditions", which serves as a guide for the participants [42]. The "Chronic Disease Self-Management Leader's Manual" is a detailed protocol that is used by the course leaders [43]. The program consists of 6 weekly sessions, each with a duration of 2½ hours. There are 10-15 participants in each training group, and pairs of trained leaders teach the program. The program is based on the self-efficacy theory, which incorporates strategies suggested by Bandura to enhance self-efficacy (for an extensive overview of this theory, see Chapter 2; [38]). Lorig et al. encourage the use of lay-persons to teach the CDSMP because as instructors they can serve as successful role models, and lay-persons provide a large pool of potential volunteers who can also teach the program [44]. Studies suggest that lay-leaders can teach (arthritis) self-management programs with results similar to those achieved by professionals [44-46]. This is important, for instance because cost reduction can become a major issue for both patients and care providers.

The National Health Service (NHS) in the United Kingdom has adopted the CDSMP as the key educational offer in its Expert Patient Program [11]. At this moment, organizations in sixteen countries outside the USA are licensed, i.e. officially approved by Stanford University, to implement the CDSMP.

The CDSMP has been subjected to several evaluations [37;38;40;41;46-50]. Most of these were not identified in our literature search because the abstracts did not include all the keywords that we used. The majority (six) took place in the United States, five among American-speaking patients, and one among Spanish-speaking patients. One study was carried out in China and two in the United Kingdom (one of these among Bangladeshi patients). Tables 1.1a-c give an overview of these studies; studies focusing on only one specific disease are not included. The study samples in these evaluations mainly involved older adults (mean age 62.2, range 48.9-78.6), and mainly concerned patients with heart disease, lung disease, diabetes, or arthritis. However, one study included only patients with chronic low back pain [49], while another included "a diversity of primary chronic diseases that have not been previously studied" (such as myalgic encephalomyelitis, polio, endometriosis, haemophilia, liver disease; [50]). In six studies the participants were assigned to an intervention group or a control group [38;40;46-49], and in all six studies the control group was a waiting-list group that received the intervention 4-6 months later. In one evaluation, the CDSMP was compared to another intervention program [37];

Table 1.1a Overview of studies of the CDSMP that have been carried out (Authors, subject characteristics, recruitment, follow-up, setting)

Author(s), year (country)	N, mean age, %male, disease	Recruitment	Follow-up	Setting
Lorig et al., 1999 [38] (USA)	952; 65.3; 35.5; lung disease (asthma, chronic bronchitis, or emphysema), heart disease (coronary artery disease or congestive heart failure), stroke, chronic arthritis	Public service announcements in the mass media, referrals from flyers left in physicians' offices and community clinics, posters at senior citizen centers, referrals from county governments employers	6 months	Multiple community sites (churches, senior and community centers, public libraries, health care facilities)
Lorig et al., 2001 [40] (USA)	683; 65.3; 34.6; heart disease, lung disease, stroke, arthritis	Public service announcements, talks to community groups, notices in clinics	1 and 2 years	Community sites such as senior centers, churches, and medical centers
Lorig et al., 2001 [41] (USA)	613; 62.2; 27; one or more chronic disease	By physicians or case managers, and through announcements in waiting rooms and in health plan newsletters; letters to high utilizers	1 year	Health education departments of Kaiser Permanente
Lorig et al., 2003 [48] (USA)	551; 57.0; 21; heart disease, lung disease, type 2 diabetes	Community outreach to churches, community centers, and clinics	4 months	Community settings (churches, neighborhood centers, clinics)
Fu et al., 2003 [46] (China)	779; 64.0; 28.6; hypertension, heart disease (coronary or congestive heart disease), chronic lung disease (asthma, chronic bronchitis, or emphysema), arthritis, stroke, or diabetes	Public service announcements in the mass media, posters at community senior centers, flyers left in community clinics, interpersonal persuasion	6 months	Community site

Table 1.1b Overview of studies of the CDSMP that have been carried out (Authors, design, measurements, analysis)

Author(s), year (country)	Design	Measurements	Analysis
Lorig et al., 1999 [38] (USA)	Randomized controlled trial (wait-list control)	Previously tested self-administered questionnaires [51]	Analysis of covariance (controlled for baseline value of the study variable, as well as age, sex, education, and marital status) Two-way analyses of variance to determine if the intervention had different outcomes for those with different diseases
Lorig et al., 2001 [40] (USA)	Longitudinal design as follow-up to a randomized trial (wait-list control)	Questionnaire on chronic disease self-management study measures developed by Lorig et al. [51]	T-tests/χ^2 for differences in baseline measures Matched-pair t tests were used to test for changes between baseline and 1 or 2 years later
Lorig et al., 2001 [41] (USA)	Before-after cohort study	Questionnaire on chronic disease self-management study measures developed by Lorig et al. [51]	Paired t-test to assess changes in outcomes between baseline and 1 year
Lorig et al., 2003 [48] (USA)	Randomized controlled trial (wait-list control)	Physical activity scales (developed for ASMP study); Communication, health status: scales developed for the CDSMP study[51]; Health care utilization: self-report; 4-item self-efficacy scale	Analysis of covariance (controlled for age, gender, education, acculturation, number of chronic conditions Paired t-tests to determine whether changes between baseline and 1 year differed from zero)
Fu et al., 2003 [46] (China)	Randomized controlled trial (wait-list control)	Chinese version of the questionnaire on chronic disease self-management study measures developed by Lorig et al. [51]	Mann-Whitney U-test (compare baseline) Analysis of covariance (controlled for baseline value that differed between the groups at baseline: age; sex; education; marital status; follow-up time, baseline number of minutes per week of stretching and strengthening exercise, cognitive symptom-management practice, communication with medical doctor, and disability).

Table 1.1c Overview of studies of the CDSMP (Authors, variables/results, *P*-values as reported in the articles; Cohen's d calculated on reported scores, i.e. mainly difference scores)

Author(s), year (country)	**Variables/Results (sign. improvements in italics)**	***P*-values**	**Effect sizes (Cohen's d)**
Lorig et al., 1999 [38] (USA)	**Self-management behavior**		
	Stretching & strengthening exercise	.005	.14
	Aerobic exercise	.0003	.20
	Cognitive symptom mgmt.	.0001	.41
	Communication w/MD	.006	.16
	Health status		
	Self-rated health	.02	.16
	Disability	.002	.15
	Social/Role activities limitations	.0007	.17
	Pain/physical discomfort	.27	.02
	Psychological well-being	.10	.07
	Energy/fatigue	.003	.16
	Health distress	.001	.17
	Shortness of breath	.56	.05
	Health service utilization		
	MD & ER visits	.11	.04
	Number of hospital stays	.047	.02
	Nights in hospital	.01	.14
Lorig et al., 2001 [40] (USA)	***Self-efficacy manage chronic disease***	.0001	-.14
	Health status		
	Self-rated health	.268	.06
	Disability	.025	-.06
	Social/role activities limitations	.995	0
	Energy/fatigue	.165	-.05

Table 1.1c (Continued)

Author(s), year (country)	Variables/Results (sign. improvements in italics)	*P*-values	Effect sizes (Cohen's d)
Lorig et al., 2001 (continued)	*Health distress*	.0001	.18
	Health service utilization		
	MD & ER visits	.006	.13
	Times hospitalized	.737	.02
	Days in hospital	.535	.03
Lorig et al., 2001 [41] (USA)	***Self-efficacy***	≤.001	-
	Self-management behavior		
	Aerobic exercise	.01	-
	Range-of-motion exercise	≤.001	-
	Cognitive symptom-management	≤.001	-
	Communication with physician	≤.001	-
	Health status		
	Disability	.77	-
	Health distress	≤.001	-
	Social/role activity limitation	≤.001	-
	Illness intrusiveness	≤.001	-
	Fatigue	.002	-
	Shortness of breath	.003	-
	Pain	.03	-
	Self-rated health	.20	-
	Depression	≤.001	-
	Health service utilization		
	Physician visits	.19	-
	ER visits	≤.05	-
	Hospitalizations	.14	-
	Days in hospital	.12	-

Table 1.1c (Continued)

Author(s), year (country)	Variables/Results (sign. improvements in italics)	*P*-values	Effect sizes (Cohen's d)
Lorig et al., 2003 [48] (USA)	***Self-efficacy***	.0006	.28
	Health status		
	Self-reported health	<.0001	.40
	Health distress	<.0001	.42
	Fatigue	.002	.24
	Pain/physical discomfort	.016	.20
	Role function	.002	.23
	Self-management behavior		
	Exercise	.001	.21
	Communication with physician	<.0001	.30
	Mental stress management	<.0001	.50
	Currently use tobacco	.997	.03
	Health service utilization		
	Physician visits	.057	.17
	ER visits	.005	.27
	Hospital stays	.481	-.03
Fu et al., 2003 [46] (China)	**Self-efficacy**		
	Managing symptoms	.001	.29
	Managing disease in general	.001	.24
	Self-management behavior		
	Stretching/strengthening exercise	.07	-.02
	Aerobic exercise	.01	.16
	Cognitive symptom-management	.005	.38
	Communication with medical doctor	.89	-.06

Table 1.1c (Continued)

Author(s), year (country)	Variables/Results (sign. improvements in italics)	*P*-values	Effect sizes (Cohen's d)
Fu et al., 2003 (continued)	**Health status**		
	Self-rated health	.001	.33
	Energy	.93	-.03
	Health distress	.001	.22
	Fatigue	.03	.17
	Shortness of breath	.01	.14
	Pain	.02	.17
	Disability	.005	.27
	Illness intrusiveness	.06	.06
	Depression	.004	.10
	Social/role activity limitation	.046	.15
	Health service utilization		
	Physician visits	.72	.02
	ER visits	.44	.01
	Hospital stays	.04	.17
	Nights in hospital	.40	.12

two studies had a pre-test/post-test design [41;50]. Most evaluations covered a period of 4-6 months, except for two studies which covered a period of 12 months [40;41].

These evaluations of the CDSMP differ with regard to the measurement of the outcome variables. Self-efficacy, for example, was measured differently across the evaluations, varying from more general self-efficacy ("perceived self-efficacy to manage different aspects of one's health and functioning"; [40]) to more specific self-efficacy ("self-efficacy for exercise, cognitive symptom-management, and communication with physician health care providers"; [41]). In one of the studies self-efficacy was not measured at all [38]. The components of health status also differed. Although self-rated health, pain/physical discomfort, energy/fatigue, social/role limitations, and health distress were measured in almost all evaluations, anxiety and psychological/emotional well-being were measured in only two. Some studies measured visits to physicians and the emergency department, whereas other studies did not.

Tables 1.2a-c give an overview of the *p*-values reported in the various studies. We also computed effect sizes, based on the reported data. Therefore, most of the effect sizes were computed on difference scores. Furthermore, for each outcome variable it was summarized how many studies showed an effect size $\geq .25$. The effects on most of these outcomes are small to moderate.

In almost all of the CDSMP studies, the participants were recruited through public announcements. Therefore, nothing is known about the patients who did not apply for participation. As a consequence, it is difficult to say anything about possible differences between participants and non-participants. Based on studies of self-management interventions, however, it might be assumed that the participants are, indeed, a selection. Furthermore, in none of the CDSMP studies gave detailed information about the recruitment process, for instance whether it was difficult to recruit participants, or the most effective method of recruitment, for example, flyers or posters.

It can be concluded that the CDSMP is the only self-management program that focuses on people with one or more chronic diseases, in order to stimulate them to become more actively involved in the management of their own health and enable them to take care of themselves. As this program has already been implemented in many countries, it would also be a candidate intervention to supplement the health care that is provided for people with one or more chronic diseases in the Netherlands. However, the various evaluations are difficult to compare, and this makes it difficult to draw any general conclusions about the effectiveness of the CDSMP. Therefore, before implementing the program in the

Table 1.2a Overview of the effect sizes (and *P*-values) of the various variables in the studies of the CDSMP

Variable	**Lorig et al., 1999 [38]**	**Lorig et al., 2001 [40]**	**Lorig et al., 2001 [41]**	**Lorig et al., 2003 [48]**	**Fu et al., 2003 [46]**	**Number of studies that showed improvement (i.e. ES ≥.25)/total number of studies in which this variable was studied**	**Number of studies that showed significant *p*-values (p ≤ .05)/ total number of studies in which this variable was studied**
Self-efficacy	-		- (≤.001)	.28 (.0006)		1/1	2/2
- Self-efficacy to manage chronic disease		.14 (.0001)				0/1	1/1
- Managing symptoms					.29 (.001)	1/1	1/1
- Managing disease in general					.24 (.001)	1/1	1/1
Health behavior							
Stretching & strengthening exercise	.14 (.005)				-.02 (.07)	0/2	1/2
Aerobic exercise	.20 (.0003)		- (.01)		.16 (.01)	0/2	3/3
Cognitive symptom mgmt.	.41 (.0001)		- (≤.001)		.38 (.005)	2/2	3/3
Communication	.16 (.006)		- (≤.001)	.30 (<.0001)	-.06 (.89)	1/3	3/4
Range-of-motion exercise			- (≤.001)			-	1/1
Exercise				.21 (.001)		0/1	1/1
Mental stress management				.50 (<.0001)		1/1	1/1
Currently use tobacco				.03 (.997)		0/1	0/1

Table 1.2b *(continued)*

Variable	**Lorig et al., 1999 [38]**	**Lorig et al., 2001 [40]**	**Lorig et al., 2001 [41]**	**Lorig et al., 2003 [48]**	**Fu et al., 2003 [46]**	**Number of studies that showed improvement (i.e. ES ≥.25)/total number of studies in which this variable was studied**	**Number of studies that showed significant *p*-values (p ≤ .05)/ total number of studies in which this variable was studied**
Health status							
Self-rated health	.16 (.02)	.06 (.268)	- (.20)	.40 (<.0001)	.33 (.001)	2/4	3/5
Disability	.15 (.002)	-.06 (.025)	- (.77)		.27 (.005)	1/3	3/4
Social/Role activities limitations	.17 (.007)	0 (.995)	- (≤.001)	.23 (.002)	.15 (.046)	0/4	4/5
Pain/physical discomfort	.02 (.27)		- (.03)/-	.20 (.016)	.16 (.02)	0/3	3/4
Psychological well-being	.07 (.10)					0/1	0/1
Energy/fatigue	.16 (.003)	-.05 (.165)	- (.002)	-.24 (.002)	-.03(.93)/.17 (.03)	0/4	3/5
Health distress	.17 (.001)	.18 (.0001)	- (≤.001)	.42 (<.0001)	.22 (.001)	1/4	5/5
Shortness of breath	.05 (.56)		- (.003)		.14 (.01)	0/2	2/3
Illness intrusiveness			- (≤.001)		.06 (.06)	0/1	1/2
Depression			- (≤.001)		.10 (.004)	0/1	2/2

Table 1.2c *(continued)*

Variable	Lorig et al., 1999 [38]	Lorig et al., 2001 [40]	Lorig et al., 2001 [41]	Lorig et al., 2003 [48]	Fu et al., 2003 [46]	Number of studies that showed improvement (i.e. ES ≥.25)/total number of studies in which this variable was studied	Number of studies that showed significant *p*-values ($p \leq .05$)/ total number of studies in which this variable was studied
Health service utilization							
MD & ER visits	.04 (.11)	.13 (.006)				0/2	1/2
Number of hospital stays	.02 (.047)	.02 (.737)	- (.14)	-.03 (.481)	.17 (.04)	0/4	2/5
Nights in hospital	.14 (.01)				.12 (.40)	0/2	1/2
Physician visits			- (.19)	.17 (.057)	.02 (.72)	0/2	0/3
Emergency department visits			- (≤.05)	.27 (.005)	.01 (.44)	1/2	2/3
Days in hospital		.03 (.535)	- (.12)			0/1	0/2

Netherlands, it is necessary to investigate its usefulness and effectiveness in a systematic way. This is done in the present thesis.

The aim of the study presented in this thesis is threefold. First, to study the short-term and longer term effects of the CDSMP on self-management behavior, health, and health care utilization in a clinical sample of older people with one or more chronic diseases in the Netherlands. Secondly, to study the working mechanisms of the CDSMP, and the effect of the CDSMP on quality of life and well-being. Thirdly, to investigate whether the actual subjects in this study on the effects of the CDSMP, i.e. people who agree to participate, are a specific selection of the intended sample.

1.4 Outline of the dissertation

Chapter 2 starts with an outline of the theoretical background of the CDSMP, i.e. the self-efficacy theory. Some theoretical problems with regard to the self-efficacy theory in relation to the CDSMP are explained, and an additional theory, which could partly solve these problems, is discussed: the theory of self-management of well-being (SMW). The chapter ends with an overview of the research questions that were addressed in the study presented in this thesis, and the main hypotheses.

Chapter 3 describes the methods used in the study, the recruitment strategy, the sample characteristics, the measurements, and the intervention, which consists of an adaptation of the CDSMP to the Dutch situation, called “GRIP op lijf en leven”. The following three chapters present sub-studies evaluating this intervention.

Chapter 4 presents the first study, an evaluation of the short-term and longer term effects of the CDSMP among chronically ill older people in the Netherlands. Knowing from previous studies that the CDSMP can have positive effects on self-efficacy, self-management behavior, and health status, we expected to find positive effects in our sample of patients, aged 59 or older, with one or more chronic diseases.

Chapter 5 presents the second study, which focuses on the effect of the CDSMP on self-management abilities other than self-efficacy, and investigates whether the CDSMP improves subjective well-being.

Chapter 6 presents the third study, which focuses on the effects of the CDSMP on health care utilization.

Chapter 7 described another study, comparing patients who refused to

participate (refusers) and patients who agreed to participate (participants), after they had been invited to participate in the self-management intervention.

Chapter 8 describes the participants' experiences with the program, subjectively evaluated in several ways and at various moments. With possible future implementation in mind, this chapter has been written in Dutch.

Finally, *Chapter 9* contains a general discussion of the main results and the implications of these findings. The thesis ends by a summary of the results.

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