Motivation for Self-management Among Adults with Type 2 Diabetes

by

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Summary

Background: The demands of daily diabetes self-management behaviours have been described as challenging and many individuals fail to adhere to this regimes. There is, therefore, a growing recognition of the need to focus on the motivation to maintain self-management behaviours among people with type 2 diabetes. However, although many researchers have identified motivation as critical for diabetes self-management, few studies have explicitly focused on this topic.

Aims: The overall aim of this thesis is to use both qualitative and quantitative approaches to develop knowledge about factors that may be related to motivation for self-management among adults with type 2 diabetes. These factors include ability expectations, values, and social support and their relationship with diabetes self-management behaviours.

Methods: In 2007, 19 adults with type 2 diabetes participated in focus group interviews about factors that may stimulate motivation for diabetes management. The analysis of the interview text was inspired by the qualitative content analysis method. In 2008, 425 adults with type 2 diabetes completed the questionnaire about diet and exercise management, ability expectations, values, and social support from healthcare practitioners, family and friends, as well as data about socio-demographic factors. Several statistical procedures were applied.

Results: Six life-values were identified, several of which are related to fundamental human needs. The results indicated that life values may be critical motivational factors for engaging in a diabetes self-management. The results also suggested that goals related to self-management were formulated in more general than specific terms.

Descriptive analysis revealed a pattern of high scores on intrinsic motivation (ability expectations and values) and a more moderate level of diet and exercise management. Moreover, relatively few participants reported that diet and exercise implied negative values for them. In the multiple regression analysis, results showed a tendency for respondents with higher exercise ability expectations to report taking more exercise;

the same tendency was found for diet management. However, indicators of intrinsic motivational factors explained more variances for exercise management than for diet management.

Results also revealed that a majority of the participants were satisfied with the social support from healthcare practitioners. By contrast, a small percentage of the participants reported frequent social support from family and friends. In the multivariate approach, only modest associations were found between social support and self-management.

Five attributes of social support were identified, reflecting participants' perspectives on what they consider necessary attributes of support from healthcare practitioners that motivated them to self-manage their disease. Although it is unclear whether the attributes that were identified in paper II actually influence self-management motivation in a positive way, the results in the quantitative study indicated that some of the associations between social support and diet and exercise management were mediated by ability expectations.

Conclusions: This study demonstrated that many people with type 2 diabetes followed the recommended diet and exercise management less than recommendations by the current national diabetes guidelines. Life values seem to be a critical factor in motivation for diabetes self-management. Moreover, this present study lends support to the theoretically-based notion and to previous research findings that ability expectations may enhance self-management. Although the majority of participants were satisfied with the social support from healthcare practitioners, findings indicate a need for more practical and on-going support. In fact, the results imply individual differences in how participants preferred to receive social support from healthcare practitioners. Few participants reported frequent social support from family and friends signifying the potential that exists to empower family and friends to give more constructive support. However, only modest associations were found between social support and self-management, but some of those associations were mediated by ability expectations.

List of papers

This thesis is based on the following papers, which will be referred to in the text by their Roman numerals:

I.   Oftedal, B., Karlsen, B., & Bru, E. (2010). Life values and self-regulation behaviours among adults with type 2 diabetes. *Journal of Clinical Nursing, 19*(17-18), 2548-2556.

II.   Oftedal, B., Karlsen, B., & Bru, E. (2010). Perceived support from healthcare practitioners among adults with type 2 diabetes. *Journal of Advanced Nursing, 66*(7), 1500-1509.

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IV.   Oftedal, B.,Bru, E., & Karlsen, B. (Accepted). Social support as a motivator of self-management among adults with type 2 diabetes. *Journal of Nursing and Healthcare of Chronic Illness.*

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1 Introduction

At present, there is no cure for type 2 diabetes. Self-management of the disease is, therefore, a key factor in achieving adequate metabolic control and preventing long-term complications (Funnell, et al., 2010; International Diabetes Federation [IDF], 2009). Self-management behaviours include a healthful diet, regular physical activity, blood glucose self-monitoring and possible use of oral tablets and insulin injections (M. Clark, 2005). The demands of these daily behaviours have been described as challenging (Hunt, Arar, & Larme, 1998; Paterson, Thorne, & Dewis, 1998), and many individuls fail to adhere to diabetes management regimes (Wentzel, et al., 2008; Xu, Toobert, Savage, Pan, & Whitmer, 2008). It is thus not surprising that several studies have shown that diabetes management is often far from optimal (Claudi, Ingskog, Cooper, Jenum, & Hausken, 2008; Saydah, Fradkin, & Cowie, 2004). Since diabetes management activities are hard to achieve and even harder to maintain, there is a growing recognition of the need to focus on the motivation to maintain self-management behaviours among people with type 2 diabetes. However, although many researchers have identified motivation as critical for diabetes self-management, few studies have explicitly focused on this topic (Korkiakangas, et al., 2010; Schilling, Grey, & Knafl, 2002; Shigaki, et al., 2010). Consequently, more work has to be done to understand the mechanisms involved in motivation for adequate diabetes self-management among adults with type 2 diabetes.

1.1 Background

1.1.1 Type 2 diabetes – a chronic disease

Over the last 30-40 years, there have been considerable cultural and social changes, and changes in people's behaviours and lifestyles, all of which have resulted in an escalating incidence of type 2 diabetes (IDF, 2009). With the rising rate of diabetes in both developing and developed countries, the World Health Organization has described

diabetes as a worldwide epidemic. There is every reason to believe that the next decade will bring a further increase (Zimmet, Cameron, & Shaw, 2005). At present, an estimated 285 million people worldwide live with diabetes; within the next 20 years, this figure is expected to reach 438 million, of whom over 90% will have type 2 diabetes (IDF, 2009). In Norway, about 350 000 people have type 2 diabetes, but since type 2 diabetes can remain asymptomatic for many years, it is likely that approximately 50% of people with type 2 diabetes are undiagnosed (Claudi, et al., 2009).

The diagnosis of type 2 diabetes usually occur in adults over 30 years of age, but unfortunately, the prevalence of type 2 diabetes in adolescents and children is increasing (Claudi, et al., 2005). What is the reason for this dismaying increase in type 2 diabetes? Although we do not have all the answers, the genetic aspects are clearly important, involving both a strong familial history and ethnicity. For instance, populations from the Pacific regions, Asia and Africa have an especially high risk (IDF, 2009; Zimmet, et al., 2005). In addition, among environmental factors, rapid cultural and social changes, ageing populations, increasing urbanisation, dietary change and reduction in physical activity are the most significant ones (IDF, 2009).

The World Health Organization [WHO)], 2010) defines diabetes mellitus as:

> "a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such a deficiency results in increased concentrations of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves".

Type 2 diabetes is the most common form of diabetes and arises either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. As a result, people cannot metabolise the glucose in the food, which leads to a high level of glucose in the blood ($\leq 7\%$). This high level of glucose is called hyperglycaemia (IDF, 2009). Hyperglycaemia can lead to serious long-term complications such as cardiovascular disease, kidney failure, blindness, and neuropathy. Moreover, in most people with type 2

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diabetes, there is a multiple set of risk factors that commonly appear together, forming what is known as the "metabolic syndrome". The metabolic syndrome refers to a cluster of the most dangerous heart attack risk factors and raised fasting plasma glucose, abdominal obesity, high cholesterol, and high blood pressure. The more factors of the metabolic syndrome that are manifested, the higher the cardiovascular mortality rate (IDF, 2009). However, although it is possible to achieve metabolic control, a recent Norwegian survey revealed that only seven per cent of adults with diabetes attained the optimal metabolic control known to be ideal for preventing complications (Claudi, et al., 2008; Jenum, Claudi, & Cooper, 2008). Similar results have been found in other countries (Saydah, et al., 2004).

1.1.2   Definition of self-management

In the late 1970s, when home blood glucose monitoring was introduced, the focus of diabetes management shifted from doctors to patients (Saudek, Derr, & Kalyani, 2006). It is now a common view that people with diabetes carry out about 95% of their own care (Anderson, et al., 1995). Peoples' involvement in the management of their care is referred to as self-management. However, there is no generally accepted definition or "gold standard" of self-management in the health field, and indeed, the term tends to be used interchangeably with terms such as *self-care* and *self-regulation*, although they do not have the same meaning in the literature (Kralik, 2010). Barlow et al. (2002) defined self-management as "the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and life-style changes inherent in living with chronic condition" (p. 178). Self-regulation has been described as any efforts undertaken to alter one's behaviour (Scheier & Carver, 2003) and has been demonstrated as an integral component of self-management (N. Clark & Partridge, 2002). On the other hand, self-care comprises "everything that people do to maintain life and satisfy their needs including activities of daily living such as washing, dressing, being educated and communicating with others" (Battersby, Lawn, & Pols, 2010, p. 86). This definition indicates that self-care activities do not necessarily have an impact on health. According to Battersby et al. (2010), it is suitable to use the

term self-management because, in contrast to self-care, self-management describes those activities that a person does that directly affect on health-related factors. Based on this understanding, in this thesis, the term self-management is mainly used to describe those activities people with type 2 diabetes have to carry out in order to achieve adequate metabolic control.

1.1.3   Self-management of type 2 diabetes

The fact that type 2 diabetes is first and foremost a self-management disease means that its treatment is largely a combination of people's daily decisions and behaviours concerning diet, exercise, blood glucose testing, foot care and medications (American Diabetes Association [ADA], 2010; M. Clark, 2005). There is no vacation from these multidimensional, diabetes self-management activities; they are 24-hours-a day, 365-days-a year. Consequently, diabetes management is a lifelong process that requires considerable self-discipline and motivation to obtain metabolic control and prevent long-term complications. It has been revealed that improving diabetes self-management can improve the metabolic control and prevent long-term complications (IDF, 2009). For instance, several intervention studies have demonstrated that physical activity and diet can prevent or delay the onset of type 2 diabetes (Gillies, et al., 2007; Tuomilehto, et al., 2001; Walker, O'Dea, Gomez, Girgis, & Colagiuri, 2010). The National guidelines laid down by the Directorate of Health also seek to address best practices for people living with diabetes (Claudi, et al., 2009). These guidelines are largely in accordance with the guidelines published by the International Diabetes Federation, American Diabetes Federation and Scottish Intercollegiate Guidelines Network (Claudi, et al., 2009). In addition, for physical activity and dietary behaviours, these guidelines for individuals with diabetes are the same as those recommended for all Norwegians (Bahr, 2009; Ommundsen & Aadland, 2009). The overall aim for the national diabetes guidelines is that people should be able to live a good life despite having diabetes (Claudi, et al., 2009). To achieve the overall aim, the guidelines recommend the following treatment goals:

- Daily moderate physical activity for at least 30 minutes

- Well-balanced meals including vegetables, fruit, whole grain breads, fish (such as tuna, salmon, cod or catfish), chicken and low-fat dairy products
- Weight reduction of 5% for overweight people
- Glycosylated heamoglobi (HbA$_{1c}$) $\leq$ 7%
- No smoking
- Blood pressure: < 135/80 mmHg
- S-LDL-cholesterol $\leq$ 2.5 mmol/l

The national diabetes guidelines for physical activity and dietary behaviour are described in general terms that indicate different approaches that can be incorporated into a person's daily life. For instance, for physical activity, one approach could be to climb the stairs instead of taking the elevator or parking far away from an entrance to increase total walking distance. Others may prefer structured exercise programmes. Although physical activity and exercise have different definitions (see e.g., Caspersen, Powell, & Christenson, 1985), they also have a number of common elements. Therefore, in this thesis the term "physical activity" is used interchangeably with "exercise".

Although guidelines for best practices in diabetes care are presented, the demands and the complex nature of these daily behaviours have been described as challenging to manage well, particularly with regard to diet and exercise (Gatt & Sammut, 2008; Pun, Coates, & Benzie, 2009). Paterson et al. (1998) demonstrated in a meta-analysis of 43 qualitative studies that the daily diabetes regime interferes with the individual's priorities and experience of living a "normal" life. It is, therefore, not unexpected, that the daily self-management behaviours are experienced by many as inconvenient and sometimes as a burden (Snoek, 2002). Several studies have revealed that barriers to exercise and diet occur most often (Ary, Toobert, Wilson, & Glasgow, 1986; Pun, et al., 2009; Shultz, Sprague, Branen, & Lambeth, 2001), and the most frequently reported barriers or challenges are time constrains, negative physical reaction, lack of interest and situational factors, such as inappropriate food offered by others (Nagelkerk, Reick, & Meengs, 2006; Pun, et al., 2009; Shultz, et al., 2001). Because studies have revealed that diet and exercise management are the most difficult to

follow, the quantitative approach is primarily used in this thesis to investigate these behaviours.

Given the large number of self-management challenges encountered by individuals with diabetes, it is not surprising that striving for adequate metabolic control challenges the individual's motivation to adhere to the diabetes regime (Snoek, 2002). Obviously, motivation is an important conceptual aspect of diabetes management. Previous diabetes research has suggested that motivational problems are probably the most significant cause of poor self-management (Casey, De Civita, & Dasgupta, 2010; Peyrot & Rubin, 2007; Ruderfelt & Axelsson, 2004). For instance, the lack of motivation appears to be the reason why people discontinue self-management behaviours (Carter & Kulbok, 2002). However, because we cannot force people to be motivated, we need to understand the factors that may stimulate motivation for diabetes management. According to Eccles and Wigfield (2002), expectancy and value are two major components that have important motivational effects for doing a task. This theory suggests that when people value (e.g., experience a perception of interest or utility) what they are doing, for instance, exercise, and believe that they can succeed (e.g., taking part in New York marathon), they will be motivated to try. Expectations and values are, in turn, affected by their perceptions of support from the social environment, such as healthcare practitioners, family and friends. As diabetes is a continual self-management disease that requires considerable self-discipline, motivation and social support, expectations and values are considered to be central factors of intrinsic motivation for diabetes self-management.

Theories within the expectancy-value tradition are commonly used to explain health behaviours (Gibbons, Houlihan, & Gerrard, 2009). However, no studies so far have used Eccles et al.'s expectancy-value theory as their explicit theoretical framework with a view to investigate motivation for diabetes management. Nevertheless, there is some published research on aspects of the application of expectancy-value theory related to diabetes management. For instance, several studies have investigated the concept of self-efficacy (see chapter 2.2.2.; *self-efficacy* and *ability expectations* are used interchangeably with *expectations*) in relation to diabetes management (Dutton, et al., 2009;

Gleeson-Kreig, 2006; Sousa, Zauszniewski, Musil, Lea, & Davis, 2005; Wu, et al., 2007). By contrast, values have played a less central role in research on motivation for self-management. However, aspects of the value component, such as negative aspects or costs related to diabetes management, have received some research attention (Pun, et al., 2009). Yet to date, we have been unable to find research that focuses on both expectations and values in relation to self-management behaviours among people with type 2 diabetes. Subsequently, it is of interest to investigate indicators of intrinsic motivation, such as ability expectations and values, for diabetes self-management, and to investigate how social support from healthcare practitioners (formal support), family and friends (informal support) may influence motivation for diabetes management among adults with type 2 diabetes.

1.2   Aims of the thesis

The overall aim of this thesis is to develop knowledge about factors that may be related to motivation for self-management among adults with type 2 diabetes. The more specific aims are as follows:

1. To identify life values among adults with type 2 diabetes and to describe their experiences of how these values may influence self-regulation behaviours (paper I)
2. To investigate diet and exercise management and how indicators of intrinsic motivation, such as ability expectations and values, are associated with diet and exercise management among adults with type 2 diabetes (paper III)
3. To describe how adults with type 2 diabetes perceive different attributes of support provided by healthcare practitioners and how various attributes of support can influence people's motivation to self-manage their disease (paper II)
4. To investigate how adults with type 2 diabetes perceive diabetes-related social support from healthcare practitioners, family and friends (paper IV)
5. To investigate how perceived social support from healthcare practitioners, family and friends are associated with diet and exercise management and the extent to which ability

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expectations mediate the association of perceived social support with diet and exercise management (paper IV)

1.3   Structure of the thesis

This thesis comprises six chapters. The introductory chapter has described type 2 diabetes as a chronic disease and the challenges of motivation for diabetes self-management, followed by presenting the aims of this thesis. Chapter 2 presents the theoretical framework of the research. It begins with some basic definitions of motivation and a brief presentation of some theories related to health behaviours, followed by Eccles et al.'s expectancy-value theory. A conceptual model for this thesis is then presented. Chapter 3 describes the methodological frames. Chapter 4 offers the main findings. Chapter 5 discusses the findings in light of earlier research and relevant theories, followed by methodological considerations for both the qualitative and quantitative studies. Finally, chapter 6 provides the conclusion, implications for clinical practice and suggestions for further research.

2   Theoretical framework

This section presents theory and research related to motivation and health behaviour, followed by Eccles et al.'s expectancy-value theory and research; it concludes by presenting a conceptual model for this thesis. The purpose of the following presentation is to illustrate and clarify the constructs that are considered relevant for the theoretical and methodological framework of this thesis.

2.1 Motivation

Motivation is derived from the Latin root *movere* which means "to move" (Schunk, Pintrich, & Meece, 2008, p. 4); in this sense, the study of motivation is the study of action. There are many definitions of motivation and considerable disagreement over its precise nature. Schunk et al. (2008) have developed a general definition of motivation that captures aspects that are considered to be central to motivation: "Motivation is the process whereby goal-directed activity is instigated and sustained" (p.4). According to this definition, motivation is a process rather than a product, which indicates that motivation cannot be observed directly but rather must be inferred from actions (e.g., the choice of task and effort) and verbalisation (e.g., "I think I am able to exercise every day"). Moreover, motivation involves goals and activities, which indicate that most activities people engage in are directed toward attaining their goals. Finally, the definition emphasises that motivated activity is instigated and sustained. According to Schunk et al. (2008), this refers to the assumption that it is often difficult to start or take the first step toward a goal. Therefore, motivation is important to sustain action. The motivational process, which includes factors such as expectations and values, could help people overcome difficulties and sustain motivation. For instance, a person who has high expectations for success in physical activity may also have a high degree of interest in engaging in physical activity and, additionally, will perform and sustain physical activity.

A well-known, key distinction in the field of motivation has been the contrast between "intrinsic" and "extrinsic" motivation. Ryan and Deci (2000) have defined extrinsic motivation as "doing something because it leads to a separable outcome" (p. 60) and intrinsic motivation as "doing of an activity for its inherent satisfactions rather than for some separable consequences" (p. 56). However, Ryan and Deci (2000) do not consider "intrinsic" and "extrinsic" motivation as two distinct types of motivation, but rather believe there is a continuum from extrinsic to intrinsic motivation, where the former can lead to the latter, i.e., activity done because of the inherent as pleasure at the endpoint. Self-management of type 2 diabetes is not necessarily done because these behaviours are perceived as pleasurable, but rather because they are perceived as important or necessary. Still such behaviours could be considered intrinsically motivated, and in this thesis, intrinsic motivation is defined as the incentive to undertake a behaviour or an activity due to its perceived importance or necessity. Intrinsic motivation is in addition believed to be influenced by ability expectations concerning the behaviour or activity.

2.2   *Motivation and health behaviour*

The construct of motivation has been assumed in selected frameworks to explain health behaviours. The Health Belief Model was one of the earliest comprehensive attempts to explain what motivates a person to engage or not engage in health-related behaviour from an expectancy-value framework (Becker, 1974; Rosenstock, 1974). According to Gibbons et al. (2009), theories that relied on some variation of an expectancy-value approach suggest that behaviour could be a result of an assessment of antecedent factors, such as beliefs about outcomes and perceptions of what others want. The Health Belief Model postulates, that regardless of health behaviour, a person is under the influence of two factors: cost and benefit. This means that people engage in a kind of cost-benefit analysis such that the perceived benefit must outweigh the perceived cost. Another essential part of this theory is people's perception and assessment of their risk to develop an illness

(susceptibility) and how serious they perceive that illness to be (severity) (Naidoo & Wills, 2000; Taylor, 2006). For instance, some studies have demonstrated that the Health Belief dimension "severity" is associated with diabetes regime adherence (Harvey & Lawson, 2009). Although the Health Belief Model is the most influential and intensively researched theory of motivation for health-related behaviours (Carter & Kulbok, 2002), this model has been criticised for neglecting important factors such as the social influence of family and peers (Taylor, 2006), and for not including perceived self-efficacy or expectancy as an influential contributor to a healthful behaviour (Bandura, 1997).

Another theory that links motivation to health-related behaviour is the Theory of Planned Behaviour (Ajzen, 1991). This theory is also linked to an expectancy-value approach (Gibbons, et al., 2009). According to this theory, a person's behavioural intention depends on his or her attitudes to the behaviour, perceived behavioural control, and subjective norms. Attitudes reflect positive or negative evaluations of the behaviour, and perceived behavioural control refers to people's perceptions of their ability to perform a given behaviour. Lastly, subjective norm refers to the perceived social pressure to engage or not to engage in a behaviour (Ajzen, 1991). Gatt and Sammut (2008) tested the Theory of Planned Behaviour for self-management among adults with type 2 diabetes. Their findings showed that perceived behavioural control appears to be the most predictive factor related to self-care behaviours. However, the variance accounted for only 49% of the variables included in the study. This implies that other factors related to diabetes self-management behaviour are not accounted for in this model.

There are also other motivational theories that include expectancy and value constructions, such as Weiner's Theory of Attribution (Weiner, 1986, 2010), for the identification of important factors that may increase the probability for a person to adopt healthy behaviour. Nevertheless, the main theory inspiring this thesis is an expectancy-value theory presented by Eccles and her colleagues (Eccles, 1983; Eccles & Wigfield, 2002). The decision to use this theory is based on the strong emphasis made by Eccles and her colleagues on the

perspective on values. In their theory, value is about how people make decisions: how and why they choose one behavioural alternative over another. Concerning type 2 diabetes, it is assumed that, in addition to ability expectations, values are believed to influence diabetes self-management because individuals with type 2 diabetes must make daily decisions and choices related to such behaviours. It may, therefore, be suggested that they need to pursue conflicting goals in order to manage their diabetes and at the same time live a satisfying life. Moreover, because promotion of diabetes management has so many educational aspects, and the expectancy-value theory has primarily been used within the field of education, we consider the Eccles model as an important theoretical inspiration in this thesis.

2.2.1   Eccles et al.'s expectancy-value theory

Eccles (1983) derived her theory from the early works of Atkinson (1957) and Weiner (1986) on motivation. Atkinson's model was influenced by several ideas, including Lewin's (1938) notions of how the valence of an activity determines the importance of an activity to an individual (Wigfield & Eccles, 1992). When Atkinson developed his expectancy-value model, he defined expectancies as individuals' anticipations that their performance will be followed by either success or failure, and values as being the relative attractiveness of succeeding or failing at a task (Bembenutty, 2008). Eccles, who believed that value is influenced by many other aspects of a person's life, thus introduced a refined and expanded expectancy-value model that is linked to a broader array of psychological and sociocultural perspectives (Bembenutty, 2008). Eccles and Wigfield (2002) postulated that people's motivation is most directly predicted by their expectations of success at behaviours or tasks and the subjective value they attach to success on those tasks. These components are in turn, influenced by both personal and social factors. It is worth noting that the terms *expectancy* and *value* are not equivalent to *motivation,* but they have been proven to be related to motivation (Bong & Skaalvik, 2003; Wigfield & Eccles, 2000). The next section offers more details of the core components in the expectancy-value theory.

2.2.2   The expectancy component

The expectancy component refers to an individual's beliefs and judgements about his/her capabilities to perform and succeed at a task (Wigfield & Eccles, 2000). This component has long been recognised by motivation theorists as having important motivational effects on many behavioural choices or activities in people's lives (Eccles, 2009). Theory and the interpretation of research findings imply that people who believe they are capable of accomplishing a task or behaviour are more motivated to seek challenging tasks (Denissen, Zarrett, & Eccles, 2007). However, Eccles (2009) believes that individuals' expectations for success vary across tasks, activities, and behaviours and that people are much more likely to select those tasks of which they have high expectations for success. On the basis of these considerations, it would be interesting to investigate the expectancy component related to self-management among people with type 2 diabetes and how this may influence motivation for self-management.

In Wigfield and Eccles' model (2000, 2002), the expectancy component reflects a construct of both ability beliefs and expectancies of success. Beliefs about ability focus on the present ability and refer to "individuals' evaluation of their competence in different areas" (Wigfield & Eccles, 2000, p. 70), while expectations of success focus on the future and are defined as "individuals' beliefs about how well they will do on an upcoming task" (Wigfield & Eccles, 2000, p. 70). Related constructs are prominent in other motivational models, in particular Bandura's self-efficacy theory (Bandura, 1997). According to Wigfield and Eccles (2000), theoretically, there can be a distinction among self-efficacy, competence beliefs, and expectancies, but empirically they are often strongly related. In this thesis, the term *ability expectations* is used interchangeably with the expectancy and self-efficacy component. *Ability expectations* refer to an individual's beliefs about his or her ability to perform necessary diabetes management. Although the concept of ability expectations does not occur in diabetes research, the concept of self-efficacy has been widely used in the self-management research on chronic diseases (Holman & Lorig, 2004) and has been associated with better self-management among people with type 2 diabetes (Gleeson-Kreig, 2006; Shi,

Ostwald, & Wang, 2010; Sousa, et al., 2005; Wu, et al., 2007). Bean, Cundy, and Petrie (2007) investigated the differences among Europeans, South Asians and Pacific Islands in perceptions of self-efficacy and self-care among adults with type 2 diabetes. That study demonstrated that those with higher levels of self-efficacy have better diabetes self-care, which was fairly consistent across ethnic groups.

2.2.3   The value component

The value component refers to the reasons individuals have for engaging in a task (or not), and their motivational potential is partly governed by what people consider important (Wigfield & Eccles, 1992). Eccles and Wigfield used the term *subjective task values* to signify that these beliefs are individuals' perceptions of their own values (Schunk, et al., 2008; Wigfield & Eccles, 1992). They describe four components of subjective values, and each component can affect behaviour.

Attainment value is related to the importance of doing well at a task, and more broadly, it deals with a person's identity or a person's actual or ideal self-schema. Eccles et al. (2007) argued that one of the motivational components of engaging in a task is confirmation or disconfirmation of salient aspects of one's self-schema, such as body image or self-worth. A study by Ball, Crawford, & Owen (2000) demonstrated that feeling fat explained the lower rate of physical activity, particularly among women. With regard to diabetes management, it may be suggested that, when self-management behaviours are considered as important and, in addition, confirm salient aspects of one's self-schema, the motivation for self-management may increase. By contrast, when diabetes management activities conflict with the self-schema of people with type 2 diabetes, their motivation for such activities may decrease.

The second component, *intrinsic value*, refers to the enjoyment one gains from carrying out a task. This component of value is similar to the construct of intrinsic motivation as defined by, for instance, Ryan and Deci (2000). According to Wigfield and Eccles (1992), when a task has high interest value, individuals will be more engaged in that task,

persist longer, and be more intrinsically motivated to do the task. On the basis of these considerations, it may be suggested that when an individual with type 2 diabetes self-manages primarily for intrinsic reasons, he/she will be more motivated to perform these behaviours. Research on physical activity has demonstrated that intrinsic motives such as enjoyment are positively associated with more physical activity (Dacey, Baltzell, & Zaichkowsky, 2008; Ferrand, et al., 2008).

The third component, *utility value,* is related to current and future goals and captures more "extrinsic" reasons for engaging in a task (Wigfield & Eccles, 1992). Wigfield and Eccles (1992) maintain that people pursue some tasks because those tasks are important for their goals, even if the people are not interested in that task for its own sake. For instance, many people with type 2 diabetes follow a healthful diet because they want to prevent long-term complications, or they exercise because their doctor expects them to do so. The latter example of utility value is similar to the "extrinsic" reason for doing a task presented by Ryan and Deci (2000).

The fourth and final component is *cost*, which is characterised as the negative aspects of engaging in an activity. Cost is influenced by many factors such as fear of failure and anxiety (Eccles, 2009). In this thesis, the cost component will be referred to as negative values related to self-management behaviours. The most negative aspects of the self-management regime reported by people with diabetes were inappropriate food offered by others, negative physical reactions, financial resources and lack of information and social support (Pun, et al., 2009). Moreover, the cost component implies that when individuals engage in one task, they cannot usually engage in another task at the same time (Eccles, 2009). Earlier studies have demonstrated that the demands for self-management activities in order to achieve adequate blood glucose control compete with other interests or values (Hörnsten, Sandstrom, & Lundman, 2004; Paterson, et al., 1998).

In summary, these four value components have been demonstrated to be empirically distinct from one another and from the expectancy component (Eccles & Wigfield, 1995). However, it is suggested that there is a link between expectancies and values that causes a tendency

in people to value those activities in which they think they will do well, and vice versa. With regard to diabetes management, it can be assumed that individuals with a stronger belief in their ability to engage in diabetes management behaviours also value performing these activities. On the other hand, if diabetes management activities are perceived as too costly, the individual's belief in diabetes management activities may decrease. However, findings from expectancy-value research have found that when both expectancies and values are used to predict an achievement, expectancies are significant predictors, but values are not significant predictors. By contrast, research has found, for instance, that in terms of intentions to take a future course and actual engage in those, values are better predictors then expectancies (Meece, Wigfield, & Eccles, 1990; Wigfield & Eccles, 1992).

2.2.3.1 Values and goals

It is necessary to describe the relationship between values and goals, because both concern the purpose or aim of individuals when engaging in different activities (Locke, 2002; Wigfield & Eccles, 2002). According to Wigfield and Eccles (2002) and Locke (2002), values are similar to goals; however, goals are usually considered more specific and change more frequently than values, which also apply to those goals related to diabetes self-management behaviour concerning diet and exercise. At the same time, more general life goals are often related to values (Boekaerts, de Koning, & Vedder, 2006), such as health and longevity, belonging to a fellowship, and self-determination. Yet in most real-life situations, people have several different goals or values that they intend to pursue simultaneously. For instance, people may want to enjoy culinary delights while also wanting a slim figure. Because people seldom desire one thing at a time, and the process of goal or value attainment includes constantly prioritizing among the many goals that a person wishes to pursue, peoples' goals related to diabetes management cannot be considered in isolation but in relationship to other important life values, such as work and belonging to a fellowship. Surprisingly few studies have considered the concurrent influence of multiple values (e.g., work and diabetes management) on diabetes management behaviours and how individuals' motivations for diabetes management were influenced

when life values competed with other necessary activities for adequate metabolic control. Morrow, Haidet, Skinner, and Naik (2008) found that among older people with type 2 diabetes, life and health values and other goals related to self-care practices often complemented each other.

Locke (2002) has posited that for a goal to be important, it must be tied to an important value. Fishbach, Friedman and Kruglanski (2003) also emphasised that goals are more likely to be accomplished when they are in harmony with other goals and values. For instance, the goals of attaining adequate metabolic control and taking part in the New York marathon may facilitate each other. On the other hand, the goal of attaining adequate metabolic control can easily conflict with the preference for tasty but unhealthy food. Based on this understanding, it may be suggested that values that are in accordance with the goals of attaining adequate metabolic control may positively influence motivation for self-management among people with type 2 diabetes. On the other hand, values can easily conflict with the preference for adequate metabolic control which, in turn, may reduce motivation for diabetes self-management. The question of how people deal with goal conflict is a well-researched area within social psychology (Hofer & Peetsma, 2005), and several theoretical perspectives have been used to examine motivational- or goal conflicts (e.g., Shah & Kruglanski, 2002; Deci & Ryan, 2000; Wrosch, Scheier, Carver, & Schulz, 2003). However, as far as has been seen, motivation theory related to chronic illness rarely addresses peoples' preferences for different values and how life values correspond or conflict with their daily life with the disease. It would, therefore, be worthwhile to investigate how the values of people with type 2 diabetes life correspond or conflict with their goals of attaining adequate metabolic control.

2.2.4   Social Support

Since diabetes management involves daily efforts, it is suggested that people with type 2 diabetes have to be supported to maintain and sustain self-management activities and to take responsibility for their health. Because physicians, nurses and other healthcare practitioners often deal with patients over time, through the long and often

challenging and complicated management of type 2 diabetes, it is expected that they play a central role in this work. In Norway, people with type 2 diabetes are usually treated in primary care by their general practitioners, most of whom have medical secretaries. Many medical secretaries are registered nurses and some have formal training in diabetes care (Jenum et al. 2008). In addition, people with type 2 diabetes are offered a structured educational programme at the hospital (e.g., The Coping and Learning Centre), which includes information, education and counselling about type 2 diabetes.

In this thesis, social support is understood as "the extent to which an individual feels connected to other people in meaningful ways" (Prkachin & Prkachin, 1999, p. 383). Social support may be formal (from professionals or formal groups) or informal (from family and friends) (Bullock, 2004). According to social support theorists, social support refers to four broad attributes of behaviours that will facilitate peoples' chances of succeeding at a given behaviour: *emotional support* (provision of empathy, caring, love and thrust), *affirmational support* (appraisal, feedback), *informational support* (suggestion, advice, information) and *tangible support* (practical assistance) (Stewart, 2000). Some of these dimensions seem to overlap with the Eccles' dimension of social support, such as emotional support and instrumental support (tangible). Colarossi and Eccles (2003) posited that emotional support could increase motivation that would result in investing more efforts into achieving one's goals. Instrumental support or advice could facilitate decision-making and behaviour that lead to a feeling of accomplishment and self-worth. The individual perception of the support can be either positive (constructive) or negative (non-constructive).

Theory and research in the field of social support have demonstrated that social support appears to promote diabetes management directly (Bai, Chiou, & Chang, 2009; Beverly, Miller, & Wray, 2008; Miller & Davis, 2005; Sousa, Zauszniewski, Musil, McDonald, & Milligan, 2004; Wen, Shepherd, & Parchman, 2004) and indirectly through improvement of ability expectations (Williams & Bond, 2002; Xu, et al., 2008). Presently, most studies have examined the direct associations between social support and diabetes management; the

dominant finding is that social support is positively associated with better diabetes management. Conversely, it is not uncommon to observe non-supportive behaviour or lack of supportive behaviour from healthcare practitioners, family and friends (Neufeld, Harrison, Hughes, & Stewart, 2007; Stewart, 2000). Earlier research in diabetes has demonstrated that healthcare practitioners do not actively involve patients in decision-making about diabetes management and that this reduces patients' attempts at diabetes regulation (McDowell, et al., 2009). Another study found that many patients with type 2 diabetes feel worthless, ignored, unsafe, and lacking in confidence within the clinical encounter (Hörnsten, Lundman, Selstam, & Sandstrom, 2005). Nagging and criticism from family members have also been found to reduce people's perception of autonomy (Sandberg, Trief, Greenberg, Graff, & Weinstock, 2006), thus making them less motivated to cope with the problems induced by the disease. Surprisingly few studies have investigated what people with diabetes perceive as helpful and what they wish for social support. One Norwegian study demonstrated that only three of ten want to be physically active with their families and friends (Ommundsen & Aadland, 2009). It may be suggested, therefore, that some people are motivated by social aspects of physical activity, while others give priority to the possibility for autonomy and flexibility regarding the time and place of their exercise activities.

According to the Theory of Planned Behaviour, subjective norms, which are based on the assumption that social pressure encourages people to behave in a socially-desirable manner, have a strong relationship with behaviour intention (Ajzen, 1991). However, there have been mixed findings in the literature regarding how subjective norms predict treatment regime. Finlay, Trafimow, & Jones, (1997) have shown that subjective norms are robust predictors of health behaviour intentions while, Povey, Conner, Sparks, James, and Shepherd (2000) and Kagee and van der Merwe (2006) found that subjective norms had no effect on diabetes management.

The link between social support and motivation for a behaviour or task may be mediated by expectations (Eccles, 2007). It may be suggested that social support can influence people's motivation to diabetes self-management by ability expectations. It appears, however, that only a

few studies to date have investigated the indirect associations between social support and diabetes management. Williams and Bond (2002) and Xu, et al. (2008) investigated how social support, through self-efficacy, was associated with diabetes management. These researchers discovered that social support and diabetes management were mediated by self-efficacy.

In summary, several previous studies have demonstrated that perceived social support seems to have a directly positive or negative influence on diabetes management. On the other hand, few studies have demonstrated that social support may influence diabetes management indirectly through, for instance, improvement of self-efficacy.

2.3 A conceptual model for the present study

The expectancy-value theory developed by Eccles and her colleagues (2002) is comprehensive in order to incorporate as many aspects as possible that have proved to influence motivation for tasks or behaviours. Consequently, the wide scope of the theory renders it hard, if not impossible, to apply the entire model in a single study. According to Bong (1996), comprehensive theory allows the researcher to select variables of interest and analyse their relationship without losing sight of the big picture. Figure 1 presents a model inspired by elements from Eccles and Wigfield's expectancy-value theory (Eccles & Wigfield, 2002). In this thesis, the model proposes that a person's diabetes self-management is influenced by his or her ability expectations and values about those behaviours. Moreover, a person's ability expectations and values related to diabetes management are, in turn, influenced by perceptions of social support from healthcare practitioners, family and friends.
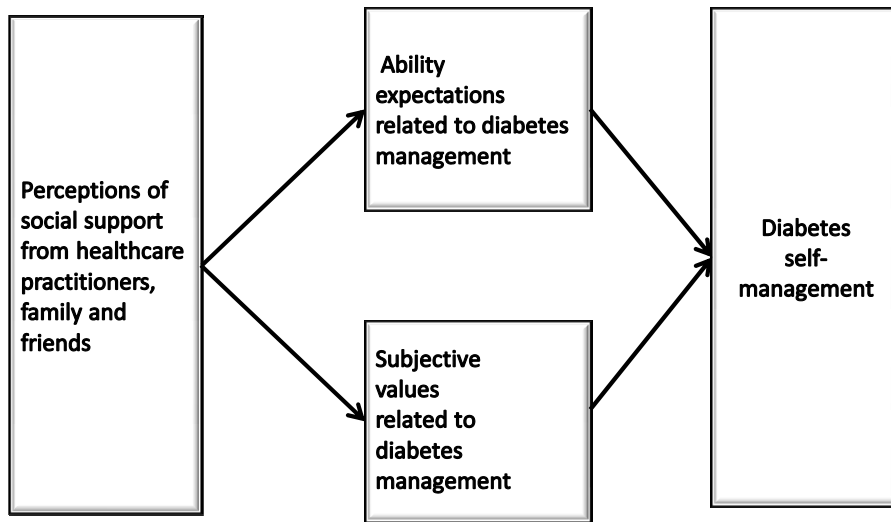
Figure 1. Conceptual model for the present study inspired by elements of Eccles and Wigfield's expectancy-value theory.

3 Methods

3.1 Philosophical considerations

Epistemology is the study of how we know what we know (Crotty, 1998). Moreover, epistemology is concerned with the kinds of knowledge that are possible and how we can ensure that they are both adequate and legitimate. Consequently, there is a range of epistemologies. Objectivist epistemology postulates that things exist as meaningful entities independently of consciousness and experience and that research can attain that objective meaning and truth. Constructionist epistemology rejects objectivism and believes that people construct the realities in which they participate (Crotty, 1998). The current thesis is embedded within critical realism. Critical realism is a philosophical perspective that presents alternatives to the established paradigms of positivism and interpretivism (Houston, 2001; McEvoy & Richards, 2006). In short, critical realism asserts that reality has an objective existence, but our knowledge of that existence is always mediated by interpretations based on prior knowledge. Therefore, we cannot make neutral observations of the "facts" about reality because what we observe is dependent on our theories, pre-understanding and investigative interest. This means that all knowledge is fallible and subject to corrections (McEvoy & Richards, 2006). Consequently, critical realism represents a "both-and" in accordance with positivism and interpretivism. However, the aim of critical realism is not to identify generalisable laws (positivism) or to identify the lived experience or beliefs of social actors (interpretivism); its aim is to develop deeper levels of explanation and understanding (McEvoy & Richards, 2006).

Motivation is an abstract concept that cannot be observed directly but is inferred from verbalisations or obvious behaviours. Due to the "latency" or "invisibility" of the concept of motivation, questions about how it could be conceptualised, operationalised, measured and interpreted were a core issue when planning this thesis. This study was,

as previously mentioned, inspired by the expectancy-value model when deciding how best to understand and investigate motivation for diabetes management. In addition, research methods that reflect the complexity of human motivation were needed. It has become a more common view that data from both qualitative and quantitative studies are especially useful when investigate complex health behaviours (Polit & Beck, 2004). In this thesis, therefore, both qualitative and quantitative research methods were used. The use of two methods made it possible to acquire a more profound and extensive knowledge about motivation for self-management among people living with type 2 diabetes. The purpose was also to strengthen the knowledge of motivation for self-management because one can use the qualitative and quantitative methods to complement each other, which may lead to a richer and more in-depth description of the research theme (Polit & Beck, 2004). Using a quantitative approach allowed both for quantification (i.e., determination of amount and frequency) of diabetes-related self-management behaviours and motivation and for investigation of the associations between these variables, while the qualitative study emphasised the descriptions of people with type 2 diabetes that were related to motivation for diabetes management. However, we assumed that either quantitative or qualitative approaches would give us a complete picture of our object of study, but that each would be valuable and each could give us a different partial picture.

3.2   Study design

This thesis comprises both a descriptive/explorative qualitative design and a cross-sectional design. The design has elements of component design (Polit & Beck, 2004). In component design, qualitative and quantitative aspects remain distinct during the data collection and analysis phases, but they are combined during the interpretation and reporting phase. In this thesis, the qualitative and quantitative approaches are used separately in the different studies but combined in the overall discussion. The thesis draws on data from two sources: a focus group interview and a survey study. The two approaches were conducted sequentially and with two different samples. The qualitative approach occurred prior to the survey. As mentioned earlier, using two

methods does not necessarily produce an integrated whole. Nevertheless, qualitative and quantitative approaches are likely to yield a richer account than either approach alone. Figure 2 presents an illustration of the study design. Table 1 presents an overview of methods, recruitment, and analyses.

Qualitative (Qual.) approach

| Qual. data collection | → | Qual. data analysis | → | Qual. data results | → | Qual. data interpretation and discussion |

Quantitative (Quan.) approach

| Quan. data collection | → | Quan. data analysis | → | Quan. data results | → | Quan. data interpretation and discussion |

Discussion based on qualitative and quantitative findings
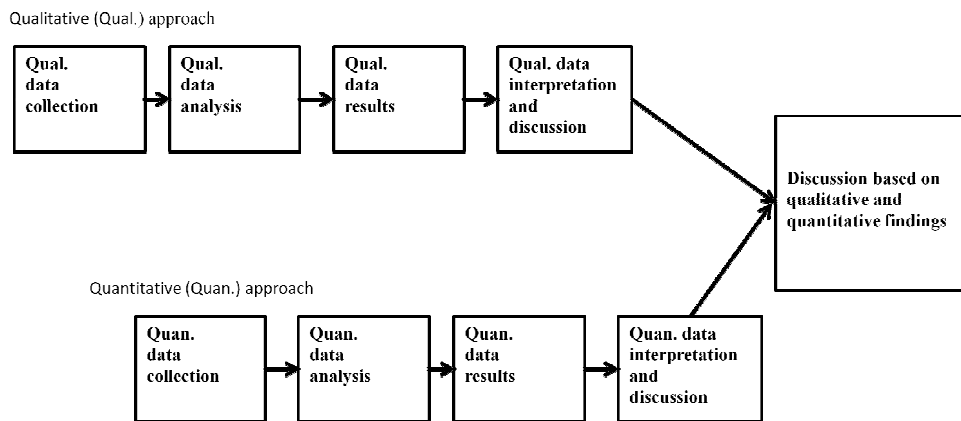
Figure 2. Overall design of the thesis.

Table 1 Overview of methods, recruitment, and analyses

Papers	Data collection method	Invited (n)	Response (n)	Recruited from	Data analysis methods
I,II	Focus groups	42	21	• Coping and Learning Centre (N= 30) • General practitioners (N= 9) • Local Diabetes Association (N=3)	Qualitative content analysis NVivo$_7$
III,IV	Survey	689	425	• General practitioners (N= 189) • Norwegian Diabetes Association (N= 500)	Quantitative analysis SPSS 15.0

3.3 Qualitative approach

3.3.1 Participants in the focus groups

The qualitative research was conducted in south western Norway. To obtain a varied picture of how adults with type 2 diabetes experience motivation for self-management, the participants were recruited from three sources: 1) the Coping and Learning Centre at a University hospital, 2) a local diabetes association and 3) general practitioners (GPs). The inclusion criteria were ages 30 - 65 years, disease duration of at least one year, and the ability to speak Norwegian. The age limit of 30 - 65 was selected because it is representative of the vast majority of people living with type 2 diabetes in Norway (Stene, et al., 2004). The disease duration of at least one year was chosen because we tried to ensure that all participants already had some experience living with type 2 diabetes. A purposive sample of adults with type 2 diabetes was selected from the Coping and Learning Centre and the GPs' registers. Thirty people were invited to participate by the leader of the Coping and Learning Centre and nine by the nurse working with the GPs. People with more than five years' experience of type 2 diabetes were strategically recruited from a local diabetes association by the local leader. It was suggested that living some years with type 2 diabetes may increase the chances that one has also gained insight into how other people live with their diabetes, which is regarded as important knowledge to bring into a focus group interview. Twenty-one people agreed to participate: 12 from the Coping and Learning Centre, six from the GPs and three from the local Diabetes Association. Two participants dropped out of the study prior to the start of the focus group due to work or illness. Of the 19 participants, 12 were males and seven females. Fourteen had participated in the educational programme at the Coping and Learning Centre. The majority had a self-reported HbA_{1c} level within the acceptable range ($\leq 7\%$) and three had $HbA_{1c} > 8\%$. Table 2 presents their clinical and demographic characteristics.

Table 2 Clinical and demographic characteristics of the sample in the three focus groups

	Focus group 1	Focus group 2	Focus group 3
Gender:			
Male (n)	5	3	4
Female (n)	2	2	3
Age Median (years)	57	52	42
Educational level			
University	5	3	1
High school	2	1	6
Primary and secondary school		1	
Duration of diabetes Median (years)	8	9	2
HbA$_{1c}$ (%) Mean	7.1	7.5	6.5

3.3.2 *Focus group interviews (papers I and II)*

A focus group is defined as "a research technique that collects data through group interaction on a topic determined by the researcher" (Morgan, 1997, p. 6). The definition comprises three important aspects: Firstly, focus group interviews are a method of producing data on the phenomenon studied; secondly, interaction amongst the participants is a source of data; thirdly, the researcher defines the discussion topics (the focus) of the group. The focus group interview was selected for the qualitative studies (papers I and II) because the interaction amongst the participants where they share, compare and discuss their experience with type 2 diabetes makes it possible to obtain several perspectives on the research topic. The data collection will probably generate a broad knowledge and understanding of the research phenomena.

According to Morgan (1997), what determines the "right" number of participants in the group is a good balance between having enough participants to generate a discussion, yet not too many to preclude some participants from having the time and space to express their opinions. In addition, both homogeneity and heterogeneity must be considered. Homogeneity is necessary to make the participants comfortable and to convince them that they have something to say about the topic, while heterogeneity is necessary to challenge the participants to engage in a dynamic discussion. The justification for the optimal number of groups is when additional data no longer generates new understanding ("saturation"). In this study, three focus groups were planned, with seven people in each group. This was based on the belief that more groups will not necessarily provide new information. Although a focus group interview is seen as a suitable method of obtaining information from many informants about a specific topic, there is a high degree of uncertainty related to the discussion in a focus group. One challenge could be that one person dominates the group or that one person will not speak at all. However, depending upon factors such as the participants (not enough participants show up) and the quality of the discussion in the group (flat, unproductive discussion), additional groups may be required. In this study, the dynamics of all the groups were positive, and many of the participants expressed that the fellowship and discussions were constructive and valuable.

Even though many factors may influence the implementation of a successful focus group interview, the role of the moderator or the group leader is essential for the results. In short, the moderator's role is to guide the group through the discussion and to create a non-threatening supportive climate that encourages all participants to share their views. In addition, the moderator has to find the right balance between an active and passive role in the group (Sim, 1998). An assistant moderator is also important because the second person can make notes on non-verbal interaction or other dynamic factors that cannot be recorded on audiotape.

3.3.2.1   Procedure of the focus group interviews

The focus group interviews reported in papers I and II comprised three groups, each with five to seven participants who included both males and females.

All respondents were invited by letter to take part in the study, and all provided their informed written consent prior to the focus groups. Those accepting the invitation received a reminder phone call the day before the scheduled focus group meeting.

The focus group interviews took place at our university in May and June 2007 and comprised two sessions, each limited to two hours. The idea behind the two sessions was to allow the participants time for reflection both during and between the interviews. According to Hummelvoll (2007; 2005), several sessions can lead to a deeper understanding of an issue.

All focus group interviews were performed by the same persons. The first author (B.O.) moderated the discussion by means of a semi-structured interview guide. The other member of the research team (B.K.) took field notes and observed the interaction within the groups. Demographic and biomedical information was gathered via questionnaires administered during the interview. Immediately prior to the focus groups, the moderator reviewed the process with the participants (e.g., all opinions are welcome even if you disagree with them). The interview questions were inspired by Eccles et al.'s expectancy-value model (Eccles & Wigfield, 2002; Wigfield & Eccles,

2000). The moderator began with a general question ("Can you tell us a little about yourself, for instance your name and the duration of your type 2 diabetes?") and progressed to questions that were more specific to the research objectives. Examples of questions related to paper I are; "What are you doing for self-managing your disease?" and "What goals do you have related to diabetes management?" Follow-up questions like, "Why did you think it is difficult to meet the goals related to type 2 diabetes?", "Why did you think it may be difficult to make the right choice related to diabetes management?", were asked to elucidate the participants' motivation and experiences living with type 2 diabetes. Examples of questions related to paper II are: "What did you experience as necessary attributes of support from healthcare practitioners to be motivated for diabetes self-management?" and "Can healthcare practitioners' attitudes and behaviours influence the expectations of being able to achieve adequate diabetes self-management?". Follow-up questions like "What follow-up would you ideally like?" were asked to elucidate how participants' experienced social support from healthcare practitioners. At the end of every focus group meeting, the research team discussed the most important topics and possible differences between that focus group and the other groups.

3.3.2.2 Trustworthiness

The concepts of validity and reliability can be used in both qualitative and quantitative methods for describing trustworthiness, yet, the use and the content of the concepts are different (Polit & Beck, 2004). Therefore, in the qualitative tradition, the terms *credibility*, *dependability* and *transferability* have been frequently used for describing various aspects of trustworthiness (Graneheim & Lundman, 2004). In this study, concepts linked to the qualitative tradition are preferred and thus draw on the work of Lincoln and Guba (1985), who used the criteria of credibility, dependability and transferability to maintain and determine the trustworthiness in qualitative research. According to Lincoln and Guba (1985), *credibility* refers to the confidence in the data and involves two aspects: 1) carrying out and describing the study in such a way as to enhance the believability of the findings; and 2) demonstrating creditability for external readers. *Dependability* refers to the stability of the data over time and

alterations. This means, the findings would be repeated with the same participants and context. *Transferability* considers to which degree the findings can be transferred to other settings or groups. Accordingly, the following strategies were used to ensure these criteria: To strengthen credibility, the interview guide was pretested on three individuals with type 2 diabetes who were not included in the study. On the basis of their recommendations, some of the questions were revised. All interviews were transcribed verbatim by the researcher (B.O.) and the text was imported into the data program NVivo$_7$ (2006). This data program made it easy to go back and forth between the data, the meaning units and text organised under tentative themes. According to Roberts, Priest and Traynor (2006), the procedure of saving, handling, and repeated checks of condensation and categorisation of the interview data can improve its credibility. Increased credibility was also achieved by summarising the preceding focus group discussions and by obtaining feedback on these summaries from the participants. To reinforce the credibility of the analysis, the themes were identified and formulated in the course of discussions among the research team. The dependability of the study was ensured by using the same interview guide with each group, tape recording the interviews and transcribing them verbatim. Field notes were also taken during the focus groups. Transferability of our findings to another context has been enhanced by providing descriptions of the participants, data collection and findings together with appropriate quotations.

3.3.3   Qualitative content analysis (papers I and II)

A qualitative content analysis has been described as a research method for the interpretation of the content of a text through a systematic process of coding and identifying themes or patterns (Hsiu-Fang & Shannon, 2005). In this research, the focus groups were audiotaped and transcribed verbatim and the analysis was inspired and guided by the Graneheim and Lundman (2004) qualitative content analysis. According to Graneheim and Lundman (2004), a text analysis always involves multiple meanings, and there is always some degree of interpretation in approaching a text, but interpretation varies in depth and abstraction between manifest and latent content analyses. Manifest content analysis is concerned with what the text says and describes data

obtainable from the visible and obvious text content. Latent content analysis deals with what the text talks about, the relationship aspects and involves an interpretation of the underlying meaning of the text (Graneheim & Lundman, 2004). In papers I and II, content analysis is applied on both the manifest and the latent content levels.

In addition to the question of manifest and latent content, the analysis includes several other steps. The content analysis procedure in papers I and II followed the same steps. All content analysis began with an open-minded reading of the transcribed text to obtain a sense of the whole. Next, the text was read in detail and meaning units were identified and condensed, while still retaining the core meaning, using the NVivo$_7$ programme (2006). The condensed meaning units were then abstracted with codes. The different codes were compared on the basis of similarities and differences and consolidated into tentative themes. Subsequently, the themes were identified and formulated in the course of discussions within the research team.

3.4   Quantitative approach

3.4.1   Sample in the survey

The target sample in the survey comprised adults with type 2 diabetes, aged between 30 and 70 and willing and able to complete a questionnaire written in Norwegian. The participants were recruited by nominators who determined if subjects met the inclusion criteria of the study. The participants were recruited from two sources: 1) Seven general practitioners (GPs) in one large municipality and in some smaller ones in south western Norway; and 2) members of the Norwegian Diabetes Association (NDA).

The sample recruited from the NDA was selected from five Norwegian counties and strategically selected to represent urban and rural cultural variations between Norwegian regions and settlement patterns. The samples from general practitioners and the NDA were comparable in all attributes, with the exception of the number of people whose

diabetes was treated solely by diet (GP group = 24.2%; NDA group = 12.4%). In addition, the NDA group had slightly higher HbA$_{1c}$ levels (7.1%) than the GP group (6.9%).

A slightly larger proportion of the subjects included in the research were male. Moreover, the majority of the sample used oral medications as treatment of type 2 diabetes (55.7%), had at least a secondary education, had HbA$_{1c}$ levels within an acceptable range (7.0%), and had been diagnosed with type 2 diabetes for more than seven years. Compared with a nationwide survey in Norway (Jenssen, Tonstad, Claudi, Midthjell, & Cooper, 2008) about the treatment of type 2 diabetes (n = 975), the sample in the current study is comparable in approximately all attributes with this survey. As in the current study, more male than women were included in the survey (Norwegian survey (NS) = 54.8 %; current study (CS) = 53.9%), and the participants' ages were roughly the same in the two studies (NS = 59.9; CS = 58.2). In addition, the BMI and HbA$_{1c}$ in these two studies were comparable (NS = 30.0; CS = 29.7) (NS= 7.2%; CS = 7.0%), respectively, while the duration of the disease (years) was slightly lower in the nationwide survey than in the current study (NS = 6.8; CS = 8.1), respectively. However, the sample in the current study was not randomly selected and generalisation of the findings to the general population of people with type 2 diabetes should be made with caution. Table 3 provides a detailed description of the response rates and characteristics of the two samples.

Table 3 Response rate and characteristics of the samples recruited from GPs and Norwegian Diabetes Association (N= 386)

	Sample from GPs	**Sample from Norwegian Diabetes Association**	**Total sample**
Invited	189	500	689
Response	136	289	425
Response after exclusion	120	266	386
Response rate before exclusion (%)	72	58	62
Response rate after exclusion (%)	63.4	53.2	56
Demographic factors			
Male (%)	60	51.1	53.9
Female (%)	40	48.9	46.1
Age Mean ±SD (years)	57.7 ± 8.6	58.4 ± 8.8	58.2 ± 8.6
Disease duration mean ±SD (years)	6.6 ± 5.6	8.7 ± 7.0	8.1 ± 6.1
Clinical parameters			
HbA_{1c} (%)	6.9 ± 1.1	7.1 ± 1.0	7.0 ± 1.1
BMI (kg/m^2) mean SD	30.5 ± 5.9	29.4 ± 5.0	29.7 ± 5.3
Diabetes treatment			
Diet (%)	24.2	12.4	16.1
Oral medications (%)	46.7	59.8	55.7
Insulin (%)	29.2	27.8	28.2

3.4.2   Survey procedure

A questionnaire was mailed to 689 people in September 2008. The subjects were asked to return completed questionnaires in a stamped envelope addressed to the researchers within three weeks of receiving the questionnaire. A letter reminding people of the need to complete the questionnaire was sent to those who had not returned the questionnaire; this succeeded in generating 95 additional completed questionnaires.

Four hundred twenty-five people with type 2 diabetes returned the questionnaire, resulting in a 62% response rate. Table 3 shows the response rates of the two samples. According to Jacobsen (2005), a response rate above 60% is evaluated as good. Among those eligible participants who did not return the questionnaire, a few nonrespondents reported that their reasons for nonparticipation were a feeling of illness, lack of interest, and a recent diagnosis of type 1 diabetes. However, because very few of the nonrespondents offered a reason for nonparticipation, any generalisation should be made with caution.

Thirty nine respondents (paper III) and 41 respondents (paper IV) were excluded from the study because of poor response quality. Those excluded were mainly elderly people (mean age 63.5 years) reporting a low level of education. Poor response quality were defined as lacking response to more than (30%) of items of scales included in the separate study (in scales with two items, respondents were excluded if they lacked both items). Missing data were dealt with by giving a missing item the mean score of the other items in each sub-scale completed by the respondent. According to Fayers and Machin (2007), this process can be considered reasonable when the respondent has completed at least half of the items in the scale. The percentage of missing items for the final sample was relatively low and ranged from 0.0% - 3.2%. The missing items may have occurred because of the length of the questionnaire (14 scales) or because of the items themselves. The missing items were not related to one scale, yet it seems like the scale measure "diet and exercise management" had a slightly higher rate of missing answers. This could be related to daily variations in exercise and diet. Reporting the exact frequency of dietary and exercise

management performance over the preceding seven days may have been difficult, time-consuming, and even boring.

3.4.3 Measurements and assessment of measurements (papers III and IV)

Instruments used to assess the concepts in the survey studies included established instruments and instruments developed for these studies (papers III and IV) (Appendix). Criteria such as multidimensionality, diabetes relatedness, reliability, validity and appropriateness to question were assessed during the selection process. Table 4 shows an overview of the instruments used, as well as scoring range and the internal consistency reliability.

Many of the instruments in this thesis were used in earlier studies and have proved to be valid and reliable. However, in this research, some instruments were modified in length; the two instruments that were in English (SDSCA and SE-type 2 diabetes) also had to be translated into Norwegian. In accordance with internationally accepted guidelines for the translation of instruments (Fayers & Machin, 2007), the English items were translated by one forward and one backward translation. One speaker of Norwegian, who was also fluent in the English language, made a forward translation. Then, another native speaker of English who also fluently spoke the Norwegian language did a blinded back-translation into the original language. The research team then compared each item from this forward-backward translation against the original and clarified a few words to prevent misunderstanding. For instance, the word *diet* was modified to *recommended healthy food*.

Table 4 Instrument descriptions, number of items, sub-scales, responses, scoring range and the internal consistency reliability

Concept	Instrument	Paper	Sub-scales	Items	Response scale	Scale scoring	Cronbach's
Diet and exercise management	Summary of Diabetes Self-Care Activities.	III,IV	Diet management	3	Scores ranged from 0-7 points (days).	Higher scores indicate a greater frequency of performing diet and exercise management.	0.76
			Exercise management	2			0.65
Ability expectations	Diabetes Management Self-efficacy scale	III,IV	Diet ability expectations	8	5-point Likert scale ranging from 1 -5	Higher scores indicate higher ability expectations to perform necessary diet and exercise management.	0.88
			Exercise ability expectations	3			0.78
Values	Items developed for the study.	III	Positive diet and exercise values	6	5-point Likert scale ranging from 1 -5	High scores indicate higher positive or negative value in relation to diet and exercise management.	0.79
			Negative diet values	4			0.77
			Negative exercise values	3			0.70
Formal support/ Healthcare practitioners (HCPs)	Derived from Patient Questionnaire on Empowerment and items developed for the study.	IV	Constructive support from HCPs	12	5-point Likert scale ranging from 1 -5	Higher scores indicate more constructive/ non-constructive support from the HCPs.	0.95
			Non-constructive support from HCPs	6			0.84
Informal support/ Family/ friends and peers.	Items selected from Diabetes Family Behaviour Checklist	IV	Constructive support from family	9	5-point Likert scale ranging from 1 -5	Higher scores indicate more frequent constructive/ non-constructive support from the family.	0.79
			Non-constructive support from family	5			0.79
	Items developed for the study.		Support from friends (colleagues and peers).	4	5-point Likert scale ranging from 1 -5	Higher scores indicate more frequent constructive support from the friends.	0.75.

3.4.3.1   Reliability and validity of measurements

An instrument's reliability refers to its stability, i.e., how far it will give the same results on separate occasions (Bannigan & Watson, 2009). The reliability of an instrument can be assessed in various ways, such as internal consistency, test-retest reliability and equivalent-forms reliability (Fayers & Machin, 2007; Polit & Beck, 2004).

In this research, many of the instruments were modified in length and two scales were developed. As a result, Cronbach's alpha was computed to evaluate the internal consistency of the items in the instruments. The value of the reliability coefficients ranges from .00 to 1.00. The higher the coefficient, the greater the consistency between the items (Polit & Beck, 2004). Yet, a common interpretation of an acceptable value for Cronbach's alpha is a reliability coefficient above .70 (Field, 2005; Polit & Beck, 2004).

Validity refers to whether an instrument measures what it is intended to measure (Fayers & Machin, 2007). In this study, face validity and construct validity were used to assess the validity of the scales. Face validity refers to whether the scales reflect the intended domain of interest clearly and unambiguously and are closely related to content validity (which considers whether a scale has included all items relevant to the study and excluded irrelevant items). According to Fayers and Machin (2007), "face validity concerns the critical review of an instrument after it has been constructed" (p.79). In this study, face validity of the instruments was carried out in the planning phase. The questionnaire was pretested with three individuals with type 2 diabetes. The aim of the pretest should be to ensure whether or not they find the questionnaire difficult to understand, confusing, ambiguous or irritating. Based on their recommendations, some of the items related to the instrument developed for this study were revised.

Construct validity refers to whether or not an instrument measures the constructs it was designed to measure and is particularly relevant when the scale has been developed on the assumption of a theory (Fayers & Machin, 2007). In this research, construct validity was assessed through principal component analyses, which allow us to assess the extent to which various items are measuring the same concept (Field, 2005). For

instance, if items in a scale have been designed to measure exercise, then principal component analysis of those items that measure exercise should give high loadings (a loading of more than 0.40 is usually a common criterion, see Pett, Lackey, & Sullivan, 2003) for one factor and low for others. This tells us that items with high values are important for exercise and items with low loading are of less importance (Field, 2005). Because construct validity is a complex and ongoing process (Pett, et al., 2003), follow-up analysis such as confirmatory factor analysis should ideally be done to establish or strengthen construct validity.

3.4.3.2 Diet and exercise management

Diet and exercise management were included as dependent variables in the quantitative approach (Papers III and IV). Diet and exercise management were assessed with six items from the 14-item Summary of Diabetes Self-Care Activities (SDSCA) developed by Toobert, Hampson, and Glasgow (2000). SDSCA, which has been extensively used in diabetes research, has been found to be valid and reliable with moderate inter-item correlations (r= .59-.79) (Toobert, et al., 2000). The SDSCA is a self-report measure for assessing the frequency of self-care activities of people with diabetes. The respondents were asked about the frequency of performing dietary (4 items) and exercise (2 items) management behaviours over the preceding seven days. To ensure that diet or healthy food was understood according to the standard of diabetes care, a footnote in the questionnaire highlighted the national diabetes guidelines. According to physical activity, the two items reflect the diabetes national guidelines regarding regular physical activity for at least 30 minutes. Scores ranged from 0-7 days. Higher scores indicate a greater frequency of performing diet and exercise management behaviours. The index scores were calculated as mean scores across unweighted item scores. The dimensionality of items assessing exercise and diet were tested by principal component analysis, the implementation of oblique rotation, and the number of extracted components set to two. The latter was due to that fact that the six items were expected to measure two dimensions of self-management; diet management and exercise management. As anticipated, the principal component analysis yielded a two-component solution and explained 39.5 % (diet) and 20.5 % (exercise) of the total

variance, which had eigenvalues of 2.3 and 1.2, respectively. The item intended to measure diet management, "On how many of the last seven days did you eat high fat foods such as red meat or full-fat dairy products?" yielded a component loading below 0.40., and was, therefore, not included in the scale for diet management. Measurements of reliability indicated acceptable internal consistency among items included in the sub-scale "diet-management". For the sub-scale "exercise management", the internal consistency was below .70, which is the lower limit for an acceptable Cronbach's alpha, according to Polit and Beck (2004). However, they postulated that in some cases, lower coefficients may be required, and since the Cronbach'a alpha is dependent on the number of items we considered, an α of 0.65 for the two-item exercise-management-scale is acceptable. Scores for exercise management correlated significantly with scores for diet management (r = 0.25).

3.4.3.3 Ability expectations

Ability expectations, which refer to an individual's beliefs about his or her ability to perform necessary diabetes management, were included as independent variables in the quantitative approach (papers III and IV). Twelve items from the 20-item Diabetes Management Self-efficacy Scale (SE-type 2 diabetes), developed by van der Bijl et al. (1999) and Kara et al. (2006), were used to assess diet and exercise ability expectations. The respondents were asked to indicate their ability expectations in relation to diet and exercise management. Example of items were: "I think I'm able to adjust my diet when I am away from my home", and "I think I'm able to get sufficient physical activities, for example taking a walk or biking", rated on a five-point Likert scoring format ranging from "no, definitely not" (score 1) to "yes, definitely" (score 5) (Table 2, paper III). Higher scores indicated greater expectations of the ability to perform necessary diet and exercise management. The dimensionality of the items was tested by a principal component analysis, implementing oblique rotation and an eigenvalue of >1. Oblique rotation was selected because previous studies have found correlations between these types of expectations (Kara, et al., 2006; Wu, et al., 2008). As expected, the principal component analysis yielded a two-component solution, labelled "Diet

ability expectations" and "Exercise ability expectations". The item "I think I'm able to select the right foods", intended to assess diet ability expectations was excluded due to its component loading of less than 0.40. Component-based index scores were computed as means across unweighted item scores. The two sub-scales yielded satisfactory internal consistency (see Table 4).

3.4.3.4   Values related to diet and exercise management

Values were included as independent variables in paper III. The assessment of values related to diet and exercise management contained 13-items and was developed for this specific study, inspired by a Health Beliefs Scale (Lewis & Bradley, 1994). The respondents were asked to indicate positive and negative values related to diet and exercise management. Positive values reflect primarily utility values, which are related to current and future goals and capture more "extrinsic" reasons for engaging in a task, in the Eccles model (see Chapter 2.2.3). The negative values reflect the cost component in Eccles's model, which are characterised as the negative aspects of engaging in an activity. Examples of items assessed as relevant to reflect utility values were: "Regular physical activities reduce the chances of developing long-term complications" and "Recommended food helps/will help me to better regulate my blood sugar". Examples of items that reflect negative values were: "Exercise makes/will make everyday life too hectic" and "Eating the recommended food makes me feel different in social contexts" (Table 3, paper III). The items in the instrument were rated according to a five point Likert scale ranging from "disagree strongly" (score 1) to "agree strongly" (score 5). High scores indicated a strong positive or negative value in relation to diet and exercise management. A principal component analysis implementing oblique rotation and an eigenvalue of >1 was conducted to investigate the dimensionality of these items. Oblique rotation was selected because there are grounds for supposing that different kinds of diabetes management related values will correlate and a four-component solution was expected for this scale. However, the principal component analysis indicated a three-component solution. The first component comprised six items concerning positive values related to diet and exercise management and explained 27.9% of total variance,

which had an eigenvalue of 3.62. The second component included four items associated with negative diet values, and explained 17.2% of total variance, which had eigenvalue of 2.2. The third component contained three items with negative exercise values, and explained 10.8% of the total variance, which had an eigenvalue of 1.4. The solution with one component covering both positive diet and exercise values may indicate that it was not empirically possible to differentiate between these two concepts. The separate components associated with negative diet and exercise values may indicate that it was empirically achievable to distinguish between these concepts. Consequently, one component index score was computed for positive diet and exercise values and two separate components were computed for negative diet values and negative exercise values. The three sub-scales for assessing diabetes-related values appeared to having sufficient internal consistency (see Table 4).

3.4.3.5 Formal social support

The scale assessing perceptions of formal support, i.e., support from physicians, nurses and other healthcare practitioners was included as independent variables in paper IV. Formal social support was assessed by means of 11 items scale derived from the Patient Questionnaire on Empowerment (Karlsen, 2004). The scale has been translated into Norwegian, and has shown satisfactory reliability in adults with diabetes (Karlsen, 2004). In addition, seven items were developed for this study. The focus in this scale was on perceived constructive social support (reflecting elements of emotional, informational, affirmational, and tangible support as described in 2.2.4) and non-constructive social support (reflecting elements of the opposite of the four attributes of social support mentioned above) from healthcare practitioners. Twelve items focusing on constructive social supports, and six items to capture non-constructive social supports. The respondents indicated the degree to which they agreed with items such as, "they listen to me and my concerns" and "they do not take your views about how diabetes can be treated seriously" on a five-point Likert scale format, ranging from "agree strongly" to "disagree strongly". The higher (1-5) the scores on supportive items, the more constructive support from the healthcare practitioners, and the higher the scores on non-supportive items, the

more non-constructive the support. The dimensionality of the items was tested by a principal component analysis, implementing oblique rotation and the number of extracted components set to two. The latter was related to that the 18 items were expected to measure two dimensions of social support; "Constructive social support" and "Non-constructive social support". As anticipated, the principal component analysis yielded a two-component solution and explained 43.6% (constructive social support) and 14.6% (non-constructive social support) of the total variance, which had eigenvalue of 7.8 and 2.6, respectively. Measurements of reliability indicate satisfactory internal consistency among items included in the scale (see Table 4).

3.4.3.6 Informal social support

Two different scales assessing informal social support were included as independent variable in paper IV. First, a scale of 14 items was derived from the 16-item Diabetes Family Behaviour Checklist (DFBC) developed by Schafer, McCaul and Glasgow (1986). Family member support refers to relatives or whom the participant is living with. The scale has proven a useful measure to assess family support for people suffering from diabetes (Schafer, et al., 1986). The scale has been translated into Norwegian and has shown satisfactory reliability and validity (Karlsen, Idsoe, Hanestad, Murberg, & Bru, 2004). Based on a pilot study by Karlsen et al. (2004), two items were excluded due to non-significant associations between these and the other items in the scale. The two items were "let you sleep late rather than getting up to take your insulin" and "eat foods that are not part of your diabetic diet". Moreover, the original response alternatives were modified due to difficulties for the respondents to specify the response alternatives in detail, as was done in the original scale (Karlsen, et al., 2004). The current version of the DFBC consists of nine supportive and five non-supportive items. The items in the instrument were rated according to a five-point Likert scale (slightly modified from the original DFBC, see Karlsen et al., 2004) from "never" to "very often" (scores from 1 to 5). High scores on positive items indicate high perceived constructive social support from family; high scores on negative items indicate high perceived non-constructive social support. The dimensionality of the items was tested by a principal component analysis, the implementing

oblique rotation and the number of extracted components set to two. The latter was related to the assumption that the 14 items were expected to measure two dimensions of social support. The principal component analysis yielded a two-component solution that was in accordance with the intended dimensions of constructive and non-constructive family support, and explained 30.0 % (constructive social support) and 15.4% (non-constructive social support) of the total variance, which had eigenvalues of 4.2 and 2.2, respectively. Measurements of reliability indicate that both constructive (supportive) and non-constructive (non-supportive) support obtained acceptable internal consistency among the items (see Table 4).

The researchers also developed one scale for this study that included four items, assessing social support from friends, colleagues and peers (defined as "friends"). These items assess perceptions of constructive social support received from friends. The following items are included: "exercise with you", "talk to you about how you feel about your diabetes", "encourage you to follow the diet advice you have received" and "help you to make decisions about what to eat". The scale is rated in a five-point Likert scale ranging from: "never" to "very often" (scores from 1 to 5). High scores indicated high perceived constructive social support from friends. The dimensionality of the items was tested by a principal component analysis, and yielded a one-component solution, indicating that these items assess a uniform concept. The one-component solution explained 59.0% of the total variance, which had an eigenvalue of 2.5. Measurements of reliability indicated acceptable internal consistency among the items (see Table 4).

3.4.3.7 Demographic and disease-related variables

There can be other variables in studies; for instance, age and gender might influence the association between independent and dependent variables (Field, 2005). If these variables are measured, then it is possible to control for their influence on these variables by including them in the regression model (Field, 2005). However, the main challenge is to identify which variable might or might not influence (confound) the relationship between independent and dependent

variables. In this study, demographic and disease-related variables were selected primarily due to rationales found in the literature.

Authors have suggested that age and gender may confound the association between motivation and diabetes-management (Barrett, Plotnikoff, Courneya, & Raine, 2007; Ferrand, et al., 2008). Moreover, higher education is associated with better self-efficacy (Rottmann, Dalton, Christensen, Frederiksen, & Johansen, 2010; Wentzel, et al., 2008) and lower prevalence of metabolic syndrome (Silventoinen, Pankow, Jousilahti, Hu, & Tuomilehto, 2005). In papers III and IV, age, gender, and education were included in the multivariate analysis. *Age* was scored as a continuous variable (in years). *Gender* was graded as follows: women=1 and men=2. For *education,* the questionnaire was divided into three categories*:* primary and secondary school, high school and university.

It is possible that *duration of disease* might influence the association between motivation and diabetes management. When the disease is diagnosed, individuals will be highly motivated in following a diabetes regime, but as time passes, motivation may fade as has been reported after angina or myocardial infarction and in type 2 diabetes (Plotnikoff & Higginbotham, 1998; Plotnikoff, et al., 2007). In contrast, a study by Xu, Pan and Liu (2010) found that a longer duration of diabetes was associated with a higher level of self-management. In this study, *duration of disease* was scored as a continuous variable (in years). In paper IV, duration of disease was dichotomised as less than six years ago and more than six years ago.

Based on very limited available research, it is suggested that individuals using insulin are more motivated to follow the recommended diabetes management regime because they consider that their condition is more serious than those using only oral hypoglycemic agents to control diabetes (Xu, et al., 2010). In paper III, we controlled for *treatment regime* by means of diet, oral medication and insulin.

Because it is suggested that motivation for diabetes management is associated with *diabetes-related complications* the respondents were asking whether they have vascular and heart disease, leg ulcers,

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neuropathy, retinopathy, kidney disease and amputation. A dichotomous variable was obtained by assigning the value 1 to those who reported one or more complications and the value 0 to those who reported no complications.

Studies have demonstrated that most adults with diabetes have at least one *co-morbidity* (Druss, et al., 2001), and approximately 40% have three or more (Wolff, Starfield, & Anderson, 2002). Because it is suggested that co-morbidity may influence the association between motivation and diabetes management (Perlmuter, Dimaculangan, Seidlarz, Singh, & Gabhart, 2008; Piette & Kerr, 2006; Plotnikoff, et al., 2007), participants in this study were asked to indicate *co-morbidity,* which refers to one or more serious medical condition/disease or health problems that are not directly related to the primary diagnosis (Nardi, et al., 2007). A dichotomous variable was computed analogous to that for complications. In paper IV, co-morbidity and diabetes complication were adjusted for, and the multiple regression analyse did not reveal any confounders. It is worth noting that separate analyses for these variables were also adjusted for in paper III.

Conversely, because predictors such as *glycosylated haemoglobin* (HbA$_{1c}$) and *Body mass index* (BMI) may act as dependent variables, these variables were not considered as relevant to this study. However, BMI and HbA$_{1c}$ can be potential confounders. Participants were therefore asked to state the most recent *HbA$_{1c}$* levels as well as their *height* and *weight*. BMI was calculated as weight in kilograms divided by height in square metres. A follow-up regression analysis with BMI in paper III yielded only modest changes in beta-coefficients for the independent variables.

3.4.4   Statistical analysis (papers III and IV)

In papers III and IV, the statistical analyses were performed using SPSS package version 15 (Norusis, 2007). Several statistical procedures were applied depending on the research question: descriptive statistics, Pearson's product moment correlation, multiple linear regression analyses, reliability testing and principal component

analysis. In this research, $p < 0.05$ was considered to be statistically significant.

Descriptive analyses were performed to assess the characteristics of the sample (Papers III and IV). To obtain additional descriptive information pertaining to the dependent variables as well as to the independent variables, index scores were categorised according to the response format. For example, the scale for ability expectations had a five step response format, and an index score as an unweighted mean score across items was computed (scoring range: 1 – 5). For descriptive purposes the index score were categorised as follows: 1 – 1.8: no, definitely not; 1.8 – 2.6: probably not; 2.6 – 3.4: maybe yes/maybe not; 3.4 – 4.2: probably yes; and, finally, 4.2 – 5: yes, definitely. The categorised variables were used to depict frequencies of responses.

Pearson's product moment correlation coefficient (r) was used to measure the associations among variables. The general goal of multiple regression analysis is to seek knowledge about the multivariate relationships between a dependent variable and several independent variables (predictors). In paper III, multiple regression analyses were applied to assess the relationship between indicators of motivational variables (ability expectations and values) and diet and exercise management. In paper IV, two regression models were tested to investigate the extent to which associations between perceived social support and diet and exercise management were mediated by ability expectations. Pearson product moment correlations and multiple regression analyses were considered as relevant approaches because there were no indications of variables violating these assumptions. Skewness (degree of asymmetry) and kurtosis (degree of cluster) were performed to assess the normality of data distribution. The skewness ranged from -0.99 to 1.04 and kurtosis from -0. 85 to 1.21 for the different scales, indicating a normal distribution. The subscale "positive diet and exercise values" has slightly higher values of skewness (-1.72) and kurtosis (5.02) than the other scales, therefore, follow-up analyses with normal scores for this variable were performed. The analyses with normal scores did not change the results in paper III.

3.5 *Ethical issues*

This study was performed in accordance with the ethical guidelines of the Declaration of Helsinki (World Medical Association, 2009). The study design for the qualitative- and the quantitative approaches (Papers I-IV) was approved by the Norwegian Regional Committee for Medical and Health Research Ethics (No. 060.07 and No. 055.08), and the Norwegian Social Science Data Services (No. 16664 and No. 18770).

Eligible patients attending the general practitioners and the Coping and Learning Centre, along with members of the Norwegian Diabetes Association, were invited by letter to participate in the study. All the participants were informed about the study, the possibility to withdraw at any time and the fact that confidentiality was guaranteed. They also had the opportunity to ask questions about the study and to contact the project leader, doctoral student or the nominators by telephone and e-mail.

According to the qualitative study, all respondents provided their informed written consent prior to the focus groups. They were guaranteed confidentiality, and all personal identification was removed to ensure this. In the quantitative study, the questionnaires were returned to the researcher by post. The anonymity of the data material was assured by coding the questionnaire.

4   Summary of the results

The main findings of each of the four studies constituting this thesis are presented below. Papers I and III investigate how indicators of intrinsic motivation, such as ability expectations and values, may influence motivation for self-management among adults with type 2 diabetes. The studies presented in papers II and IV were primarily conducted to investigate how perceived social supports are associated with motivation for self-management among adults with type 2 diabetes. The first two papers are qualitative studies, and the last two are quantitative studies (cf. Figure 2).

4.1   Paper I

Life values and self-regulation behaviours among adults with type 2 diabetes

The study presented in paper I aims to identify life values among adults with type 2 diabetes and to describe their experiences of how these values may influence self-regulation behaviours. In this study, life values are considered to be general values, and more specific values or goals are related to diabetes self-management behaviours.

Six themes related to life values were identified. The first theme, *maintaining health and longevity,* reflected participants' desire to achieve a long and healthy life without long-term complications. However, few reported having specific goals related to self-management that could help them prevent long-term complications. The second theme, *a feeling of bodily well-being,* described how diabetes management could result in both bodily well-being and discomfort. The third theme, *preserving a positive body image,* concerned how negative body image could hinder self-management behaviours. The fourth theme, *self-determination,* reflected the importance of making independent choices and having the right to refuse treatment. However, findings indicate that self-determination is a double-edged sword. On the one hand, self-determination may motivate

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people to take responsibility for their own diabetes regulation; on the other hand, it may result in ignoring the advice provided by healthcare practitioners. The fifth theme, *maintaining the ability to work,* showed that work can both complement and conflict with diabetes management. Lastly, the theme of *belonging* reflected how membership in a group or fellowship can both promote and undermine the motivation for self-management behaviours.

The findings indicate that the participants' life values seem to play an important motivational role in relation to self-management behaviours. In addition, the results indicate that goals related to self-management were formulated in more general than specific terms.

4.2 Paper II

Perceived support from healthcare practitioners among adults with type 2 diabetes

This study describes how adults with type 2 diabetes perceive different attributes of support provided by healthcare practitioners and how various attributes of support can influence people's motivation to self-manage their disease.

Five themes were identified that reflect the perspectives of participants on what they consider necessary attributes of support from healthcare practitioners motivating them to self-manage their disease: The first theme, *an empathetic approach*, dealt with how participants view that aspects such as understanding, listening and a holistic approach from healthcare practitioners were important for their motivation for self-management. The second theme, *practical advice and information,* focused on how participants perceived that practical advice and information from healthcare practitioners such as what food to buy, how prepare meals, and how to make it easier to exercise, are essential for the participants' expectations of being able to perform specific diabetes behaviours. The third theme, *involvement in decision-making,* dealt with the importance of being partners in decision-making about diabetes treatments. Results indicate that many of the respondents perceived that healthcare practitioners did not involve them enough in

decision-making, which may have a negative influence on motivation for diabetes management. The fourth theme, *accurate and individualised information,* highlighted that the majority of participants were dissatisfied with the inaccurate and inconsistent information received from healthcare practitioners. The findings indicate that such information can reduce motivation to self-manage diabetes adequately. The fifth and last theme, *ongoing group-based support,* dealt with how participants preferred ongoing support in addition to regular checkups. They suggested that ongoing support with other people with diabetes would increase their motivation to self-manage their disease.

Although it is unclear whether the attributes that were identified actually influence self-management motivation in a positive way, the findings may imply that healthcare practitioners may strengthen the motivation for diabetes management. Healthcare practitioners could stimulate people with type 2 diabetes by enhancing expectations of being able to perform necessary diabetes management and by providing empathetic, individualised, practical and ongoing group-based support.

4.3   Paper III

Motivation for diet and exercise management among adults with type 2 diabetes

This study investigated diet and exercise management and how indicators of intrinsic motivation, such as ability expectations and values, are associated with diet and exercise management among adults with type 2 diabetes.

Descriptive findings indicate that approximately 25% of the respondents stated that they followed their diet seven days a week, while eight per cent reported exercising daily. At the same time, the majority of the respondents scored high on indicators of intrinsic motivation: diet ability expectations (70%), exercise ability expectations (80%), positive diet and exercise values (95.6%) for a healthy diet and exercise. This seems to be even more the case for exercise than for diet management. Moreover, relatively few

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participants reported that diet (22.8%), and regular exercise (13.8%) implied cost or negative values for them.

Results from the multiple regression analysis revealed that, among the indicators of intrinsic motivation, "diet ability expectations" yielded a significant positive multivariate association with "diet management" scores, and "exercise ability expectations" showed significant positive multivariate associations with "exercise management". Moreover only "negative exercise values" was negatively significant with "exercise management". This result may indicate that the participants who exercised at a low level perceived that this activity required more time and effort than modifications to their diet. At the same time, respondents with higher expectations of being able to exercise reported taking more exercise. The same tendency was found for diet management.

The results from the multiple regression analyses showed that the indicators for intrinsic motivation explained more variance in exercise (21.6%) than in diet management (7.6%). The modest association between intrinsic motivational factors and diet management may imply that there are important extrinsic factors such as expectations and norms communicated by healthcare practitioners that play a significant role in determining dietary behaviour. With regard to exercise management, the results indicate some potential for improving exercise management by stimulating intrinsic motivation.

4.4 Paper IV

Social support as a motivator of self-management among adults with type 2 diabetes

The aim of this study was investigate how adults with type 2 diabetes perceive diabetes-related social support from healthcare practitioners, family and friends and how perceived social support is associated with diet and exercise management, and the extent to which ability expectations mediate the association of perceived social support with diet and exercise management.

The descriptive results showed that the majority (75%) of the participants agreed that they perceived constructive support from healthcare practitioners, whereas relatively few perceived frequent support from family and friends (9.8% and 1.5%, respectively).

It was assumed that perceptions of support could be dependent on the duration of diabetes. Data was therefore analyzed separately for two subsamples defined on the basis of the duration of diabetes: 1) duration less than six years ago (N=179), and 2) those with a disease duration of more than six years ago (N=196). Little difference was detected in the perceptions of social support between these two subsamples. However, concerning diet management, the results from multiple regression analyses showed that associations of variables assessing perceived social support with diet management were somewhat stronger among those diagnosed less than six years ago. Moreover, among this subsample there was a significant tendency for those reporting non-constructive support from their family to report poorer diet management, while, surprisingly, there was a tendency for perceived non-constructive support from healthcare practitioners to be associated with better reported diet management. Support from friends showed significant bivariate associations with diet management among the subsample diagnosed less than six years ago.

Among the sample diagnosed more than six years ago, a tendency for non-constructive support from healthcare practitioners to be associated with poorer diet management emerged, and, again surprisingly, a tendency for constructive healthcare practitioners support to be associated with poorer diet management was also detected. For this subsample, support from family and friends showed non-significant associations with diet management.

Finally, diet ability expectations showed a significant association with diet management among those with disease duration of less than six years and mediated 27% of the associations between support and diet management. Among the sample diagnosed more than six years ago, no mediating role of diet ability expectation was found.

Concerning exercise management, none of the support variables yielded significant multivariate associations. However, the bivariate correlations between constructive support from family and friends and exercise management were significant associations in both subsamples. Moreover, the associations between exercise ability expectations and exercise management were significant, and, in both subsamples, exercise ability expectations mediated approximately 60% of the variance accounted for by support variables in exercise management.

To sum up, the descriptive results showed that the majority of the participants reported satisfactory constructive support from healthcare practitioners, whereas relatively few perceived frequent support from family and friends. Only modest associations were found between social support and self-management, but some of the associations were mediated by ability expectations. Associations of variables assessing social support with diet management were strongest among those who had had the disease less than six years.

5 Discussion of central findings

The main aim of this thesis is to develop knowledge about factors that may be related to motivation for self-management among adults with type 2 diabetes. In the following section, the central research findings, which are based on the qualitative and quantitative studies, will be discussed both separately and in relation to each other (cf. Figure 2), followed by methodological considerations.

5.1 Diabetes self-management

The descriptive results from paper III support previous studies indicating that many individuals fail to adhere to a recommended diabetes management regime (Nelson, Reiber, & Boyko, 2002; Wentzel, et al., 2008; Xu, Toobert, Savage, Pan, & Whitmer, 2008). Most of the participants in the present study engaged in fewer physical activities than both the general adult population and what is recommended by the current guidelines for people with type 2 diabetes. This aligns with previous studies documenting a tendency for adults with diabetes to engage in less physical activity than non-diabetic adults (Anderssen, et al., 2009; Grace, Barry-Bianchi, Stewart, Rukholm, & Nolan, 2007; Gregg, et al., 2000). It is worth noting, however, that approximately 40% of the participants in the current study reported exercising two and three times a week. A Norwegian study found that the majority of the potentially active people prefer to exercise two to three times per week (Ommundsen & Aadland, 2009). It is possible, therefore, that many participants in the current study recognise exercise two and three times a week as the appropriate level of physical activity. Moreover, it is not unreasonable that the participants considered that exercising three times a week was the same as following the general recommendations. Earlier studies have demonstrated that healthcare practitioners do not inform patients about the recommended frequency, intensity and duration of physical activity in a standardised way (Glasgow, Toobert, & Gillette, 2001; Morrato, Hill, Wyatt, Ghushchyan, & Sullivan, 2006; Poskiparta, Kasila, &

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Kiuru, 2006). However, a recent Norwegian study revealed that approximately 70% of people are aware of the current recommendations for at least 30 minutes of daily physical activity (Ommundsen & Aadland, 2009). The somewhat equivocal findings among the different studies suggest that more research is needed to explore subjective norms for exercise management among people with type 2 diabetes.

Concerning diet management, the results revealed that approximately 50% of the participants stated that they adhered to their diet six to seven days per week; this implies that they followed diet recommendations to a greater extent than the recommendations pertaining to physical activity. This is consistent with a study by Clark and Hampson (2001), which found that people with type 2 diabetes follow a diet regime better than they do physical activities instruction. Although no Norwegian studies to date seem to have compared dietary patterns between adults with type 2 diabetes and the general population, there are some indications that dietary behaviours among people with type 2 diabetes and the general population are little different. A study from the Netherlands found that people with type 2 diabetes have similar eating behaviours to those of the general population (van de Laar, et al., 2006).

5.2 Indicators of intrinsic motivation on diabetes self-management

The central purposes of this thesis were to investigate indicators of intrinsic motivation, such as values and ability expectations, and how these indicators are related to diabetes self-management. The initial part of this section comprises a discussion of the findings presented in papers I and III concerning diet and exercise values, life values, and their relationship with diabetes management, followed by discussions of the results reported in paper III about ability expectations and diet and exercise management.

5.2.1 Values and diabetes-self-management

In this thesis, the value component was investigated in terms of a more general life values related to diabetes management by using a qualitative approach (paper I) and in terms of more specific diet and exercise values related to diet and exercise management by using a questionnaire (paper III). This section begins with a discussion that relates the findings presented in paper III, followed by a discussion related to the findings in paper I regarding life values.

The descriptive results presented in paper III suggest that a substantial proportion of people with type 2 diabetes believe that diet and exercise management have positive values for them. On the other hand, relatively few reported negative diet and exercise values. In addition, only a moderate level of diet and exercise management was reported. One possible explanation for this somewhat unexpected pattern may be that people with type 2 diabetes knew that diet and physical activity were good for them and therefore primarily reported positive values. The findings about valuing diet and exercise as important have been demonstrated in other studies (Holmstrom & Rosenqvist, 2005; Ommundsen & Aadland, 2009). However, because relatively few reported exercising and eating healthy food every day, it could be that they underestimate the efforts or difficulties of diet and exercise management. More research is needed to understand this pattern of high positive diet and exercise values and low negative diet and exercise values and a more moderate level of diet and exercise management.

The results of the multiple regression analysis revealed that there were modest associations of "positive diet and exercise values" with reported "diet and exercise management". This finding was somewhat unexpected, because, according to Eccles (2009), people are likely to select tasks with high subjective value for them. The results of this present study could be a consequence of the questionnaire used. Although the reliability of the scale showed satisfactory internal consistency, other psychometric properties of the scale have not yet been fully evaluated. One cannot rule out the possibility that the sub-scale "positive diet and exercise values" has ceiling effects. It is also possible that the current focus on values may fail to give reliable

information about the kind of positive values that are important for diabetes management. For instance, items related to more general life values, such as body image and belonging, or to more diabetes-specific values, such as "it is important for me to exercise every day", could be beneficial. Accordingly, further studies could refine this scale.

Conversely, the results in the present study showed that negative exercise values were significantly associated with a low level of reported exercise, and thus intimating that negative exercise values are likely to constitute a risk for poor exercise management. This result seems to be supported by the findings of the qualitative study presented in paper I, where many of the participants reported that exercise was associated with physical discomfort and fatigue and made them reluctant to perform exercise activities. These findings are in accordance with previous research demonstrating that, among people with type 2 diabetes, discomfort, inconvenience and fatigue may affect the ability or motivation to engage in health-promoting activities such as exercise (Shultz, et al., 2001).

The qualitative study presented in paper I identified six life values, many of which are related to basic universal human needs (see e.g., Maslow, 1970), such as belonging to a fellowship, self-determination, absence of stigmatization, and bodily well-being. This study's findings point to many participants experiencing some life values to be congruent with self-management behaviours, while others' values were in conflict with adequate diabetes management. According to Fishbach et al. (2003), values are more likely to be accomplished when they are in harmony with other values or goals. Conversely, goals are harder to fulfil when they conflict (Wigfield & Eccles, 2002). Results presented in paper I indicate that some life values, such as belonging to a fellowship and bodily well-being, seem to influence diabetes management both positively and negatively. For instance, the findings indicated that some participants experience bodily well-being when they eat healthy food and exercise, which may positively influence their motivation for continuing this behaviour, while others reported that exercising did not result in a sense of bodily well-being, but rather in a feeling of physical discomfort, which, in turn, may decrease motivation for these activities. Thus, this study may connote that life values could

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hinder or promote diabetes management and, therefore, may be critical factors in motivation for diabetes management, supporting the assumptions that goals are more likely to be accomplished when they are in harmony with other values or goals (Fishbach, et al., 2003). However, in this present study, life values related to diabetes management were only investigated in a qualitative approach. Future research should follow up the findings from paper I because it could be suggested that important life values may shed some light on why many people with type 2 diabetes demonstrate relatively low diet and exercise behaviours.

Finally, the findings in paper I indicated that the participants' goals related to diabetes management were formulated in more general than specific terms, such as "I try to control my weight and some other things in life". These findings are in line with earlier studies showing that few people with chronic disease set specific goals (Davis, 2007; Huang, Gorawara-Bhat, & Chin, 2005). Research on motivational properties has implied that proximal goals promote motivation better than distal ones, because distal goals alone are too far removed in time to provide effective incentives and guidelines for present action (Bandura, 1997; Emmons, 1992; Schunk, 1991). Results presented in paper I indicate that few participants have specific and proximal goals related to diabetes management; thus, it may be suggested that these goals only have a modest motivational influence on diabetes regulation behaviours. It is possible that these findings can, to some extent, elucidate why relatively few of the respondents in paper III cited adherence to their diet and exercise seven days per week.

5.2.2 Ability expectations and diet and exercise management

The present study (paper III) reveals a pattern of high ability expectations and, as mentioned above, a more moderate level of diet and exercise management. In light of Eccles' model (2009), which assumed that people select those tasks/activities for which they have high expectations for success, these results are to some degree unexpected. However, it appears from a study by Wentzel et al. (2008)

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that a high self-efficacy score does not necessarily translate into good health behaviours. One possible explanation for the current result could be that people can be over-confident about their abilities, either because they do not have sufficient understanding to assess their ability or because they encounter unanticipated barriers to goal achievement (e.g., negative physical reactions). Moreover, it is also possible that the relatively low frequency of diet and exercise management reported in this present study may reflect that people with type 2 diabetes do not fully recognise or understand the difficulties of living with type 2 diabetes and, therefore, may have unrealistic expectations of what they must do to obtain adequate blood glucose control. These suggestions are supported by Thoolen, de Ridder, Bensing, Gorter and Rutten (2006), who also found that people with type 2 diabetes reported low self-management, but high self-efficacy. However, the current results from the multiple regression analysis indicated a tendency for participants with higher exercise ability expectations to report taking more exercise; the same tendency was found for diet management. This is in accordance with several studies demonstrating that self-efficacy is a central determinant of success in the self-management of chronic illnesses (Dutton, et al., 2009; Sousa, et al., 2005; Wu, et al., 2007). The current results lend, therefore, some support to the notion that ability expectations may influence motivation for diabetes management among people with type 2 diabetes. Yet, more research is needed to clarify the relationship between ability expectations and diabetes management.

Taken together, the present findings presented in paper III indicated that among indicators of intrinsic motivational factors, ability expectations were significantly associated with diet and exercise management, while only negative exercise values were significant for exercise management. These findings are partially consistent with results from expectancy-value research (Meece, et al., 1990), which found that when both expectancies and values are used to predict an achievement, values are not significant predictors. In the present study, the results point to the notion that ability expectations seem to capture some of the variances initially explained by the value variables. It is possible, therefore, that there is a link between ability expectancies and values, which causes a tendency in individuals with a stronger belief in

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their ability to engage in diabetes management behaviours, to also value performing these activities. However, the results also demonstrated that indicators of intrinsic motivational (ability expectations and values) factors explained more variances for exercise management than for diet management. The findings may denote that exercise management is more closely linked to intrinsic motivational factors, which are supported by a large Norwegian study demonstrating that 76% of those who were defined as physically inactive were motivated to begin regular physical activity (Ommundsen & Aadland, 2009). The modest amount of variance accounted for by expectations of ability and values in terms of dietary behaviour may suggest that there is only a limited potential for improving healthy diet management by stimulating intrinsic motivation in this area.

5.3 Social support and diabetes self-management

Results presented in paper IV indicated that a majority of the participants was satisfied with the social support from healthcare practitioners. By contrast, a small percentage of the participants reported frequent social support from family and friends. These findings are surprising, to some extent, as support from healthcare practitioners is usually available only a few times a year, while it is reported that people often deal with their health problems outside the health system (Battersby, et al., 2010). However, the current results are in accordance with earlier studies showing that support from healthcare practitioners scores higher than support from family and friends (Gleeson-Kreig, 2008; Tang, Brown, Funnell, & Anderson, 2008). The striking differences in perceived support from healthcare practitioners compared to that received from family and friends may imply that a potential exists to empower family and friends to give more constructive support.

Because previous studies have shown that disease duration may influence motivation for self-management (Plotnikoff, et al., 2007; Xu, et al., 2010), the analyses in the quantitative study of social support (paper IV) were conducted separately for two subsamples defined on the basis of disease duration. However, little difference was detected in

the perceptions of social support between these two subsamples. These findings could lend support to the notion in paper II that there were no noteworthy differences in perceptions of social support between the two focus groups with long disease duration (mean eight years and nine years) and the focus group with short disease duration (mean two years).

In the study presented in paper II, five attributes of social support were identified, reflecting participants' perspectives on what they consider necessary attributes of support from healthcare practitioners to motivate them to self-mange their disease. These attributes of social support are similar to dimensions suggested by social support theory (Stewart, 2000). However, the findings indicate individual differences in how participants preferred social support from healthcare practitioners to be offered. For instance, results presented in paper II indicate that some participants wished to receive detailed information about type 2 diabetes, whereas others expressed a preference for more general information. The same tendency was found in the study presented in paper IV, where results show that some participants responded positively to an empathic approach from healthcare practitioners, while others responded positively to a more confrontational approach. However, the direction of associations was partly unexpected in paper IV. There was a tendency for constructive support from healthcare practitioners to be associated with poorer diet management, whereas non-constructive support from healthcare practitioners was associated with better diet management. These findings are not immediately understandable. However, the results may imply that healthcare practitioners who have a confrontational approach, focusing on the seriousness and the demands of type 2 diabetes, may risk that some people perceive them as less supportive. Yet, this more confrontational approach could, for some people, serve as a necessary external pressure to achieve adequate diet management. Other people may be more responsive to an empathic approach. The differential patterns serve as a reminder of the complexity of this topic. More research is needed, therefore, to understand the motivational mechanisms of social support.

In the multivariate approach in paper IV, none of the variables assessing social support yielded significant associations with exercise

management. However, social support from family and friends show significant bivariate associations with exercise management, and the overall explained variance for support variables in relationship to exercise management was significant for those diagnosed more than six years ago and marginally significant for those diagnosed less than six years ago. These findings may suggest that social support from family and friends can enhance exercise management, which is in line with previous research (Beverly, et al., 2008). The non-significant relationship between support from healthcare practitioners and exercise management may indicate that healthcare practitioners are less focused on supporting exercise than diet management. This interpretation is in accordance with the findings presented in paper II and from a Finnish study (Poskiparta, et al., 2006), in which participants reported that practical support related to exercise was ignored or overlooked by healthcare practitioners. Participants in the current qualitative study emphasised that advice from healthcare practitioners on how to make exercise easier would be helpful. More research is needed, however, to clarify the role of social support in exercise management.

Concerning the associations between family support and diet management, the results showed a somewhat different pattern. These findings suggest that people diagnosed with type 2 diabetes less than six years ago are more in need of frequent diet management support from their family than those who have lived with the disease for several years. This may indicate that the latter group may be able to adopt diet management with minimal family support. As previously mentioned, very few people reported frequent support from family and friends, which may have led to an underestimation of the links between such support and self management. It is also possible that a differentiation among support from friends, colleagues and peers could have increased the sensitivity of the scale to assess critical aspects of support. Researchers have suggested that peers with type 2 diabetes may provide different and more effective support than, for instance, friends (Brownson & Heisler, 2009; Paul, et al., 2007). Future research could benefit from including items in which the support from friends, colleagues and peers is differentiated.

The link of social support to motivation for a behaviour or task is likely be mediated by ability expectations (Eccles, 2007). In accordance with earlier studies (Williams & Bond, 2002; Xu, et al., 2008), results presented in paper IV give some support to this assumption. The results indicate that a substantial amount of the overall associations between social support and exercise management was mediated by exercise ability expectations in both subsamples. By contrast, the links between social support and diet management were mainly direct associations and not mediated by ability expectations. This was especially the case for support from healthcare practitioners. The same tendency was found in the study presented in paper II, where many participants reported that healthcare practitioners inform them about diet. Yet, it was unclear whether this information actually improves ability expectations for diet management. The findings may indicate that social support may act as an external regulatory agent in relation to diet. According to the Theory of Planned Behaviour (Ajzen, 1991), people feel some degree of pressure from significant others to behave in a socially-desirable manner. It may be claimed, therefore, that normative sociocultural expectations could be one reason why individuals with type 2 diabetes attempt to adhere to diet recommendations. Thus, external motivational factors could be helpful in encouraging adequate diet management. Yet, it is worth noting that earlier research suggests that social norms and pressure are associated with less optimal motivation and long-term behavioural regulation (Segar, Eccles, Peck, & Richardson, 2007; Segar, Eccles, & Richardson, 2008).

Finally, the finding in paper IV, indicating that the associations between social support and diet/exercise management were rather modest, was unexpected, because several studies have demonstrated that social support from healthcare practitioners, family and friends is a significant factor in diabetes management (Bai, et al., 2009; Miller & Davis, 2005; Paul, et al., 2007; Tang, et al., 2008). However, some studies have demonstrated modest correlations between social support and diabetes management (Karlsen, et al., 2004; King, et al., 2010). The weak associations between family- and friend support and self-management in the present study could be, as mentioned above, attributed to the relatively low percentage of individuals who reported

support from these sources. However, results presented in paper II could also shed some light on why self-management is only slightly influenced by social support. The findings from this study indicate that many participants experienced that they often felt empty and "left to their own devices" after their initial encounters with their healthcare practitioners, including those that formed a part of course at the Coping and Learning Centre. They reported that social support provided only a few times a year is not enough to stimulate motivation for self-management and, therefore, expressed a need for ongoing support in addition to the regular check-ups offered by healthcare practitioners. These findings are consistent with a review by Clark (2008), who revealed that patients with chronic illness require continuous support in self-management. Moreover, the participants in the study presented in paper II asserted that group meetings with other people with diabetes could be helpful in stimulating them to self-manage their disease. This finding is consistent with a number of studies demonstrating that patients specifically value the peer interaction aspects of groups. Such groups have been identified as an effective means of providing educational, emotional and instrumental benefits for people with chronic illness (Brownson & Heisler, 2009; Lorig, et al., 1993; Lorig, Ritter, Villa, & Armas, 2009; Percy, Gibbs, Potter, & Boardman, 2009; Ussher, Kirsten, Butow, & Sandoval, 2006). However, according to Clark (2008), self-management declines some months after educational interventions, thus it appears as if such patients require continuous support. This notion is confirmed in a review by Coster and Normann (2009), who found that intensive and long-term interventions seem to be more successful than shorter ones.

5.4   Methodological considerations

According to Polit and Beck (2004), using both qualitative and quantitative approaches provides complementary strengths and limitations, i.e., the strength of one approach complement the weakness of the other. For example, in this thesis, the qualitative studies added in-depth information about life-values, while the quantitative study added more information about the level and distribution of diet and exercise values and their associations with diet and exercise self-

management. Moreover, the quantitative study showed weak associations between perceived social support from healthcare practitioners and self-management, whereas the qualitative study presented in paper II contributed to the understanding of why this association might be weak. The design in this thesis seems to be suitable to investigate motivation for self-management among adults with type 2 diabetes. However, methodological considerations related to the focus group interviews and the survey will be discussed separately in the next two sections.

5.4.1   The focus group interviews

The intention behind the use of focus groups was that the group process could help the participants to explore and clarify their views of diabetes management motivation better than individual interviews. It has been suggested that the interaction between participants may stimulate thoughts and reflections, thus leading to a rich source of data that would not emerge in a one-to-one interview (Morgan, 1997). However, the dominance of one or two participants as described by Krueger and Casey (2000) can prevent other participants from discussing new and relevant issues. In the focus group interviews the dynamics of all the groups were positive, and many of the participants described the fellowship and discussions as having been constructive and valuable.

By using a theoretically-inspired, semi-structured interview guide, there might be a risk that the researcher favours answers and issues reflecting the researcher's theoretical perspectives or pre-understanding, rather than participant's view of the phenomenon under study. The research team was aware of that and, therefore, allowed changing or omitting questions or including additional ones in order to be open to other perspectives (Robson, 2002). Using the focus group interview method, the discussion and conversation among the participants where they share, compare and discuss their experiences with type 2 diabetes, may also increase the possibility that several or other perspectives of self-management motivation will be emphasised during the interview. Thus, this may reduce the risk that the research team favours answers and issues reflecting the theoretical perspectives, rather than participant's view, of the phenomenon under study.

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Another challenge with the focus group interview is that participants may carefully choose what to say rather than expressing their individual experiences or genuine opinions (Morgan, 1997). As documented in paper II immediately prior to the focus groups, the moderator emphasised that all opinions were welcome, even if the participants did not agree with each other. Moreover, the moderator (B.O.) and the other member of the research team (B.K.) who performed the focus group interviews did not have any relationship with the participants, which might have facilitated the participants' ability to speak freely.

The participants were mainly people with acceptable levels of glycaemic control, as measured by HbA_{1c}. It is conceivable that people who struggle to maintain glycaemic control or who do not regard glycaemic control as a feasible or desirable goal might have identified other perspectives related to the topic discussed in the focus groups than those mentioned by the participants. It is also possible that they may not have wanted to participate in a focus group interview in which other people might have had different perspectives on the disease.

Another possible limitation is that, although the two focus group sessions allowed participants time for reflection both during and between the interviews, it is unclear whether the findings actually influence motivation for self-management. Moreover, one cannot rule out the possibility that the findings that were identified in the current study would have changed if the participants had been interviewed individually or in times of crisis (e.g., newly diagnosed). Another concern is that the participants recruited from the Coping and Learning Centre might have identified ongoing group-based support (paper II) as a critical attribute of support, simply because the program emphasised it.

5.4.2   The survey study

The cross-sectional design is particularly appropriate for describing associations between variables at a fixed point in time (Polit & Beck, 2004). The conceptual framework depicted in figure 1, presents a theoretically-based assumption about causal direction that has directed

the quantitative analytic model. The cross-sectional design does not, however, allow us to evaluate causal effects or directions. One can only assume which variables were functioning as antecedents, mediating and response variables and their main paths of influence. Hence, there are frequently several alternative explanations in a cross sectional design. It may be that social support from healthcare practitioners may influence diabetes management by influencing ability expectations, but it is also plausible that people who have high ability expectations to manage their diabetes perceive more support from healthcare practitioners. Both causal chains are certainly possible. Accordingly, future research should aim at implementing experimental or longitudinal designs in order to gain knowledge of the direction of relationships between motivational factors and self-management among people with type 2 diabetes.

Researchers who have investigated people's diet and exercise habits have emphasised that these are complex behaviours that are difficult to measure with a simple instrument (Jenum, et al., 2006; Vereecken, et al., 2009). There is also a lack of consensus or "gold standard", which has led to different approaches when validating diabetes self-management, including lack of content validity with the latest American Diabetes Association standard of diabetes care (Sousa, Hartman, Miller, & Carroll, 2009). Although the questionnaire used in this study reflects the recommendation from the national diabetes guidelines related to frequency of diet and exercise management, a precise estimate of diet and exercise management could not be obtained, and the Summary of Diabetes Self-care Activities (SDSCA) scale for assessing diet and exercise management in this study comprises only five items. Future research should therefore expand the instrument to include more items relevant for diet and exercise management among people with type 2 diabetes.

Lastly, all our data were based on self-reports and, according to Asimakopoulou and Hampson (2005), self-reported measures of behaviour can be prone to recall bias. It has been suggested that the most pervasive problem for response bias is people's tendency to present a favourable image of themselves (Polit & Beck, 2004). We cannot exclude the possibility of such bias in our study, but according

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to Polit and Beck (2004), the effects of such bias should not be exaggerated. However, one should note that self-reporting from people with type 2 diabetes was the only available source of information. Collecting compatible information from family and healthcare practitioners would strengthen further research.

6   Conclusions

The present study is one of the few studies conducted in Norway on motivation for self-management among adults with type 2 diabetes. The aim of this thesis was to develop knowledge about factors that may be related to motivation for self-management among adults with type 2 diabetes. Through use of focus group interviews and surveys, this thesis has sought to develop knowledge about diabetes management motivation as perceived and described by the people living with this disease. This concluding chapter will present the main findings of the study, followed by some possible implications for clinical practice and suggestions for future research.

The study results indicate that many people with type 2 diabetes followed diet and exercise recommendations less than what the current national diabetes guidelines recommend. However, they followed diet recommendations to a greater extent than those pertaining to physical activity. This study's findings also imply that few participants have specific and proximal goals related to diabetes management.

Six themes related to life values where identified, of which several are related to fundamental human needs. The findings may imply that life values can be a critical factor in motivation for diabetes self-management. This is an issue that requires further research.

According to results related to ability expectations, these findings lend support to previous research and the theoretically-based notion that ability expectations may enhance self-management among adults with type 2 diabetes. Concerning values, only negative exercise values were significantly negative associated with reported exercise management. These findings may connote that people who exercise on a low level perceived this activity as more demanding and more time and effort consuming than modifications to their diet. However, ability expectations and values explained more variance for exercise management than for diet management. The findings may indicate that intrinsic motivational factors are more closely linked to exercise management than to diet management.

Relatively few participants perceived frequent, constructive support from family and friends. Significant bivariate associations between exercise management and family and friend support, along with significant associations between family support and diet management for people diagnosed less than six years ago were found. This may indicate that they are more in need of frequent diet management support from their families than those who have lived with the disease for several years.

Regarding social support from healthcare practitioners, the results in the quantitative study revealed that the majority of participants reported satisfactory, constructive social support from healthcare practitioners. However, only modest associations of social support with self-management were found. The weak association could, to some degree, be related to results from the qualitative study, which indicated that social support provided only a few times a year is not enough to stimulate motivation for self-management. Participants expressed, therefore, a need for practical and ongoing support in addition to the regular check-ups offered by healthcare practitioners. However, the findings imply individual differences in how participants would prefer social support from healthcare practitioners. Although it is unclear whether the attributes that were identified in paper II actually influence self-management motivation positively, the results in the quantitative study indicated that some of the associations between social support and diet and exercise management were mediated by ability expectations, lending some support to the assumption that social support may enhance self-management by improving ability expectations.

6.1 Possible implications for clinical practice

It is important to transform the findings into useful practical intervention strategies for clinical practice when possible (Kralik, Paterson, & Coates, 2010). The present findings may provide healthcare practitioners with a better understanding of the motivation for daily self-management behaviours among people with type 2 diabetes. They may also provide ideas for interventions that could

stimulate motivation for self-management among people with type 2 diabetes.

The results about how life values may correspond or conflict with diabetes management support the assumption that getting to know patients' life values and priorities is fundamental for the provision of quality care by healthcare practitioners (Daiski, 2008). It will be important, therefore, for healthcare practitioners and other existing support structures to learn about people's life values and take these values and priorities into account when giving advice about self-management behaviours. Moreover, the results suggest that some people with type 2 diabetes need to be encouraged and supported to set more specific, proximal goals for self-management that are, as far as possible, in accordance with important life values. To achieve this, it may be essential to conduct goal setting in close cooperation with people living with diabetes. The findings also imply the importance of individual differences in how participants prefer to receive social support from healthcare practitioners. Healthcare practitioners should therefore consider ways to balance empathic and non-confrontational approaches with confrontational ones. These findings may also be relevant for the support of people with other chronic illnesses with similar demands as type 2 diabetes.

The study emphasises the importance of practical and ongoing support for people with type 2 diabetes to keep them motivated; therefore, more permanent supervision after, for instance, the course at the Learning and Coping Center would be beneficial. Healthcare practitioners should also pay more attention to physical activity in their consultations with people living with type 2 diabetes, and as far as possible, provide ongoing support related to such activity. They should also help people living with type 2 diabetes to identify forms of exercise that they can master and sustain and that will not threaten their body image and self-worth. The current study also lends support to previous studies suggesting that exercise groups are important for motivating people to increase their exercise level (Casey, et al., 2010; Ferrand, et al., 2008; Korkiakangas, et al., 2010). The need to organise such groups is therefore reinforced by the findings in this study. Healthcare practitioners should also, if possible, facilitate the establishment of

more permanent peer-support groups among people with type 2 diabetes to stimulate their self-management motivation.

Although the present results reveal that many participants followed diet recommendations to a greater extent than those pertaining to physical activity, it may be inferred that many people with type 2 diabetes are likely to need help from healthcare practitioners to discover food that is both nutritious and tasty. Organizing cooking support groups could be one way of achieving this.

Finally, the findings illustrated room for improvement in support from family and friends. Healthcare practitioners can play a role in stimulating such support and, thus, encourage ongoing support for people with type 2 diabetes.

6.2   Suggestions for further research

This thesis has shed some light on how ability expectations and values may influence the motivation for self-management among adults with type 2 diabetes. However, given the methodological limitations and the difficulty of presenting an overall picture of factors involved in motivation for self-management, more research is needed to identify patterns or factors that may predict motivation for self-management.

In this study, self-reported measures were used to collect information about diet and exercise management. In order to strengthen the quality of these variables, future research could use more objective measures, such as pedometers and daily logs related to dietary and physical activity behaviours. Moreover, the scale for assessing diet and exercise management comprises only five items. Future research should, therefore, expand the instrument to include more items relevant for diet and exercise management among people with type 2 diabetes. Further studies could also follow up on the suggestions that subjective exercise management norms are formed individually on the basis of what most people recognise as the appropriate level of physical activity.

This study's results lend support to the assumptions that ability expectations are central for diabetes self-management; however, longitudinal studies could make it easier to test causal models. Further research is also needed before definitive conclusions can be drawn about how the dynamics of people's life values influence the motivation for self-management behaviours. Cross-sectional and longitudinal quantitative studies that investigate how life values and self-management behaviours interrelate would be beneficial. Moreover, although the value scale developed in this current study showed satisfactory psychometric properties, the value scale could have included more items reflecting life values or other components of values relevant for diabetes management. Accordingly, further studies could benefit from refining this scale. In addition, even though the current quantitative studies have explained some of the variance in the different dependent variables (diet and exercise management), a considerable degree of variance remains to be explained. With regard to the wide scope of Eccles' expectancy-value model, other parts of the model ought to be included as variables in further research, for instance, people's interpretations of past diet and exercise behaviours.

The modest influence of support from the healthcare practitioners may indicate that more research is needed to develop methods to better support and stimulate motivation for self-management among people with type 2 diabetes. We also need more research to investigate how knowledge about motivation can be used in clinical work. Therefore, it would be of special interest to develop a motivation intervention programme based on expectancy-value theory. For instance, it would be useful to conduct experimental research to test different approaches to help people with type 2 diabetes to set specific goals for diabetes management behaviours that are in accordance with important life values. Moreover, because the findings indicate a low frequency of social support from family and friends this is another area where further research could benefit from an intervention study aimed to empowering family and friends to give more constructive support. Additional research is also needed to differentiate support from friends, colleagues and peers.

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Paper 1

PATIENT PERSPECTIVES

Life values and self-regulation behaviours among adults with type 2 diabetes

Bjørg Oftedal, Bjørg Karlsen and Edvin Bru

Aim. The aim of this study was to identify life values in adults with type 2 diabetes and to describe their experiences of how these values may influence self-regulation behaviours.

Background. Daily self-regulation behaviours have been described as challenging, because the individuals try to find a balance between them and life values. However, little is known about how life values may influence the motivation for necessary self-regulation behaviours.

Design and methods. A descriptive/explorative qualitative design that included focus groups was used to collect data. The sample consisted of 19 adults with type 2 diabetes. Data were analysed using qualitative content analysis.

Results. The findings revealed six themes: maintaining health and longevity, a feeling of bodily well-being, preserving a positive body image, self-determination, maintaining the ability to work and belonging. The results reflect the fact that many life values have a major influence on self-regulation behaviours.

Conclusions. The findings indicate that several of the life values can conflict with self-regulation behaviours, which in turn may influence the motivation for self-regulation of type 2 diabetes. Some of these values could be considered to be related to self-worth, which is regarded as an important motivational component for engaging in a task. Moreover, this study highlights the fact that goals related to self-regulation behaviours were formulated in more general than in specific terms.

Relevance to clinical practice. This study may help health professionals to understand how adults' life values influence their motivation for adequate self-regulation. The findings indicate that the existing support structures should make an effort to learn about people's life values and take them into account when giving advice about self-regulation behaviours. Moreover, people with type 2 diabetes should be supported by health professionals to set more specific self-regulation goals that are consistent with their life values.

Introduction

The primary goal of medical care in type 2 diabetes is to achieve optimal glycemic control, and it is clear that this to a large extent depends on the affected individual's self-regulation behaviours (Claudi *et al.* 2005, American Diabetes Association 2008). Self-regulation behaviours necessary for type 2 diabetes require the pursuit of many different goals concerning diet, exercise and medication to maintain adequate metabolic control and avoid long-term complications (Clark 2005). The demands of these daily self-regulation behaviours have been described as challenging, because the

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individuals try to find a balance between them and their life values (Hunt *et al.* 1998, Paterson *et al.* 1998). It is well documented that values have a significant impact on motivation and play a crucial role in understanding self-regulatory behaviour (Heisler *et al.* 2003, DeShon & Gillespie 2005). Previous diabetes research has suggested that motivational problems are probably the most significant cause of poor self-regulation (Ruderfelt & Axelsson 2004, Peyrot & Rubin 2007). Little is, however, known about how life values influence the motivation to attain necessary metabolic control by stimulating or inhibiting self-regulation behaviours in adults with type 2 diabetes.

Background

According to the expectancy-value theory, individuals' expectations of success and the value they place on it are important determinants of their motivation (Wigfield & Eccles 2000, Eccles & Wigfield 2002). Wigfield and Eccles (2002) consider goals to be similar to values, because both concern the purpose or aim of individuals when engaging in different activities. However, goals are usually considered more specific and change more frequently than values, which also applies to those related to self-regulation behaviours concerning exercise and diet. On the other hand, more general life goals are often related to values. Eccles and Wigfield (2002) describe four components of subjective values that can affect behaviour: (1) attainment value, which is related to the importance of doing well at a task and more broadly, it deals with a person's identity. The task will have a higher attainment value if it confirms salient aspects of a person's actual or ideal self-schema, (2) the term intrinsic value concerns the enjoyment one gains from carrying out the task, (3) utility value is determined by the importance of a task that is related to current and future goals. For example, people with type 2 diabetes exercise because they wish to prevent long-term complications, and (4) the final component is 'cost', which is characterised as the cost of conducting the activity and means that the value of a task also affects a set of variables. For instance, the negative consequences of self-regulation behaviours among people with type 2 diabetes could be reduced possibility of living in accordance with other central values in their everyday life such as spending time with family or friends.

According to Fishbach *et al.* (2003), goals are more likely to be accomplished when they are in harmony with other goals and values. For instance, the goals of attaining adequate metabolic control and taking part in the New York marathon may facilitate each other. On the other hand, the goal of attaining adequate metabolic control can easily conflict with the preference for tasty but unhealthy food.

A quantitative study by Puder *et al.* (2005) suggested that the main personal treatment goal among adults on insulin for type 1 and type 2 diabetes is long-term adequate glucose control, followed by goals for the prevention of complications and finally goals for having a good quality of life. This study included only 22 respondents with type 2 diabetes, so generalisation of findings is limited. Huang *et al.* (2005) found that in their study the majority of older patients with type 2 diabetes focused on maintaining their independence in activities of daily living, rather than obtaining optimal metabolic control and preventing complications. The burden of self-care and maintenance of independence may take precedence over strict adherence to treatment regimens that are in accordance with published guidelines on diabetes care. However, a recent study by Morrow *et al.* (2008) found that life and health values as well as goals related to self-care practices often complemented each other among older adults with type 2 diabetes.

All the studies referred to above were conducted mostly among older people (> 65 years) with type 2 diabetes. A few studies have examined life values and how they influence self-regulation behaviours among adults aged between 30–65 years with type 2 diabetes.

The study

Aim

The aim of this study was to identify life values among adults with type 2 diabetes and to describe their experiences of how these values may influence self-regulation behaviours.

Design

A descriptive/explorative qualitative design that included focus groups was applied. Focus groups were useful for exploring ideas expressed by the respondents as well as for identifying issues for future research. This study was conducted as a pilot study prior to a national longitudinal, prospective survey.

Participants

The study was conducted in the south-western part of Norway. To obtain a varied picture of life values and how they influence self-regulation behaviours among people with type 2 diabetes, the participants were recruited from three separate sources: The Coping and Learning Centre at a University hospital, a local Diabetes Association and general practitioners (GPs). The samples from the University hospital

and the GPs were purposively selected from patient lists. People with long experience of type 2 diabetes were strategically recruited from the local Diabetes Association. Individuals aged 30–65 years, with disease duration of at least one year and able to speak Norwegian, were included in the study. A total of 21 people agreed to participate: 12 from the University hospital, six from the GPs and three from the local Diabetes Association. They received a reminder phone call the day before the scheduled focus group meeting. Prior to the start of the focus group, two participants dropped out of the study because of work and illness.

The 19 participants comprised 12 men and seven women with a mean age of 51 years. Fourteen of the participants were married while five were single. All but one had completed high school or university education. Ten were working full time, six half-time, while three were unemployed. The time since the onset of their diabetes ranged from 1–26 years (mean = 7 years). Nine participants were treated with insulin, six by means of diet and oral medication and four by means of diet alone. The mean self-reported HbA_{1c} level was 6·9 %. Three participants had $HbA_{1c} < 8\%$.

Ethical considerations

The study was approved by the Norwegian Regional Committee for Medical and Health Research Ethics (No. 060·07), the Norwegian Social Science Data services and the Privacy Ombudsman for Research (No. 16664). All respondents were invited by letter to take part in the study and provided their informed written consent prior to the focus groups. They were guaranteed anonymity and the right to withdraw from the study at any time.

Data collection

The focus group interviews took place at the University, and the data were collected in May and June 2007. The participants were divided into three focus groups. Each group consisted of five to seven persons of both sexes. The interviews took the form of two sessions, each limited to two hours. Demographic and biomedical information was gathered via questionnaires administered during the interview. The interview guide was pretested on three individuals with type 2 diabetes who were not included in the study. Based on their recommendations, we revised some of the questions. The first author (BO) moderated the discussion by means of a semi-structured interview guide based on the expectancy-value model of achievement motivation (Wigfield & Eccles 2000, Eccles & Wigfield 2002). The other member of the research team (BK) took field notes and observed the

interaction in the groups. Two main topics were addressed: important values in life and the participants' experiences of how life values may influence self-regulation behaviours. At the end of every focus group meeting, the research team discussed the most important themes as well as possible differences between that focus group and the other groups. Increased validity was achieved by summarising the preceding focus group discussions and obtaining feedback on these summaries from the participants. The interviews were audio taped and transcribed verbatim.

Analysis

The analysis of the interview texts was inspired by qualitative content analysis (Graneheim & Lundman 2004) and performed in several steps. First, the text about the participants' life values as well as their experiences and reflections related to how these life values influenced self-regulation behaviours was read through to obtain a sense of the whole. Second, the text was read in detail, and meaning units were identified and condensed to make it shorter, while still capturing the core meaning, using the NV_{IVO_7} programme (QSR International Pty Ltd, Doncaster, Victoria, Australia). The condensed meaning units were then abstracted to codes, which were consolidated into tentative themes. Both the manifest and the latent content were highlighted. On NV_{IVO_7}, we had one main node related to life values, and the analysis resulted in six themes related to this node. Subsequently, these themes were analysed according to how they stimulated or inhibited self-regulation behaviours. To strengthen the credibility of the analysis, the themes were identified and formulated in the course of discussions among the research team.

Findings

The following six themes related to life values were identified: maintaining health and longevity, a feeling of bodily well-being, preserving a positive body image, self-determination, maintaining the ability to work and belonging. These themes are presented in Table 1. In each theme, the participants' descriptions of how their life values influenced self-regulation behaviours were highlighted. Quotations were added to give meaning to the text.

Life values

Maintaining health and longevity
This theme, which occurred consistently throughout the discussions, emphasised the value of a long, healthy life without complications. One participant stated:

Table 1 Life values among adults with type 2 diabetes

Maintaining health and longevity
A feeling of bodily well-being
Preserving a positive body image
Self-determination
Maintaining the ability to work
Belonging

The long-term complications are far ahead, I hope. But I think that I'd prefer to grow old and stay fit for a very long time. Only I can do anything about that and it motivates me to do something.

This value was also expressed by the wish to see their children and grandchildren grow up, which motivated them to remain healthy:

Now, I am lucky enough to be a grandmother…Therefore I want to see my grandchildren grow up – staying healthy is a motivation, as healthy as possible with this disease [diabetes].

Another participant stated: 'The idea of having a good quality of life when I'm retired motivates me to make an effort to prevent complications later on'. When asked to specify what they did to remain healthy, they mentioned general rather than more specific goals. The following comment exemplifies the formulation of goals: 'I try to control my weight and some other things in life. The goal is to control my diabetes'. In one focus group, both the respondents treated by means of diet only and those already on medication discussed how to avoid starting or increasing diabetes medication. They perceived this as an indicator of poor regulation or increased severity of their condition: 'It might appear that when you start on medication, it's all over'. The wish to avoid medication motivated them to keep to a healthy diet:

It is motivating for me to keep away from anything to do with medicine, so I try as hard as I can to control it by means of diet.

As the quotations above demonstrate, the participants did not report specific goals concerning necessary self-regulation behaviours for the prevention of long-term complications and, in turn, the attainment of health and longevity.

A feeling of bodily well-being
This theme is based on the discussions of how diabetes self-regulation behaviours may result in a feeling of bodily well-being or discomfort. The feeling of bodily well-being generated by adequate self-regulation is described by the following quotation: 'Both reduced weight and physical training increase my sense of well-being'. Another participant explained how eating healthy food resulted in perceived bodily well-being:

Recently the motivation for diabetes regulation has been that I feel such bodily well-being when I eat – I actually start my day with a salad. Then my hands don't become swollen. I am able to walk on my feet. My body feels totally different. And that motivates me enormously.

In contrast, many participants emphasised their love for chocolate bars and their inability to abstain from food with high levels of sugar or fat. One informant put it like this: 'Many times all I can think of is chocolate, it drives me nuts – and I end up eating it'. The majority experienced that exercise could cause bodily discomfort, weakness and fatigue as exemplified in the following comment:

I may be fresh when I start training and it goes smoothly for a while, but suddenly I 'come up against a blank wall', as if there is no energy left in my body.

Some participants also mentioned that expectations of negative bodily sensations could prevent them from engaging in physical exercise:

I have muscle pain, which I use as a poor excuse for not exercising. For example, I take the lift instead of the stairs, or drive the car to the shops, instead of walking.

Preserving a positive body image
The value of having a positive body image was emphasised in the discussions. Many participants stated, however, that they were dissatisfied with their body shape and particularly their weight and experienced that they did not match today's ideal body standards (e.g. healthy, shapely, toned and thin). Their descriptions of dissatisfaction with their body image were closely linked to their sense of self-worth, which in turn appeared to influence their choice of self-regulation behaviours. For instance, they described avoiding the fitness centre, because they felt particularly vulnerable in situations where they had to exercise together with slim persons:

…if there were more persons with diabetes together we could have avoided what you mentioned about g-strings and that thing about looking better than the others and showing off, because that is very much what goes on at gyms today.

The next example is indicative of how the participants struggled with their body image and, in turn, how a negative body image could conflict with the goal of exercise as part of self-regulation: 'I would attend a fitness centre if there was one for people like us who have a few extra kilos'.

Self-determination
This theme reflects the participants' need to influence their diabetes regulation decisions and to make their own independent choices. Several participants mentioned health

professionals as discussion partners: 'I use the health professionals as a sparring partner. We discuss and ask each other about diabetes treatment'. They also emphasised the importance of making independent choices and having the right to refuse treatment:

I go to the doctor four times a year and he asks me what I'd like to improve on. And I say that I'll start jogging. But I haven't done it yet (laughter). Right, that's good, he says and then he asks the next time: did you do it? No, I say, I didn't. I couldn't find the motivation. He accepts that of course. I mean, it is my life and the decisions I make are my own responsibility.

The freedom to express their own opinions, take their own decisions and even to make demands on their doctors was described as important:

I called my doctor and said that I had to have insulin. Then he said that this is not how it works. Yes, I said, this is how it works. It is my disease. I have to have it [insulin]. Then he just laughed… yeah, but I don't care, you are not the one to decide this. I need that insulin. I've had to fight for it and to say how I want things. I sat there until I got it. So it worked out fine.

Although the participants emphasised diabetes as a condition that requires self-determination to make their own decisions about regulatory behaviours, they often perceived it as challenging, as expressed by the following quotation: 'I want to have a stronger character so that I can decide myself. It should be up to each individual how they use their future'.

Maintaining the ability to work
In each focus group, the participants discussed how 'maintaining the ability to work' can both correspond and conflict with self-regulation behaviours. Adequately regulating their diabetes was described as especially important by those who said that they were happy in their jobs. A participant stated:

I have a strong desire to remain healthy. My job is so much fun and I want to work – a lot.

Another respondent explained that his job required a special health certificate incompatible with the use of insulin; therefore, he walked an hour each morning and also avoided eating food with high levels of sugar:

It is very important to me that I keep my health certificate. If I start taking insulin, I'll lose it. So that is a strong incentive for controlling my diabetes.

Other participants believed that working conditions and goals for being competent in one's profession can compete with the behaviours associated with the regulation of their diabetes:

I'm busy at work, I work overtime. Then I don't have the time to follow up on my diabetes as much as I'd like to.

Another commented:

There can be factors in the job situation that might disrupt a healthy eating pattern for a person with diabetes.

As the quotations above demonstrate, some participants experienced problems with combining work with diabetes regulatory behaviours.

Belonging
The value of 'belonging' emerged through discussions about the importance of having good relationships with family and friends. Although all participants emphasised this value, their experiences of belonging to a social group were sometimes described as difficult:

Obviously, when other people treat themselves to cakes I am supposed to sit there separately and … it is about wanting to be like other people. I sort of don't want to be so very different.

The participants emphasised that being and living like others can sometimes conflict with the demands of diabetes regulation: 'I can't just survive on bread and water. I want to enjoy life like other people and live it up'. Many expressed their need not to be socially stigmatised:

Well, you notice their attitude: 'no, you cannot eat this or that'. You feel a bit isolated and treated differently in a way.

It emerged from the discussions that it is very important to the participants to avoid social stigmatisation:

I believe if you, for example, have been granted special conditions or rights, you have stigmatised yourself.

Some participants described the benefit of belonging to a fellowship or group that was engaged in activities such as hiking, exercise or cooking. This is demonstrated by the following quotation:

My friend has lost 30 kilos and I have lost 24 kilos! We really worked hard. It's great to have a friend like that, who gets up in the morning and joins you at the gym almost every day.

The participants acknowledged that this may correspond with the goals of achieving adequate metabolic control, as exemplified below:

We have done a lot in my circle of friends. At weekends we often prepare food in a wok, with lots of vegetables and some meat, but the portions of meat have become smaller. We try to increase the amount of vegetables and ideally to reduce the carbohydrates. It has been such a positive change of habits, actually. We have some newly

immigrated Asian women among our friends and they inspire us to use vegetables and try out new flavours etc.

Discussion

The aim of this study was to identify life values among adults with type 2 diabetes and to describe their experiences of how these values may influence self-regulation behaviours. Six themes emerged from the focus group discussions. Not surprisingly, the findings indicate that 'maintaining health and longevity' had a high value. In a hierarchical structure, maintaining health and longevity is a value with a high level of abstraction, and such abstract goals or values tend to be considered more important than those at lower levels (Chulef *et al.* 2001, Rasmussen *et al.* 2006). However, in line with research on the motivational properties, it has been suggested that abstract goals or values may only have a modest impact on motivation for specific behaviours, because the outcomes of goal attainment are unclear (Emmons 1992). Moreover, the extent to which goals influence motivation seems to depend greatly on how far into the future the goals are projected. Schunk (1991) argued that proximal goals promote motivation better than distal ones, and Bandura (1997) suggested that distal goals alone are too far removed in time to provide effective incentives and guidelines for present actions. Thus, because the value of maintaining health and longevity is both general and distal, it may only have a modest motivational influence on diabetes regulation behaviours. Some of the participants were concerned about diabetes medication and tried to avoid it, because starting or increasing medication was interpreted as a sign of ill health. Thus, because increased medication was reported to signal a threat to the value of maintaining health and longevity, the attempt to avoid medication prompted them to follow a healthy diet or engage in exercise. However, the findings indicate that most of the participants did not have specific diet, exercise or weight loss goals to prevent long-term complications and, in turn, attain health and longevity. These findings are in line with previous research revealing that, although people with diabetes are aware of and concerned about important self-regulation behaviours, most of them do not have specific diet, exercise and weight loss goals that could help them to achieve adequate metabolic control (Hunt *et al.* 1998, Huang *et al.* 2005). Boekaerts and Niemivirta (2000) assert that, in many cases, specific goals are more effective than general ones. This is supported by studies demonstrating that weighing oneself on a daily basis to achieve weight loss is more effective than doing so only once a month or having no goal at all (Linde *et al.* 2005, Raynor *et al.* 2008). It may be difficult for people with type 2 diabetes to set their own specific goals for self-regulation, as these may conflict with the activities necessary for other important and attractive goals and values. The low specificity of personal self-regulation goals may result in low motivation for adequate self-regulation behaviours, as demonstrated by the studies of Heisler *et al.* (2003) and DeShon and Gillespie (2005).

Many participants expressed the value of 'a feeling of bodily well-being', and our findings indicate that this feeling can influence self-regulation behaviours. This is not surprising, because bodily well-being is related to fundamental psychological needs (see e.g. Maslow 1970). Some participants reported that diabetes regulatory behaviours such as healthy eating and exercise gave them an immediate feeling of bodily well-being, which positively influenced their motivation for continuing this behaviour. However, the majority stated that the requirements of diabetes regulatory behaviours such as exercising did not result in a sense of bodily well-being, but rather in a feeling of physical discomfort, weakness and fatigue. These findings accord with previous research demonstrating that, among people with type 2 diabetes, discomfort, inconvenience and fatigue may affect the ability or motivation to engage in health-promoting activities such as exercising (Shultz *et al.* 2001). Our findings indicate that many participants experienced a conflict between two incompatible goals; the value of bodily well-being and self-regulation behaviours. A previous study (Shah & Kruglanski 2002) suggested that individuals differ in their ability to ignore or actively abandon alternative goals and, for those with low ability in this area, the need for bodily well-being may have a serious impact on adequate diabetes self-regulation behaviours.

Another theme concerned the value of 'preserving a positive body image'. Our findings indicate that the participants perceived that they did not match current ideal body standards and that this could make them avoid necessary exercise because it involved exposure of a body with which they were not satisfied. These results are in line with previous research concerning barriers to physical activity among adults and indicate that feeling fat explained the lower rate of physical activity, particularly among women (Ball *et al.* 2000). Previous studies among younger women with type 1 diabetes, where body image dissatisfaction led to omitting insulin as a means of weight control, also illustrate the motivational power of body image (Meltzer *et al.* 2001, Kichler *et al.* 2008). According to Harter *et al.* (1999), several studies have revealed that physical appearance and self-worth are inextricably linked. Eccles *et al.* (1998) argue that one of the motivational components of engaging in a task is confirmation or disconfirmation of salient aspects of one's self-schema, such as body image or self-worth.

The theme 'self-determination' dealt with the value attributed to taking one's own decisions about diabetes treatment as well as making independent choices. Many of the participants also considered this value to have a major influence on self-regulation behaviours. According to the Self-determination Theory, this is a universal psychological need and involves the right of competent people to determine their own affairs and be permitted to act according to their wishes (Ryan & Deci 2000, Löfman *et al.* 2008). Pelletier *et al.* (2004) demonstrated that, although people may be motivated to regulate their eating behaviours, successful regulation is more likely if the motivation is self-determined. Ford (1992) emphasised that the strength of self-determination goals varies across people and contexts, which is also the case in this study. Our findings reveal that some participants placed such a high value on self-determination that they ignored the health professionals' advice. This indicates that self-determination is a double-edged sword. On the one hand, it is considered to motivate individuals to take responsibility for their own diabetes regulation, while, on the other hand, it may result in ignoring the advice provided by health care professionals.

In this study, many of the participants stated that the value of 'maintaining the ability to work' was a central motivational factor for self-regulation behaviour. This theme incorporated the fear of losing one's job because of long-term complications and may thus have a positive effect on diabetes regulation. It is acknowledged that poor health has a negative effect on one's capacity for paid employment, and previous studies have indicated that complications owing to diabetes are associated with increased disability (Songer 2003, Tunceli *et al.* 2005, Von Korff *et al.* 2005). On the other hand, findings in this study indicate that stress at work may have a negative effect on diabetes regulation. Previous research has demonstrated that many individuals encounter obstacles in the workplace that limit their ability to achieve metabolic control (Anderson *et al.* 1993, Vinter-Repalust *et al.* 2004). This indicates the fact that it may be difficult for some people to combine work-related goals or values with diabetes regulatory behaviours.

Finally, the theme, 'belonging', highlighted the importance of belonging to a fellowship. According to Baumeister and Leary (1995), the value of fellowship is probably a basic human need. The findings illustrate the significance of belonging to a fellowship that is engaged in activities that promote adequate self-regulation, such as exercising or preparing healthy food. On the other hand, being stigmatised because of diabetes was a recurrent theme when talking about the social context, reflecting the perceived importance of being able to carry on as usual and to present oneself as 'normal'. Our findings suggest that, in many cases, the need to blend in with people who do not suffer from diabetes could inhibit diabetes regulatory behaviours.

Conclusions

This study is one of the few to identify life values and to describe how these values may influence self-regulation behaviours. The findings indicate that the participants' life values seem to play an important motivational role in relation to self-regulation behaviours. Several of these values may, however, conflict with the requirements for adequate self-regulation, which in turn may influence the motivation for self-regulation. Moreover, some of these life values could be considered to be related to self-worth, which, according to Eccles *et al.* (1998), is an important motivational component for engaging in a task. This study also highlights the fact that goals related to self-regulation behaviours such as exercise and diet were formulated in general rather than specific terms, something that, according to previous research (Bandura 1997, Boekaerts & Niemivirta 2000, DeShon & Gillespie 2005), may lead to low motivation for diabetes regulatory behaviours. However, further research is needed before more definitive conclusions can be drawn about how the dynamics of people's life values influence the motivation for self-regulation behaviours. Cross-sectional and longitudinal quantitative studies that investigate how life values and self-regulation behaviours interrelate would be beneficial. This will be the next step of our research process, and results from this pilot study will influence the choice of variables included. Experimental research to test approaches to the mentoring of people with type 2 diabetes to help them set specific goals for diabetes regulatory behaviours that are in accordance with important life values would be even more useful.

Relevance to clinical practice

The findings support the notion that getting to know patients' life values and priorities is fundamental for the provision of quality care by nurses and other health professionals (Daiski 2008). It will therefore be important to take these values and priorities into account when giving advice about self-regulation behaviours. Moreover, clients with type 2 diabetes should be supported to set specific, proximal goals for self-regulation that as far as possible are in accordance with important life values. To achieve this, it may be essential that such goal setting is conducted in close cooperation with persons suffering from diabetes. Clients are also likely to need help from health professionals to discover healthy food that

they find tasty as well as to identify forms of exercise that do not involve threats to body image and self-worth. Organising exercise or cooking support groups could be one way of achieving this.

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Contributions

Study design: EB, BK, BO; data collection and analysis: BO, BK, EB and manuscript preparation: BO, BK, EB.

Conflict of interest

The authors declare that they have no conflict of interests.

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Paper 2

ORIGINAL RESEARCH

Perceived support from healthcare practitioners among adults with type 2 diabetes

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Abstract

Title. Perceived support from healthcare practitioners among adults with type 2 diabetes.

Aim. This paper is a report of a study of how adults with type 2 diabetes perceive different attributes of support provided by healthcare practitioners and how various attributes of support can influence people's motivation to self-manage their disease.

Background. Motivational problems seem to be a major reason for poor diabetes management. According to well-known theories of motivation, expectations of being able to perform certain behaviours are a key element. Different attributes of support from healthcare practitioners are likely to influence such expectations. To date, no researchers have specifically examined how people with type 2 diabetes perceive different attributes of support from healthcare practitioners and how these may influence their motivation to manage their disease themselves.

Methods. A descriptive/explorative qualitative design and focus groups were used to collect data. The sample consisted of 19 adults with type 2 diabetes, and the data were collected in 2007 and analysed using qualitative content analysis.

Findings. Five themes were identified, reflecting perceived attributes of support from healthcare practitioners: (1) an empathetic approach, (2) practical advice and information, (3) involvement in decision-making, (4) accurate and individualized information and (5) ongoing group-based support.

Conclusion. Healthcare practitioners may strengthen the self-management motivation among adults with type 2 diabetes by enhancing expectations of being able to perform the necessary diabetes care, and through the provision of empathetic, individualized, practical and ongoing group-based support.

Keywords: focus groups, healthcare practitioners, nursing, perceived support, type 2 diabetes

Introduction

Type 2 diabetes has become one of the major threats to human health in the 21st century. At present it is estimated that 285 million people worldwide suffer from diabetes, and its prevalence is increasing rapidly, especially type 2 diabetes (International Diabetes Federation 2009). Type 2 diabetes is first and foremost a self-management disease, which means

that its treatment is largely associated with daily behaviours concerning diet, exercise, blood glucose testing and medication to obtain optimal metabolic control and prevent long-term complications (Clark 2005, American Diabetes Association 2008). The demands of these daily behaviours have been described as challenging (Hunt *et al.* 1998, Paterson *et al.* 1998). A recent Norwegian survey revealed that only seven per cent of adults with diabetes attained the optimal metabolic control known to be ideal for preventing complications (Claudi *et al.* 2008, Jenum *et al.* 2008). Similar results have also been found in other countries (Saydah *et al.* 2004).

Previous research has suggested that motivational problems are probably one of the most important reasons for poor diabetes management (Ruderfelt & Axelsson 2004, Peyrot & Rubin 2007). As diabetes is a lifelong disease and involves consultations with healthcare practitioners, several researchers have indicated that support from these practitioners is critical for effective diabetes management (Lorig 2001, Thorne & Paterson 2001, Macdonald *et al.* 2008) and may influence an individual's motivation to self-manage their disease (Williams *et al.* 2005, Tang *et al.* 2008).

Although several authors (Lorig 2001, Gallant 2003, Furler *et al.* 2008, Macdonald *et al.* 2008) have demonstrated that support from healthcare practitioners is integral to people learning how to self-manage type 2 diabetes, there is little evidence to indicate what people with diabetes perceive as helpful.

The aim of this paper is to discuss the findings of a research project conducted in Norway comprising 19 adults with type 2 diabetes. The study was intended to explore and describe different attributes of support provided by healthcare practitioners and how they are perceived to influence people's motivation to self-manage their disease.

We will begin by providing an overview of relevant literature regarding the phenomenon under study, followed by a description of the research design. We will then present and discuss the research findings, concluding with implications for nursing practice, education and research.

Background

Motivation has been found by many researchers to be critical for self-management but has received little attention (Schilling *et al.* 2002). Because of lack of empirical evidence in this field, there is also a lack of research evidence that indicates the nature of the influence of healthcare practitioners' support on people's motivation to self-manage their disease. The study reported in this paper was influenced by the expectancy-value theory of motivation (see e.g. Eccles &

Wigfield 2002) and by social support theory (see e.g. Stewart 2000).

The expectancy-value theory has primarily been used in the field of education. However, because promotion of diabetes management has so many educational aspects, we consider that this theory provides a fruitful basis for this research. Moreover, theories within the expectancy-value tradition are commonly used to explain health behaviours (Gibbons *et al.* 2009).

According to expectancy-value theory, individuals' expectations of being able to perform relevant tasks or behaviours are important determinants of their motivation. For instance, it has been suggested that individuals are more motivated to seek challenging tasks (e.g. balancing diet, exercise and medication) when they believe that they are capable of accomplishing them (Denissen *et al.* 2007). Moreover, Wigfield and Eccles (1992) believe that individuals' expectations of being able to perform relevant behaviours are influenced by their perceptions of support from others.

Recent research has discussed healthcare practitioners' support of diabetes self-management in terms of social support (Gleeson-Kreig *et al.* 2002, Miller & Davis 2005, Gleeson-Kreig 2008, Rosland *et al.* 2008, Tang *et al.* 2008). For instance, Tang *et al.* (2008) found that more than 40% of participants identified their physician as the person who provided the greatest social support in managing their diabetes. According to Stewart (2000), a social support theorist, social support offered by healthcare practitioners includes emotional, affirmational, informational and tangible attributes.

The content of the relevant literature about the influence of healthcare practitioners on self-management of chronic illnesses such as type 2 diabetes is largely anecdotal or implied in related research, but not clearly articulated. However, some studies have a more explicit focus on the influence of healthcare practitioners' support on self-management. For example, Thorne and Paterson (2001) described how healthcare practitioners who did not believe or who accused people with diabetes often caused the person to become discouraged or confused in their self-management. The reason for motivational problems among individuals with type 2 diabetes could be poorly adapted support from healthcare practitioners. It is therefore important to obtain more knowledge about how different attributes of support are perceived by people with type 2 diabetes, and how they experience these in terms of influencing the motivation for self-management.

Furthermore, as motivation is an individual experience, it seems relevant to use patients' perspectives to gain this kind of knowledge. Such an approach is in line with that of

authors who emphasize that research on support from healthcare practitioners should be grounded in a patient perspective (Little *et al.* 2001, Gallant 2003, Burke *et al.* 2006).

The study

Aim

The aim of this study was to describe how adults with type 2 diabetes perceive different attributes of support provided by healthcare practitioners and how various attributes can influence people's motivation to self-manage their disease.

Design

The research had an interpretive and descriptive qualitative design. The data were collected in 2007 by means of focus groups. The study was conducted as a pilot study prior to a national longitudinal, prospective survey.

Participants

The research was conducted in the south-western part of Norway. In Norway, people with type 2 diabetes are usually treated in primary care by their general practitioners (GPs). In addition, they are offered a structured educational programme at a hospital (e.g. the Coping and Learning Centre), which includes information about type 2 diabetes, treatment, self-management and coping. To obtain a varied picture of how adults with type 2 diabetes perceive support from healthcare practitioners, the sample was made up of people with this condition who had participated in the educational programme at the Coping and Learning Centre and others who had not received such support. They were recruited from three separate sources: (1) The Coping and Learning Centre at a university hospital, (2) a local Diabetes Association and (3) general practitioners. The inclusion criteria were age 30–65 years, disease duration of at least 1 year and ability to speak Norwegian. A purposive sample of adults with type 2 diabetes was selected from the Coping and Learning Centre and the GPs' registers. Thirty people were invited to participate by the leader of the Coping and Learning Centre and nine by the nurse working with the GPs. People with more than 5 years' experience of type 2 diabetes were strategically recruited from the local Diabetes Association by the local leader. A total of 21 people agreed to participate: 12 from the Coping and Learning Centre, six from the GPs and three from the local Diabetes Association. They received a reminder phone call the day before the

scheduled focus group meeting. Two participants dropped out of the study prior to the start of the focus group due to work or illness.

Data collection

Data were collected by means of three focus group interviews (Morgan 1997). Each group consisted of five to seven people and included both sexes. The focus groups took place at our university and comprised two sessions, each limited to 2 hours. The idea behind the two sessions was to allow participants time for reflection both during and between the interviews. According to Hummelvoll and Severinsson (2005) and Hummelvoll (2007), several sessions can lead to a deeper understanding of an issue.

The first author (B.O.) moderated the discussion by means of a semi-structured interview guide. The other member of the research team (B.K.) took field notes and observed the interaction within the groups. Demographic and biomedical information was gathered via questionnaires administered during the interview. Immediately prior to the focus groups, the moderator reviewed the process with the participants (e.g. all opinions are welcome even if you disagree with each other). The expectancy-value model of achievement motivation (Wigfield & Eccles 2000, Eccles & Wigfield 2002) and social support theory (Stewart 2000) informed the interview questions. The moderator began with a general question ('Can you tell us a little about yourself, for instance your name and the duration of your type 2 diabetes?') and progressed to questions specific to the research objectives (e.g. 'Can healthcare practitioners' attitudes and behaviours influence the expectation of being able to achieve adequate diabetes self-management?'). At the end of every focus group meeting, the research team discussed the most important themes and possible differences between that focus group and the other groups.

Ethical considerations

The study was approved by the Norwegian Regional Committee for Medical and Health Research Ethics (No. 060·07), the Norwegian Social Science Data services (NSD) and the Privacy Ombudsman for Research (No. 16664). To ensure confidentiality, the results are only presented at group level. The researchers were not employed by the Learning and Coping centre or any other diabetes care agency.

Data analysis

The focus groups were audiotaped and transcribed verbatim and the analysis was influenced by qualitative content

analysis (Graneheim & Lundman 2004). The method includes several steps, and both the manifest and the latent content were highlighted. Firstly, the transcribed text about participants' perceptions of support from healthcare practitioners and its importance for motivating self-management was read through to obtain a sense of the whole. Next, the text was read in detail and meaning units were identified and condensed, while still retaining the core meaning, using the NVivo$_7$ programme (QSR International Pty Ltd, Doncaster, UK). The condensed meaning units were then abstracted with codes (e.g. a feeling of trust). The different codes were compared on the basis of similarities and differences and consolidated into tentative themes (e.g. emotional support). The analysis resulted in five main themes related to attributes of perceived support from healthcare practitioners. Subsequently, these themes were analysed according to how participants perceived that such support stimulated or inhibited their motivation for self-management.

Rigour

Drawing on the work of Lincoln and Guba (1985) regarding rigour in qualitative research, we used the criteria of credibility, dependability and transferability to ensure the rigour of our research. To strengthen, credibility the interview guide was pretested with three individuals with type 2 diabetes who were not included in the study. Some of the questions were revised on the basis of their recommendations. Increased credibility was also achieved by summarizing the preceding focus group discussions and obtaining feedback on these summaries from the participants. To reinforce the credibility of the analysis, the themes were identified and formulated in the course of discussions among the research team. The dependability of the study was ensured by using the same interview guide with each group, and the interviews were audio-taped and transcribed verbatim. Field notes were also taken during the focus group interviews. The transferability of our findings to another context was enhanced by providing descriptions of them as well as of the participants and data collection, together with the inclusion of appropriate quotations.

Findings

The study included 19 participants, 12 males and 7 females, and their clinical and demographic characteristics are presented in Table 1. Fourteen had participated in the educational programme at the Coping and Learning Centre. The majority had a self-reported HbA$_{1c}$ level within the acceptable range (<7) and three had HbA$_{1c} > 8\%$.

Table 1 Clinical and demographic characteristics of the sample

	Focus group 1	Focus group 2	Focus group 3
Gender			
Male	5	3	4
Female	2	2	3
Age (median)	57	52	42
Educational level			
University	5	3	1
High school	2	1	6
Primary and secondary school		1	
Duration of diabetes in years (median)	8	9	2
HbA$_{1c}$ (mean)	7·1	7·5	6·5

The analysis resulted in identification of five themes related to attributes of support provided by healthcare practitioners: (1) an empathetic approach, (2) practical advice and information, (3) involvement in decision-making, (4) accurate and individualized information and (5) ongoing group-based support.

An empathetic approach

Participants stated that the attribute of empathy was integral in the support provided by healthcare practitioners for motivating them to self-manage their disease. They defined empathy as understanding, listening and a holistic approach: 'I receive a lot of support. I am aware that they take an interest in me, and they are observant and caring'. An empathetic approach gave the participants a feeling of trust: 'Then I feel safe. Then I feel that I can trust these people. What they tell me, I take seriously'. Many also mentioned how positive feedback and being treated seriously influenced their belief in their own ability to manage their diabetes: 'When I see my doctor, he always says something positive: 'You're doing so well – keep up the good work'. In this way he motivates me to go on'.

Participants also illustrated empathy by discussing what occurred when they perceived a lack of empathy, such as when they were blamed by healthcare practitioners for their disease or when healthcare practitioners limited their supportive role to that of being experts on the disease, giving priority to talking about 'objective' data such as laboratory results and medication: 'It really goes from diet to tablets to insulin. That's the only thing on their minds'. They perceived that the healthcare practitioners adopted a 'textbook approach' to the treatment of type 2 diabetes and did not ask about their needs:

If they would just listen to your problems instead of working in accordance with a ready made formula; 'because this is how we treat diabetes, this is how we respond'. It's understandable that they have a 'recipe', but I think some of them should perhaps be better at just listening to what a person tells them about his or her everyday life.

This 'textbook approach' contrasted sharply with participants' perceptions of the support they needed to cope with the illness in everyday life. Therefore, they called for a more holistic approach: 'It's just that they don't consider the totality of the whole picture. You get a lot of discussions about doses. You know, about whether doses [e.g. tablets or insulin] should be increased or reduced in accordance with blood test results'.

Practical advice and information

This theme concerned practical advice and information that may increase the motivation for diabetes regulation. Many participants reported that the only practical support they received was related to information and advice about diet and planning meals: 'She showed me some books about diet and said that the changes required are not really that big. Just take smaller portions on your plate – fewer potatoes, more vegetables, less meat, and not a lot of fatty sauces, for example'.

The majority said that they rarely received practical support in consultations with healthcare practitioners: 'What I miss concerning diabetes is more information on what you can or cannot do. In a way, it would motivate you a bit more'. Many felt that the need for practical support was ignored and overlooked by healthcare practitioners. For instance, they reported that some GPs stated that blood glucose meters were neither useful nor necessary for people with type 2 diabetes, and practical advice about blood glucose testing was not given. Lack of practical advice impaired participants' ability to use such information as a tool for adequate self-management:

I am not informed whether my blood tests are in order or not, but I wish I could have them more systematically, with the results and reference values. Perhaps if I got them by mail or picked them up myself from the doctor's surgery, it would be easier for me to gain an overview of my condition.

Another participant stated: 'When you get a type 2 diabetes diagnosis the first 'medicine' you should receive from the doctor is a 'hands-on' course in diet. You ought to be taught what food to buy and how to prepare new meals'. Those who had attended the Coping and Learning Centre programme indicated that, although they found the content beneficial, the information they received would have motivated them even more in their self-management if it had been more related to their everyday lives. For instance, they emphasized that advice on diet and how to make it easier to exercise would be helpful.

Involvement in decision-making

The importance of healthcare practitioners being partners in decision-making about diabetes management was emphasized in the discussions:

I see my doctor once every 3 months and I think he is a wonderful partner to work with. I feel that this is enough to enable me to make the adjustments that are necessary in my daily routine. The other staff members are also really good discussion partners.

Some participants defined partnership as when the competence of healthcare practitioners and their own knowledge complemented each other: professionals have knowledge and expertise about diabetes and its treatment, while the participants were experts on their daily lives with diabetes:

They [doctors] can't think of everything. So I've noticed that I have given him tips about things that I feel myself, and those tips made him reflect. Then he can get back to me with suggestions for solving issues that he has not experienced himself.

Another person stated: 'I find that learning goes both ways. And that is, of course, a win-win situation'. Participants expected healthcare practitioners to motivate them to practise self-management, and in cases where this did not happen they often refused to collaborate with their GP:

It is his job to motivate me and tell me that I am doing a good job. I am very interested in that kind of co-operation. And if I don't get it, I become quite strict and reject him as I just cannot work with people who can't be bothered to listen.

Many participants considered that healthcare practitioners did not listen or ask for their opinions about important issues associated with living with type 2 diabetes. When they noticed that professionals ignored their views, they avoided their GPs and reduced their diabetes regulation efforts: 'If they don't listen to what you have to contribute and what you say, then it's a bit like 'I can't be bothered', and I withdraw and don't give a toss'.

Another stated:

There have been times when I felt I had to fight my own doctor, when he wouldn't understand and accept my views and worries about the increase in blood sugar. So I gave up for a while and quit seeing my doctor.

Accurate and individualized information

Participants explained that accuracy of information referred not only to the correctness of the information, but also to how the information was individualized to their personal circumstances and needs. They also spoke warmly about the information received from the Coping and Learning Centre at the university hospital: 'I must say that I am happy with my GP and the information I get there. The programme at the Coping and Learning Centre was also very informative'.

However, some wished to receive detailed information about type 2 diabetes, while others expressed a preference for more general information. Nevertheless, the most frequently mentioned and problematic issues were related to variation in the level of knowledge about type 2 diabetes among healthcare practitioners and perceived inconsistency of the information given to some of participants: 'It is obvious that the level of knowledge varies, and they tell me different things. It is a big problem'. Due to having received incorrect and inconsistent information, some participants stated that they no longer trusted the advice given by the healthcare practitioners. They wished that their GPs would update their knowledge base and learn more about diabetes.

On the other hand, one participant mentioned that an excess of information about diabetes could lower the belief in one's capability to regulate it and, in turn, reduce the motivation to self-manage diabetes adequately:

There is such a lot [of information] from the doctor's surgery that it has a negative effect on you and your motivation, so I say to myself 'Gosh, no, I have to get away from all this'. I can't cope with my diabetes. I eat and do exactly what I want.

Ongoing group-based support

This theme emerged from discussions about the importance of support on a continual basis in addition to the regular check-ups offered by healthcare practitioners. Many participants emphasized that after their initial encounters with healthcare practitioners (including those that formed a part of the course at the Coping and Learning Centre), they often felt empty and 'left to their own devices':

I felt quite empty after that 3-day course at the Coping and Learning Centre. Of course I had learnt something, but everything was just up to me. It's the same thing after I've spoken with my GP: he tells me a bit about what changes I ought to make, and then asks me how far I've progressed in making those changes. 'Go home and change your diet and do the best you can'. Ok, I try my best, but I am completely alone. Everything is up to me.

Some suggested that the Coping and Learning Centre should have a follow-up course both for sharing experiences and for receiving new, up-dated information:

The Coping and Learning Centre ought to have a brush-up course with new information. New things happen all the time, you know. For me it would be good to come back after a year or two, to discuss how things went. I would have appreciated that.

Some participants were of the opinion that they should be granted free admission to a fitness centre for exercising with other people with type 2 diabetes. Moreover, others believed that participating in a small group, like the focus groups, would give them an opportunity to share their experiences, fears and frustrations, which could be helpful for finding the motivation to self-manage their disease: 'It is even more important to sit down and have a talk around the table to learn about other people's experiences, than to keep on exercising until you're blue in the face'.

Discussion

Study limitations

The dynamics of all the groups were positive, and many participants expressed that the fellowship and discussions were constructive and valuable. However, there were some limitations in this research. The participants were mainly people with acceptable levels of glycaemic control, as measured by HbA_{1c}. It is conceivable that people who struggle to attain glycaemic control or who do not regard glycaemic control as a feasible or desirable goal might have identified other attributes to those mentioned by the participants. It is also possible that they may not have wanted to participate in a focus group interview where other people might have had different perspectives on the disease. Another limitation is that the study was based on self-reports gathered in the course of a single focus group interview; it is unclear whether the attributes that were identified actually influence self-management motivation in a positive way. It is also not clear whether these attributes would change if the participants had been interviewed individually or in times of crisis (e.g. newly diagnosed). An additional limitation was that participants recruited from the Coping and Learning Centre might have identified ongoing group-based support as a critical attribute of support, simply because it was emphasized within the programme.

> ### What is already known about this topic
>
> - Only a minority of adults with diabetes manage to attain optimal metabolic control.
> - Motivational problems are probably one of the most important causes of poor diabetes management.
> - Support from healthcare practitioners may be a critical factor for motivating self-management among people with chronic illness.
>
> ### What this paper adds
>
> - Perspectives of adults with type 2 diabetes on what they consider as necessary attributes of support from healthcare practitioners in motivating them to perform self-management.
> - People with type 2 diabetes need practical support related to the everyday challenges of living with the disease.
> - People with type 2 diabetes need ongoing group-based support in order to sustain motivation to self-manage their disease.
>
> ### Implications for practice and/or policy
>
> - Healthcare practitioners should give high priority to giving practical advice and information, as well as to organizing or facilitating more permanent peer-support groups for people living with type 2 diabetes.
> - Nurses who work with patients with type 2 diabetes or with people who have similar demands can use these findings to reflect on how best to support such patients.
> - Healthcare practitioners should give more individualized instruction during self-management programmes.

Role of healthcare practitioners

The findings suggest that healthcare practitioners can influence the expectations of adults with type 2 diabetes of being able to perform necessary self-management, and consequently the motivation for self-managing their disease, by the provision of empathetic, individualized, practical and ongoing group-based support. These attributes of support that emerged in this study are in accordance with dimensions suggested by social support theory (Stewart 2000). However, the present findings are unique in that they reveal the perspectives of adults with type 2 diabetes on what they consider necessary attributes of support from healthcare practitioners motivating them to self-manage their disease.

This has relevance for nursing practice as it provides information to help healthcare practitioners reflect on how they can best support patients with type 2 diabetes. In addition, the findings contribute insights that will be beneficial to self-management programme providers. For example, we found that the support offered in such programmes must be extended past the programme's completion date. Although standardized self-management programmes are common in Norway and elsewhere, this research has highlighted the need for individualized instruction, as well as for information that relates to the person's everyday experiences of living with the disease.

Attributes of healthcare practitioners

The findings reflected two main attributes of support provided by healthcare practitioners that need to be more elucidated in the self-management literature. The first concerns the importance of practical support from healthcare practitioners as essential for patients' expectations of being able to perform specific diabetes behaviours. However, only a few reported receiving such support, which is consistent with a recent study about how adults with type 2 diabetes perceived the service from healthcare practitioners (McDowell *et al.* 2009). McDowell *et al.* (2009) demonstrated that GPs' failure to give practical information was deemed unsatisfactory. Thorne *et al.* (1999) suggested that lack of practical support may reflect the fact that healthcare practitioners consider it to be a family matter rather that a basic concern of the healthcare system. As mentioned previously, practical support from healthcare practitioners seems to be rarely addressed in type 2 diabetes research, despite the fact that some studies have indicated that it appears to be important for promoting self-management (Norris *et al.* 2001, Coster & Norman 2009). Our findings support the conclusions of the latter two studies, and indicate the need to give higher priority to practical advice and information as a means of stimulating expectations of being able to perform self-management. However, there is a need for further research on how practical support from healthcare practitioners can influence motivation for self-management.

Need for on-going support

Secondly, the findings indicate that many participants experienced difficulties in changing and maintaining lifestyle behaviours over time. Therefore, they felt a need for ongoing group-based support in addition to the regular check-ups offered by healthcare practitioners. This finding is in

accordance with a review by Clark (2008), who suggested that patients with chronic illness require continuous support in self-management. Moreover, our participants also suggested that regular group meetings with others in a similar situation would increase their motivation to self-manage their disease. This finding is consistent with those of a number of studies demonstrating that patients specifically value the peer interaction aspect of groups. Such groups have been identified as an effective means of providing educational, emotional and instrumental benefits for people with chronic illness (Lorig *et al.* 1993, 2009, Davison *et al.* 2000, Campbell *et al.* 2004, Ussher *et al.* 2006, Percy *et al.* 2009). Healthcare practitioners could be important facilitators for such groups (Davison *et al.* 2000).

Conclusion

The findings demonstrate that healthcare practitioners can influence the expectations of adults with type 2 diabetes of being able to self-manage their disease by providing empathetic, individualized, practical and ongoing support. We suggest that our findings may also be of benefit to people with other chronic illnesses with similar demands to type 2 diabetes. They also have important implications for nursing practice, education and research. In order to stimulate motivation for self-management, nurses should organize or facilitate more permanent peer-support groups, as such groups can help people to better cope with the various challenges of their condition. In addition, there is a need for individualized instruction in self-management programmes. The findings concerning the attributes of support could inform nursing education about how to best adjust support to the needs of people with type 2 diabetes. However, further research is required before definite conclusions can be drawn about the dynamics of support and its influence on motivation for diabetes management. Cross-sectional and longitudinal quantitative studies aimed at investigating the relationship between perceived support from healthcare practitioners and motivation for self-management among adults with type 2 diabetes could be beneficial. This will be the next step in our research process, and the results of this pilot study will influence our choice of variables for future questionnaires.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

EB, BK and BO were responsible for the study conception and design. BO, BK and EB performed the data collection. BO, BK and EB performed the data analysis. BO, BK and EB were responsible for the drafting of the manuscript. EB, BK and BO made critical revisions to the paper for important intellectual content. EB and BK supervised the study.

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