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# Self-Management Training for Chronic Stable Angina: Theory, Process, and Outcomes

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## 1. Introduction

### 1.1. The societal burden of chronic stable angina

Chronic stable angina (CSA) is a cardinal symptom of coronary artery disease (CAD), characterized by pain or discomfort in the precordium, shoulder, back, arm, or jaw [1]. Angina pain symptoms—or equivalents such as shortness of breath, fatigue, and nausea—are considered stable if they are experienced over several weeks in the absence of major deterioration [1-3]. Those affected by CSA typically have CAD involving one or more large epicardial arteries, although individuals diagnosed with hypertrophic cardiomyopathy, hypertension, endothelial dysfunction, or valvular stenosis/deficiencies may also exhibit angina [1]. Symptoms usually occur predictably upon physical exertion and are relieved by rest or nitroglycerin [1]. The severity of symptoms experienced can vary, typically ranging from Canadian Cardiovascular Society [CCS] class I to class III angina. A number of factors can also aggravate symptoms including heightened emotional states, diet, smoking, and weather [1,4].

As CAD survival rates increase, the global incidence and prevalence of CSA are also on the rise. Prevalence estimates suggest that CSA affects more than 10 million Americans [5] and nearly ½ million Canadians over the age of 12 [6]. In Scotland, CSA affects 2.6% of the general population, with 28 per 1000 men and 25 per 1000 women diagnosed, respectively [7]. The age-standardized annual incidence of angina, per 100 population in Finland, 2006 was 2.03 among men and 1.89 among women [8].

Chronic stable angina poses significant risk for acute myocardial infarction, congestive heart failure, atrial fibrillation, and stroke [9], as well as increased risk of cardiovascular-related mortality or hospitalization (men: RR 1.62, women: RR 1.48) [10]. Moreover, multiple studies have shown that people living with CSA are among the more severely debilitated across several chronic illness populations including sciatica, arthritis, low back pain, diabetes and

stroke [11-15]. Many of these patients suffer persistent pain episodes, poor general health, sleep disturbance, impaired social role functioning, activity restriction, and reduced ability to self-care [16-27].

As Lewin [28,29] and others [30] have argued, angina seems to have a disproportionately severe impact on one's self-perceived health status relative to other chronic illnesses. Extensive work in the field to date has shown that negative emotional states, such as anxiety and depression, are well-documented corollaries of CSA. For example, as part of a larger clinical trial, Ketterer et al. [31] (n= 196) examined the psychological profile of patients with stable CAD, angina symptoms during daily activities, and positive exercise stress tests. Anxiety and depression were strongly associated with recent angina, as well as angina in the presence of ischemia invoked by treadmill testing. Gravely-Witte et al. [32] found similar results in a prospective study of 121 patients following surgical and percutaneous revascularization procedures. Angina symptoms were predictive of higher levels of depression and lower levels of emotional and social functioning [32].

The central role of emotional distress in CSA may be explained, in part, by the fact that angina sufferers tend to hold erroneous and maladaptive beliefs about their condition. In Wynn's widely cited observational study (1967) [30], 23% of post-myocardial infarction patients (n=400) reported being anxious due to the misconception that each angina episode reflected further damage to the heart. In 40% of cases, failure to return to work was attributed to fear of imminent death [30]. Since the time of Wynn's seminal work, multiple studies have shown that CSA patients routinely interpret their angina symptoms as 'mini heart attacks' [19,22-24, 30,33]. Consequently, many patients adopt sedentary lifestyles, relinquish their normal routines, and/or retire early as means to avoid angina attacks [19,22-24,34,35]. Unfortunately, out of concern, family members, peers [17,19,36], and health care professionals [37] alike often reinforce such maladaptive coping behaviours which can evoke unintentional deconditioning as well as reductions in coronary blood flow, sheer stress, and impetus for healthy collateral coronary vessel formation [38].

Considering the high prevalence and major negative psychological impact of CSA, the cost implications are significant. The total costs associated with CSA management in the United States have been estimated to exceed 15 billion dollars per annum [1]. In the United Kingdom, the direct cost of chronic angina in 2000, including prescriptions, repeated emergency department visits and other hospital admissions, outpatient referrals, and procedures, was estimated at £669,000,000, accounting for 1.3% of the total National Health Service expenditure [39]. At the patient level, a Canadian study [40] estimated the mean cost RFA-related disability (2003 – 2005) from a societal perspective including direct out-of-pocket costs to patients, indirect costs expressed as forgone income and leisure time, and system-related costs paid by public and private insurers. The total estimated annualized cost of CSA per patient was \$19,209 [40].

In recent years, increasing attention has been given to angina self-management training [SMT] interventions as a means to offset the societal burden of CSA. These interventions are multi-modal educational packages that employ learning materials and cognitive-behavioural strategies to achieve changes in knowledge and behaviour for effective disease self-management [41]. This chapter provides a brief overview of the concept of self-management and discussion of background theory, key elements of intervention structure and process, as well

as specific angina SMT models developed in the United Kingdom and Canada. The overall effectiveness of SMT for angina will also be reviewed with respect to impact on symptoms, HRQL outcomes, and cost. Implications for future research and practice will also be discussed.

## 2. Self-Management training: Overview

Self-management training emerged as a priority for health systems in the 1980's and 90's, following a surge of population-based research on the prevalence of chronic illness in the 1960's and 70's [42]. The realization of the global prevalence of divergent chronic illnesses, without cure, led to major critiques of standard health care delivery models as too poorly integrated and siloed to address the consequences of chronic illness and related therapies [42]. Similarly, traditional patient education models have been critiqued as lacking adequate scope and complexity to address an ageing population, multiple co-morbidities, and the complex needs of individuals who must manage their chronic illnesses daily [42]. Traditional acute care models and related patient education focus on diagnosis and cure, technological interventions, and the imparting of specific disease-related information to inexperienced patients who act as passive recipients of health teaching. Within this paradigm, the health care professional is understood to be the knowledgeable, experienced authority on the patient's care priorities [42-44]. Thus, a fundamental premise of traditional models of care is that patient compliance with specific direction and principles taught will lead to improved health behaviours and outcomes [42-44].

In contrast, SMT interventions espouse the tenets of Wagner et al.'s Chronic Care Model (CCM) [45]. According to the CCM, chronic disease management refers to a system of health care that supports individuals with chronic illness to remain as healthy and independent as possible. The process of disease management is conceptualized as patient-centered, with health care professionals, the health care system, and the community at large collaborating with the patient to facilitate optimum health and well-being. Implicit within the CCM is the concept that patients should be well-informed about their illness, and should be active participants in their care [45].

The emphasis of SMT, therefore, is the role of the patient as an active player engaged in preventive and therapeutic health activities in partnership with health care professionals [46]. At the crux of such partnerships are patients' everyday problems as a result of living with chronic illnesses. As D'Zurilla [47] Lorig and Holman [44], and others [46] have argued, effective SMT is fundamentally problem-oriented. A common starting ground for SMT interventions in practice is identification, crystallization, and prioritization of patients' chief concerns [44-47]. Care is generally taken during this process to harmonize perspectives—through deliberative discussion—as health care professionals will often conceptualize the issues in terms of diagnosis and/or risk factor modification, whereas patients will think in practical terms about the day-to-day difficulties their illnesses present [19,48]. The problem list generated dictates the direction and scope of intervention for each patient [44-48].

Along with collaborative problem identification, additional key elements of SMT, which are typical [45,48,49], include a) *targeted goal setting*: identifying meaningful, realistic goals in the

context of patient priorities and preferences, b) *self-reflection*: sharing of feelings to provide opportunities for discussion about the personal meaning of chronic illness and difficult emotional responses, c) *mini-lectures and supplemental reading/workbooks*: providing opportunities for brief information sharing about relevant educational content in accessible language and formats, d) *brainstorming and problem solving*: facilitating discussion of the potential benefits of various self-management strategies such as safe exercise, sound nutrition, energy conservation and pacing, identifying and reframing negative self-talk, etc., e) *regular action planning*: learning the process of setting incremental positive behaviour change, and f) *self-monitoring, accountability, and feedback*: reporting back to peers or counsellors about individual progress and obtaining constructive feedback.

Self-management training programs have been delivered in a variety of formats including individual counseling, small group sessions, or individual and group-based approaches in combination. Programs that engage either health care professional facilitators or lay peer leaders have been shown to be effective, as have programs that use these delivery methods in combination [46,48,49]. Regardless of format, most established SMT interventions offer a range of self-management techniques for participant rehearsal and uptake over the course of several days or weeks [44-49]; typical settings for program delivery include clinical outpatient settings and community centres.

### 3. Key theoretical underpinning: Self-efficacy

As discussed, the majority of contemporary SMT programs foster an individualized approach, with a strong emphasis on coaching by a health care professional or peer leader [50]. A common goal of SMT intervention developers is to maintain a focus on wellness in the foreground and improve overall HRQL. In so doing, three key objectives of self-management coaching are to prepare people to do the following a) take better care of their health through physical activity, relaxation and stress reduction, and effective use of available treatments, b) maintain optimal social and occupational role functioning, and c) manage challenging emotional responses to chronic illness [51].

To facilitate effective coaching and desired health outcomes, most successful SMT interventions are developed on the basis of well-established psychological models of behavior change [50]. Such models delineate the instrumental processes inherent in successful role modeling, self-management skills acquisition, realistic goal setting, problem solving, and identification and management of obstacles to health-related improvements [50].

A well-integrated model in SMT research and practice is Bandura's Self-Efficacy Theory [52-54]. Renowned sociologist Albert Bandura [53] defined the concept of self-efficacy as "The exercise of human agency through people's beliefs in their capabilities to produce desired effects by their actions" (p iv). Bandura argued that fundamental to human nature is the need for control, or causative capacity in everyday situations. Human enactments of control are thought to be played out in the form of agency, or one's intentional actions. People's beliefs about their self-efficacy drive their personal senses of agency [52-54]. Therefore, chronic



disease self-management is not simply a question of knowing what to do; the process requires incremental increases in one's perceived capacity to organize and integrate cognitive, social and behavioural skills to meet a variety of aims in managing illness from day to day [52-54].

Under the direction of Kate Lorig, the Stanford Patient Education Research Centre has been a world leader in the application of self-efficacy theory to chronic disease SMT research and implementation [55]. Lorig et al.s' seminal work, the Arthritis Self-Management Program (ASMP)—developed in 1978 and funded by the National Institutes of Health—has been widely disseminated through national arthritis societies on three continents [56-61]. Multiple process evaluations and randomized-controlled trials (RCTs) of the ASMP [56-61], and its prevalent, generic adaptation, the Chronic Disease Self-Management Program (CDSMP) [62-71] (developed in 1996), have shown that participation in a standardized SMT program results in significantly improved levels of self-efficacy for those with chronic pain and other chronic diseases. In the ASMP evaluations, improved self-efficacy was found consistently to mediate sustained significant changes in HRQL, knowledge, pain, depression and disability. Reductions in health care costs up to 4 years post intervention, without formal reinforcement of program content, have also been found [60,61]. Similarly, self-efficacy enhancement in the CDSMP trials has repeatedly demonstrated significant improvements in exercise, cognitive symptom management, communication with physicians, self-reported general health, health distress, fatigue, disability, and role and social functioning. Participants have also spent significantly fewer days in hospital; sustained outcome improvements have been demonstrated up to three years post-intervention [62-71].

Both the ASMP [56-61] and CDSMP [62-71] employ a standardized 6-week, community-based format. Sessions are delivered in 2-hour sessions weekly for small groups of approximately 12 to 15 patients. As preeminent models of SMT, the ASMP and CDSMP programs have consistently supported [72] the following major precepts of Self-Efficacy Theory—summarized by Lorig et al. [73], (p. 5-6)—as principal drivers of effective chronic disease self-management:

- The strength of people's belief in their ability to achieve certain outcomes reliably predicts motivation and behaviour.
- Perceived self efficacy can be enhanced via performance mastery, modeling, reinterpretation of symptoms, and social persuasion.
- Enhanced self-efficacy belief leads to lasting improvements in behaviour, motivation, thinking patterns, and emotional well-being.

#### **4. Self-management training: Angina-specific models**

Angina-specific SMT programs emerged in the early 1990s [74-76] and have been documented as recently as 2012 [82]. The majority of RCT evidence to date includes individual counseling or small-group interventions (i.e. 6-15 patients) employing varying combinations of educational materials on CAD and medications, risk factor identification and modification, planned exercise/physical activity, and cognitive-behavioural techniques targeted at lifestyle and

angina symptom self-management, relaxation training and/or stress reduction, or enhancement of physical activity. Intervention durations, formats, and processes have varied [74-82]. A range of outcomes have been used to examine the effectiveness of angina SMT, including: angina symptom profile (e.g. frequency, severity, stability) and related sublingual (SL) nitrate use, objective measures of ischemia such as treadmill stress tests, and self-report measures of HRQL and psychological well-being.

This review of the evidence will focus first on two more recent angina SMT models with clear underpinnings in self-efficacy theory: *The Angina Plan* [78,79,82,83] and the *Chronic Angina Self-Management Program* [17,81]. Second, results of meta-analyses [84,85] of the overall effectiveness of angina SMT will be discussed.

## 5. The angina plan

The Angina Plan, developed by Lewin, Furze et al. [78,79] is the most widely evaluated and disseminated angina SMT program to date; over 20,000 patients have been enrolled [83]. The Angina Plan is recognized in the United Kingdom [86] as a form of home-based cardiac rehabilitation geared toward debunking common misconceptions about angina, promoting relaxation, increasing physical activity and role functioning, and making positive changes in lifestyle (e.g. nutrition). Risk factor identification, and educational materials on CAD, medications, as well as seeking emergency medical assistance (as appropriate) are also key components [78,79]. The program materials are provided in a workbook and relaxation tape which patients are oriented to by a nurse intervener during a structured, individualized interview process [78,79]; this initial session is followed by a 12-week course of telephone-based support to facilitate incremental goal setting and pacing of activities [78,79]. A 2002 RCT of the Angina Plan (n=142), found that at 6 months follow-up, those assigned to the intervention group had significant reductions in angina frequency, anxiety and depression, and SL nitrate usage, as compared to controls who received standard education and counseling by a nurse [79]. Those who received the Angina Plan also demonstrated significant improvements in physical limitation scores, daily walking, and dietary habits [79]. A pragmatic RCT by Zetta et al. (n=218) [82] found similar results for patients admitted to hospital for acute exacerbation of angina. Angina Plan recipients reported significant improvements in knowledge and cardiac misconceptions, social and leisure activities, perceived general health, and physical limitation. Improvements in cardiac risk factors including body-mass index and exercise were also found [82]. However, no significant improvements in anxiety and depression scores were found based on intention-to-treat analyses; extracardiac depression was proposed as a potential confounding factor diluting the treatment effect [82].

Recently, Furze et al. [83] evaluated (n= 142) a lay, peer-led adaptation of the Angina Plan in response to healthcare resource constraints as well as increasing interest in lay-facilitated SMT interventions. The Lay-facilitated Angina Management Program (LAMP) was delivered by people who had experience with CAD either as patients or caregivers [83]; outcomes were evaluated at 3 and 6 months post intervention. Compared to standard advice from a specialist

nurse, the LAMP intervention did not significantly reduce the frequency of angina symptoms; it was hypothesized that this may have been a function of effective medication regimens for both groups [83]. Those in the intervention group did report significantly improved depression (6 months), anxiety (3 and 6 months) and HRQL scores (3 and 6 months), compared to controls. Significant improvements in hip-to-waist ratio were also found. The cost utility of the LAMP was assessed in terms of quality-adjusted life years (QALY). A significant difference in average QALY per patient of 0.045 (confidence interval [CI], 0.005-0.085) was found. Based on their cost utility model, Furze et al. [83] estimated the average net benefit of the LAMP intervention (over controls) at £354-360; there was some uncertainty around this estimate however due to a lack of coefficient significance (from zero) [83]. While the LAMP was deemed cost-effective, improvements in angina symptoms per se were not observed. Notably, this finding was in contrast to evaluations of the nurse-facilitated version of the Angina Plan [79,82].

## 6. The chronic angina self-management program

The CASMP [17,81] is a disease-specific adaptation of the generic Stanford Chronic Disease Self-Management Program (CDSMP). To develop the CASMP, McGillion et al. conducted a qualitative evaluation of the self-management learning needs of individuals living with CSA; perspectives from both patients and clinicians were solicited [19]. Based on this study, adaptations of the CDSMP curriculum were made to address the following angina-specific learning needs: safe exercise planning; relaxation and stress management; symptom monitoring, interpretation, and management techniques; CAD and related medication review; decision making about seeking emergency medical assistance; diet; and, managing emotional responses to angina [17,81]. The self-efficacy enhancing process elements of the original CDSMP were retained [17,81].

The CASMP follows the CDSMP standardized 6-week, community small-group based format (i.e. 2-hour sessions weekly, groups of 8-12 patients), but the program is delivered by nurse facilitators rather than lay leaders. The program is delivered according to a facilitator manual and participants receive a workbook to reinforce educational content. In a 2008 RCT (n=130), the CASMP was found to significantly improve the frequency and stability of angina symptoms compared to usual care at 3 months post-intervention. Significant improvements in self-reported physical functioning, perceived self-efficacy, and general health status were also found [81]. The CASMP did not reduce the financial burden of CSA on participants (estimated from a societal perspective), perhaps due to the short time frame of the study [81].

Concomitant to the RCT [81], qualitative evaluation of the CASMP found positive shifts in the perceived meaning of cardiac pain following self-management training [17]. CSA was initially described by participants as a major negative life change characterized by fear, frustration, limitations and anger [19]. Following the CASMP, chronic angina was interpreted more constructively as a broad, ongoing health problem requiring continual self-management in order to retain desired life goals and optimal levels of functioning [17]. Based on these positive evaluations, plans to implement the CASMP at select cardiac centres in Canada are underway.



## 7. Overall effectiveness of angina SMT programs: Results of meta-analyses

We first summarized the effectiveness of angina SMT interventions in a 2008 meta-analysis [84]. The results of 7 trials, involving 949 CSA patients in total, were included. In each case, the effects of a SMT intervention were compared to usual medical and/or nursing care as described [74-77,79-81]. We found that those who underwent angina SMT experienced significant reductions in the frequency of angina (nearly 3 less angina episodes per week) as well as SL nitroglycerin use (approximately 4 times less per week) up to 6 months post-intervention [84]. Significant, pooled effects were also found for angina-induced physical limitation and HRQL-related disease perception, but we were uncertain of the stability of these estimates due to broad confidence intervals [84]. At the time, we were unable to generate an estimate of the effect of SMT on psychological well-being due to the heterogeneity of measures used across trials to measure these HRQL dimensions. We signaled caution with respect to the interpretation of our results due to the wide range (low to high) of methodological quality across trials included in this review [84].

New, robust trial data contributed by Zetta et al. [82] and Furze et al. [83] allowed us to update our meta-analysis in 2012 [85]; nine trials including 1282 CSA patients in total were included. Outcome measures were more homogenous with the inclusion of these new data which allowed us to examine the impact of angina SMT on psychological outcomes. Consistent with our 2008 review [84], we found that angina SMT reduced the frequency of angina symptoms and the use of SL nitrates. Self-management training also reduced physical limitation for CSA patients. Our pooled estimates of effect for the impact on SMT for emotional well-being were less certain. We did find a significant improvement in depression scores, but there was considerable statistical heterogeneity for this outcome across trials [85]. Initially, we found no impact on anxiety, but, sensitivity analysis—via removal of 1 trial [83] with the widest confidence interval for this outcome—suggested that anxiety scores [85] are improved up to six months following SMT.

Based on our systematic reviews [84,85], evidence is clear that SMT consistently improves angina with respect to the frequency of symptoms and reduces the need for SL nitrates. The positive effect of SMT on physical limitations imposed by angina also appears stable. What is less certain is the potential for SMT to improve the psychological burden of CSA, particularly anxiety. Noteworthy is the fact that the overall improvements we observed in depression scores were yielded by the Angina Plan [78,79,82,83], suggesting that perhaps individualized SMT programs may yield greater benefits in terms of emotional well-being.

Some key questions about the effectiveness of SMT for CSA management remain. A critical element contributing to the effectiveness of intervention programs to date is the provision of an array of self-management strategies that can be tailored to individual problems, needs and preferences, in the context of living with chronic angina. This much is clear and entirely consistent with the broader chronic disease-self-management literature [42-48], as well as underlying principles of self-efficacy theory [52-54]. What is less clear is the ideal intervention design—or particular elements thereof—that would yield maximum symptom benefits and much needed improvements in HRQL for this heavily burdened population. For example,

group-based SMT interventions are efficient and have been found to be equally effective as individualized approaches for arresting chronic disease progression and managing symptoms across populations; people with diabetes are one such example [86]. Yet, the available data suggest that this may not be the case for CSA patients when it comes to psychological outcomes; an individualized approach could be more effective.

There is also the question of whether angina SMT programs should be delivered by health professionals or lay peers. Indeed, lay-led SMT models have been demonstrated widely to be effective and cost-saving [42-48,82]. Such models are also idyllic in the sense that they embrace the concept of patients as active self-managers and experts in terms of the chronic illness experience [45]. However, in the case of CSA patients, Furze et al. [82] observed a high refusal rate (46%) in the RCT of their lay-led SMT program.

Other key questions pertain to the overall cost-effectiveness of angina SMT implementation as well as the ability of these programs to reduce the financial burden of CSA. The trial by McGillion et al. [81] showed no impact on cost illness but the follow up period was brief. To date, Furze et al.'s trial is the only study to [82] to examine comprehensively the cost utility of angina SMT. While the cost results of this trial are certainly promising, they pertain to the training and employ of lay leaders only.

## **8. Summary: Implications for research and practice**

Without question, SMT interventions are gaining momentum in the arena of CSA management. Their positive impact on symptoms and aspects of HRQL is unequivocal. Relatively speaking, as a class of interventions, SMT programs have not seen the widespread uptake in cardiology as they have in other fields, such as rheumatology. Historically, this may be explained by the overarching dominance of surgical and interventional strategies as mainstays of effective treatment. But the culture is changing and the need to employ adjunctive secondary prevention approaches, to help offset the burden of CAD, has been recognized worldwide [1, 87-91]. The recent incorporation of angina SMT into national clinical practice guidelines for CAD management in both the UK [87] and Canada [88] speaks to this emerging cultural shift.

In order to more fully integrate angina SMT across health systems, funding support for continued research, development and dissemination of these programs is crucial. Some outstanding issues have major implications for the widespread uptake of angina SMT training. As discussed, there are the critical questions which remain about optimal intervention design (to yield maximal benefits) and cost effectiveness. These questions could perhaps be addressed best via robust, multi-national trials with long-term follow up [85]. There must also be however, a focused effort toward both integrated and end-of-study knowledge translation strategies with the overall goal of mainstreaming angina SMT.

Typically, self-management interventions are developed and tested within academic centres or research institutes, and formally (or informally) linked with a variety of hospital and community-based settings [68]. Dissemination of these programs therefore depends on strong

partnerships between researchers and key stakeholder representatives, such as leaders in regional health authorities. Ideally, these players should be involved at the onset of angina SMT research programs and implementation to maximize the success of integrating these programs into existing and diverse health system infrastructures [68]. The widespread success of the Angina Plan in the UK [78,79,82,83] is an excellent example of the benefits of such an integrated approach.

Policy makers and the general public also require timely notification of future developments in angina SMT research, in accessible language. In the clinical arena, broader uptake of angina SMT could be facilitated by the development of key competencies to adequately prepare health care professionals to educate and consult with their CSA patients about the effectiveness of SMT programs [88]. Akin to clinician preparation for patient counseling, there is also the important question of patient readiness to engage in angina SMT. Patient preparedness for self-management is an emerging field, not yet taken up by CSA researchers. Emerging evidence suggests that one's beliefs and perceptions about a) influential others contributing to his or her overall state of health, and b) his or her own internal locus of control, may be key factors in the pre-contemplation, or intention to engage in self-management practices [92]. Advancements in this area will be important to developing a better understanding of factors that drive one's readiness for angina self-management, and ultimately, who is likely to benefit most from angina SMT training.

## 9. Conclusion

In summary, SMT interventions have much to offer in terms of offsetting the major, societal impact of angina. As adjuncts to usual care, these relatively low cost-interventions are aligned with current global emphasis on the need for treatment approaches which help CAD patients better manage their long-term health. This chapter has provided an overview of self-management theory, key elements of intervention structure and process, as well as a comprehensive review of the evidence pertaining to the effectiveness of angina SMT programs to date. Support for continued research, knowledge translation and implementation work is critical to the successful integration of angina self-management as an integral part of the routine care of people living with CSA.

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## References

- [1] Gibbons RJ, Abrams J, Chatterjee K, et al. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1999 Guidelines for the Management of Patients with Chronic Stable Angina). 2002. <http://www.acc.org/clinical/guidelines/stable/stable.pdf> (accessed 1 October 2012).
- [2] Abrams, J. & Thadani, U. Therapy of stable angina pectoris: The uncomplicated patient. *Circulation*, 2005; 112: e255-e259.
- [3] Abrams, J.A Chronic stable angina. *N Engl J Med* 2005; 352: 2524-33.
- [4] Versaci F, Gaspardone A, Tomai F, Proietti I, Crea F. Chest pain after coronary artery stent implantation. *Am J Cardiol* 2002; 89: 500-4.
- [5] Lloyd-Jones D, Adams RJ, Brown TM, Carnethon M, Dai S, De Simone G, et al; on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2010 update: a report from the American Heart Association. *Circulation*. 2010; 121(7):e46-e215.
- [6] Chow, C. M., Donovan, L., Manuel, D., Johassen, H.& Tu, J. V. (2006). Regional variation in self reported heart disease prevalence in Canada. In C.J. Tu, W. Ghali, & S. Brien (Eds.), *CCORT Canadian Cardiovascular Atlas: A Collection of Original Research Papers Published in the Can J Cardiol* (2nd ed., Rev., pp. 23-29) 2006;Toronto, Ontario: Pulses Groups Inc. and the Institute for Clinical Evaluative Sciences.
- [7] Murphy NF, Simpson CR, MacIntyre K, McAlister FA, Chalmers J, McMurray JJV. Prevalence, incidence, primary care burden, and medical treatment of angina in Scotland: Age, sex and socioeconomic disparities: a population-based study. *Heart* 2006; 92:1047-1054.
- [8] Hemingway H, McCallum A, Shipley M, Manderbacka K, Martikainen P, Keskimaki I. Incidence and prognostic implications of stable angina pectoris among women and men. *JAMA* 2006;295(12): 1404-1411.
- [9] Lampe FC, Whincup PH, Wannamethee SG, Shaper AG, Walker M, Ebrahim S. The natural history of prevalent ischaemic heart disease in middle-aged men. *Eur Heart J* 2000; 21: 1052-62.
- [10] Murphy NF, Stewart S, Hart CL, MacIntyre K, Hole D, McMurray JJ. A population study of the long-term consequences of Rose angina: 20-year follow-up of the Renfrew-Paisley Study. *Heart* 2006; 92: 1739-46.
- [11] Brown N, Melville M, Gray D, et al. Quality of life four years after acute myocardial infarction: short form 36 scores compared with a normal population. *Heart* 1999; 81:352-358.

- [12] Wandell PE, Brorsson B, Aberg H. Functioning and well-being of patients with type 2 diabetes or angina pectoris, compared with the general population. *Diabetes Metab* 2000; 26:465-471.
- [13] Lyons RA, Lo SV, Littlepage BNC. Comparative health status of patients with 11 common illnesses in Wales. *J Epidemiol Community Health* 1994; 48:388-390.
- [14] Stewart A, Greenfield S, Hays RD, et al. Functional status and well-being of patients with chronic conditions results from the Medical Outcomes Study. *JAMA* 1989; 262:907-913.
- [15] Buckley, B. & Murphy, A.W. Do patients with angina alone have a more benign prognosis than patients with a history of acute myocardial infarction, revascularization or both? Findings from a community cohort study. *Heart* 2009; 95: 461-67.
- [16] Brorsson B, Bernstein SJ, Brook RH, Werko L. Quality of life of patients with chronic stable angina before and 4 years after coronary artery revascularization compared with a normal population. *Heart* 2002; 87:140-145.
- [17] McGillion M, Watt-Watson J, LeFort S, Stevens B. Positive shifts in the perceived meaning of cardiac pain following a psychoeducation program for chronic stable angina. *Can J Nurs Res* 2007; 39:48-65.
- [18] Erixson G, Jerlock M, Dahlberg K. Experiences of living with angina pectoris. *Nurs Sci Res Nordic Countries* 1997; 17:34-38.
- [19] McGillion MH, Watt-Watson JH, Kim J, Graham A. Learning by heart: A focused group study to determine the self-management learning needs of chronic stable angina patients. *Can J Cardiovasc Nurs* 2004; 14:12-22.
- [20] Brorsson B, Bernstein SJ, Brook RH, Werko L. Quality of life of chronic stable angina patients four years after coronary angioplasty or coronary artery bypass surgery. *J Intern Med* 2001; 249:47-57.
- [21] Caine N, Sharples LD, Wallwork J. Prospective study of health related quality of life before and after coronary artery bypass grafting: outcome at 5 years. *Heart* 1999; 81:347-351.
- [22] Gardner K, Chapple A. Barriers to referral in patients with angina: Qualitative study. *BMJ* 1999; 319:418-421.
- [23] MacDermott AFN. Living with angina pectoris: A phenomenological study. *Eur J Cardiovasc Nurs* 2002; 1:265-272.
- [24] Miklaucich M. Limitations on life: women's lived experiences of angina. *J Adv Nurs* 1998; 28: 1207-1215.
- [25] Pocock SJ, Henderson RA, Seed P, Treasure T, Hampton J. Quality of life, employment status, and anginal symptoms after coronary artery bypass surgery: 3-year fol-



low-up in the randomized intervention treatment of angina (RITA) trial. *Circulation* 1996; 94:135-142.

- [26] Marquis P, Fayol C, Joire JE. Clinical validation of a quality of life questionnaire in angina pectoris patients. *Eur Heart J* 1995;16:1554-1560.
- [27] Peric VM, Borzanovic MD, Stolic RV, Jovanovic AN, Sovtic SR. Severity of angina as a predictor of quality of life changes six months after coronary artery bypass surgery. *Ann Thorac Surg* 2006;81:2115-2120
- [28] Lewin RJP. Improving quality of life in patients with angina. *Heart* 1999;82:654-655.
- [29] Lewin B. The psychological and behavioural management of angina. *J Psychosom Res* 1997;5:452-462.
- [30] Wynn A. Unwarranted emotional distress in men with ischaemic heart disease. *Med J Aust* 1967;2:847-851.
- [31] Ketterer MW, Bekkouche NS, Goldberg AD, McMahon RP, Krantz D. Symptoms of anxiety and depression are correlates of angina pectoris by recent history and an ischemia-positive treadmill test in patients with documented coronary artery disease in the PIMI study. *Cardiovasc Psychiatry Neurol* 2011;2011:1-7.
- [32] Gravely-Witte S, De Gucht V, Heiser W, Grace SL, Van Elderen T. The impact of angina and cardiac history on health-related quality of life and depression in coronary heart disease patients. *Chronic Illn* 2007;3:66-76.
- [33] Furze G, Bull P, Lewin R, Thompson DR. Development of the york angina beliefs questionnaire. *J Health Psychol* 2003;8:307-316.
- [34] Petrie KJ, Weinmann J, Sharpe N, Buckley J. Role of patients' view of their illness in predicting return to work and functioning after myocardial infarction: longitudinal study. *BMJ* 1996;312:1191-1194.
- [35] Maerland JG, Havik OE. Use of health services after a myocardial infarction. *Scan J Soc Med* 1989;17:93-102.
- [36] Furze G, Roebuck A, Bull P, Lewin RJP, Thompson D. A comparison of the illness beliefs of people with angina and their peers: a questionnaire study. *BMC Cardiovasc Dis*. <http://www.biomedcentral.com/1471-2261/2/4> (accessed 2 October 2012).
- [37] Lin YP, Furze GF, Spilsbury K, Lewin RJP. Cardiac misconceptions: comparisons among nurses, nursing students, and people with heart disease in Taiwan. *JAN* 2008;64(3):251-260.
- [38] McGillion M, Arthur H. Persistent cardiac pain: a burgeoning science requiring a new approach. *Can J Cardiol* 2012;28:S1-S2.
- [39] Stewart S, Murphy N, Walker A, McGuire A, McMurray JJV. The current cost of angina pectoris to the National Health Service in the UK. *Heart* 2003;89: 848-853.

- [40] McGillion M, Croxford R, Watt-Watson J, LeFort S, Stevens B, Coyte P. Cost of illness for chronic stable angina patients enrolled in a self-management education trial. *Can J Cardiol* 2008; 24:759-764.
- [41] Barlow, J., Wright C., Sheasby, J., Turner, A. and Hainsworth, J. Self-management approaches for people with chronic conditions: a review. *Pat Ed Couns* 2002;48:177-187.
- [42] Holman, H. and Lorig, K. Patient self-management: A key to effectiveness and efficiency in care of chronic disease. *Public Health Rep* 2004;119: 239-243.
- [43] Bodenheimer T, Lorig K, Holman H, Grumbach K. Patient self-management of chronic disease in primary care. *JAMA* 2002;288: 2469-2475.
- [44] Holman H, Lorig K. Patients as partners in managing chronic disease. *BMJ* 2000;320: 526-527.
- [45] Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A. Improving chronic illness care: Translating evidence into action. *Health Aff* 2001;20:64-78.
- [46] Warsi A, Wang PS, LaValley MP, Avorn J, Solomon DH. Self-Management Education Programs in Chronic Disease: A systematic review and methodological critique of the literature. *Arch Intern Med* 2004;164:1641-1649.
- [47] D, Zurilla T. Problem Solving Therapy. New York: Springer; 1986.
- [48] Gruman J, VonKorff. Self-management services: Their role in disease management. *Dis Manage Health Outcomes* 1999;6(3):151-158.
- [49] Foster G. Taylor SJC, Eldridge S, Ramsay J, Griffiths CJ. Self-management education programs by lay leaders for people with chronic conditions. *Cochrane Database of Systematic Reviews* 2007;Issue 4. Art. No.: CD005108. DOI: 10.1002/14651858.CD005108.pub2.
- [50] Pearson ML, Mattke S, Shaw R, Ridgely MS, Wiseman SH. Patient Self-Management Support Programs: AN Evaluation. Final Contract Report (prepared by RAND health under Contract No. 282-00-005). Rockville, MD. Agency for Healthcare Research and Quality; November 2007. AHQR Publication No. 08-0011.
- [51] McGillion M, LeFort S, Webber K, Stinson J. Pain Self-Management: Theory and Process for Clinicians. In: Lynch ME, Craig K, Peng PWH (eds.) *Clinical Pain Management: A Practical Guide*. Oxford: Wiley-Blackwell; 2011. p193-199.
- [52] Bandura A. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs: Prentice Hall; 1986.
- [53] Bandura A. *Social Learning Theory*. Englewood Cliffs: Prentice-Hall; 1977.
- [54] Bandura A. *Self-Efficacy: The Exercise of Control*. New York: W.H. Freeman; 1997.
- [55] Stanford School of Medicine. Stanford Patient Education Research centre. <http://patienteducation.stanford.edu/programs/cdsmp.html>. (accessed 8 October 2012).

- [56] Lorig K. Development and dissemination of an arthritis patient education course. *Fam and Comm Health* 1986;9: 23-32.
- [57] Lorig K., Lubeck D, Kraines RG, Selenznick M, Holman HR. Outcomes of self-help education for patients with arthritis. *Arth and Rheum* 1985;28:680-685.
- [58] Lorig K, Lubeck D, Selenznick M, Brown BW, Ung E, Holman R. The beneficial outcomes of the arthritis self-management course are inadequately explained by behaviour change. *Arth and Rheum* 1989;31:91-95.
- [59] Lorig K, Holman HR. Long-term outcomes of an arthritis study: effects of reinforcement efforts. *Soc Sci Med* 1989;20, 221-224.
- [60] Lorig K, Mazonson P, Holman HR. Evidence suggesting that health education for self-management in patients with chronic arthritis has maintained health benefits while reducing health care costs. *Arth and Rheum*, 1993;36, 439-446.
- [61] Lorig K, Holman HR. Arthritis self-management studies: A twelve year review. *Health Ed Quart* 1993;20, 17-28.
- [62] Nolte S, Elsworth GR, Sinclair AJ, Osborne RH. The extent and breadth of benefits from participating in chronic disease self-management courses: A national patient-reported outcomes survey. *Pat Ed Counsel* 2007;65(3):351-60.
- [63] Kennedy A, Reeves D, Bower P, Lee V, Middleton E, Richardson G, Gardner C, Gately C, Rogers A. The Effectiveness and Cost Effectiveness of a National Lay-led Self Care Support Programme for Patients with Long-term Conditions: A Pragmatic Randomised Controlled Trial. *J Epidemiol and Comm Health* 2007;61(3):254-61.
- [64] AM, Chan CC, Poon PK, Chui DY, Chan SC. Evaluation of the Chronic Disease Self-Management Program in a Chinese Population. *Pat Ed and Counsel* 2007;65:42-50.
- [65] Lorig KR, Ritter PL, Laurent DD, Plant K. Internet-Based Chronic Disease Self-Management: A Randomized Trial. *Med Care* 2006;44(11):964-71.
- [66] Swerissen H, Belfrage J, Weeks A, Jordan L, Walker C, Furler J, McAvoy B, Carter M, Peterson, C. A Randomised Control Trial of a Self-Management Program for People with a Chronic Illness from Vietnamese, Chinese, Italian and Greek Backgrounds. *Pat Ed Counsel* 2006;64:360-368.
- [67] Griffiths C, Motlib J, Azad A, Ramsay J, Eldridge S, Feder G, Khanam R, Munni R, Garrett M, Turner A, Barlow J. Randomised Controlled Trial of a Lay-led Self-management Programme for Bangladeshi Patients with Chronic Disease. *Brit J Gen Pract* 2005;55(520):831-7.
- [68] Lorig KR, Hurwicz M, Sobel D, Hobbs M, Ritter PL. A National Dissemination of an Evidence-based Self-management Program: A Process Evaluation Study. *Pat Ed Counsel* 2004;59:69-79.

- [69] Lorig KR, Ritter PL, González VM. Hispanic Chronic Disease Self-Management: A Randomized Community-based Outcome Trial. *Nurs Res* 2003;52(6):361-369.
- [70] Lorig KR, Sobel DS, Ritter PL, Laurent D, Hobbs M. Effect of a Self-Management Program on Patients with Chronic Disease. *Effect Clin Pract* 2001;4(6):256-262.
- [71] Lorig KR, Ritter PL, Stewart AL, Sobel DS, Brown BW, Bandura A, González VM, Laurent DD, Holman HR. Chronic Disease Self-Management Program: 2-Year Health Status and Health Care Utilization Outcomes. *Med Care* 2001;39(11):1217-1223.
- [72] Marks R, Allegrante JP, Lorig K. A review and synthesis of research evidence for self-efficacy enhancing interventions for reducing chronic disability: Implications for health education practice (Part II). *Health Prom Pract* 2005;6:148-156.
- [73] Lorig K, Stewart A, Ritter P, González VM, Laurent D, Lynch J. Conceptual Basis for the Chronic Disease Self-Management Study. In: *Outcome Measures for Health Education and other Health Care Interventions*. Thousand Oaks: Sage Publications, Inc; 1996: p1-10.
- [74] Bundy C, Carroll D, Wallace L, Nagle R. Psychological treatment of chronic stable angina pectoris. *Psychol Health* 1994; 10:69-77.
- [75] Payne TJ, Johnson CA, Penzein DB, et al. Chest pain self-management training for patients with coronary artery disease. *J Psychosom Res* 1994; 38:409-418.
- [76] Lewin B, Cay E, Todd I, et al. The angina management programme: a rehabilitation treatment. *Br J Cardiol* 1995; 1:221-226.
- [77] Gallacher JEJ, Hopkinson CA, Bennett ML, Burr ML, Elwood PC. Effect of stress management on angina. *Psychol Health* 1997; 12:523-532.
- [78] Angina Plan Administration: Welcome to the Angina Plan. <http://www.angina-plan.org.uk/index.htm> (accessed 28 September 2012).
- [79] Lewin RJP, Furze G, Robinson J, et al. A randomized controlled trial of a self-management plan for patients with newly diagnosed angina. *Br J Gen Pract* 2002; 52:194-196, 199-201.
- [80] Ma W, Teng Y. Influence of cognitive and psychological intervention on negative emotion and severity of myocardial ischemia in patients with angina. *Chin J Clin Rehab* 2005; 24:25-27.
- [81] McGillion M, Watt-Watson J, Stevens B, LeFort S, Coyte P, Graham A. Randomized controlled trial of a psychoeducation program for the self-management of chronic cardiac pain. *J Pain Symptom Manage* 2008; 36:126-140.
- [82] Zetta S, Smith K, Jones M, Allcoat P, Sullivan F. Evaluating the angina plan in patients admitted to hospital with angina: a randomized controlled trial. *Cardiovasc Ther* 2011; 29:112-124.

- [83] Furze G, Cox H, Morton V. et al. Randomized controlled trial of a lay-facilitated angina management programme. *J Adv Nurs* 2012 Jan 10. doi: 1111/j.1365-2648.2011.05920x [Epub ahead of print]
- [84] McGillion M, Arthur H, Victor C, Watt-Watson J, Cosman T. Effectiveness of psychoeducational interventions for improving symptoms, health-related quality of life, and psychological well being in patients with stable angina. *Curr Cardiol Rev* 2008; 4:1-11.
- [85] McGillion M, Victor JC, Arthur H, Carroll S, Cook A, O'Keefe-McCarthy S, Cosman T, Watt-Watson J. Self-management training for chronic stable angina. *Can J Cardiol* 2012;28:S216-S217.
- [86] Rickheim PL, Weaver TW. Assessment of group versus individual diabetes education. *Diabet Care* 2002;25(2):266-274.
- [87] Scottish Intercollegiate Guidelines Network. Management of Stable Angina: A National Clinical Guideline. <http://www.sign.ac.uk/guidelines/fulltext/96/index.html>. (accessed 19 September 2012).
- [88] McGillion M, Arthur HM, Cook A, Carroll SL, Victor JC, L'Allier, PL, Jolicoeur EM, Svorkdal N, Niznick J, Teoh K, Cosman T, Sessle B, Watt-Watson J, Clark A, Taenzer P, Coyte P, Malysh L, Galte C, Suskin N, Natarajan, M, Lynch M, Parry M, Stone J. Joint Canadian Cardiovascular Society-Canadian Pain Society Guidelines for the Management of Patients with Refractory Angina. *Can J Cardiol* 2012;28: S20-S41.
- [89] Smith SC Jr, Allen J, Blair SN, et al. AHA/ACC guidelines for secondary prevention for patients with coronary and other atherosclerotic vascular disease: 2006 update: endorsed by the National Heart, Lung, and Blood Institute [published correction appears in *Circulation*. 2006;113(22):e847]. *Circulation*. 2006;113(19):2363-2372.
- [90] Thompson PD, Buchner D, Pina IL, et al., for the American Heart Association. Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease: a statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity). *Circulation*. 2003;107(24):3109-3116.
- [91] Leon AS, Franklin BA, Costa F, et al. Cardiac rehabilitation and secondary prevention of coronary heart disease: an American Heart Association scientific statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity), in collaboration with the American Association of Cardiovascular and Pulmonary Rehabilitation [published correction appears in *Circulation*. 2005;111(13):1717]. *Circulation*. 2005;111(3):369-376.
- [92] Hadjistavropoulos H, Shymkiw, J. Predicting readiness to self-manage pain. *Clin J Pain* 2007;23:259-266.



