

THE PREGNANCY: TIME FOR A NEW BEGINNING!

**Exploring opportunities and challenges for healthy nutrition
promotion**

Ellen Szwajcer

Promotoren: Prof. dr. ir. G.J. Hiddink
Hoogleraar Voedingsvoorlichting via Intermediairen
Wageningen Universiteit

Prof. dr. C.M.J. van Woerkum
Hoogleraar Communicatie en innovatie studies m.b.a.v.
communicatie management
Wageningen Universiteit

Co-promotor: Dr. M.A. Koelen
Universitair Hoofddocent, sectie Communicatiewetenschap
Wageningen Universiteit

Promotiecommissie: Prof. dr. E. Seydel, Universiteit Twente, Nederland
Prof. dr. B. Lindström, Folkhälsan Research Center,
Finland
Prof. dr. K. de Hoog, Wageningen Universiteit, Nederland
Dr. ir. H.W. Vaandrager, Wageningen Universiteit,
Nederland

Dit onderzoek is uitgevoerd binnen de onderzoeksschool Mansholt Graduate School of Social Sciences.

THE PREGNANCY: TIME FOR A NEW BEGINNING!

**Exploring opportunities and challenges for healthy nutrition
promotion**

Ellen M. Szwajcer

Proefschrift

ter verkrijging van de graad van doctor
op gezag van de rector magnificus
van Wageningen Universiteit,
[Prof. dr. M.J. Kropff](#),
in het openbaar te verdedigen
op dinsdag 11 september 2007
des middags om half twee in de Aula

Szwajcer, Ellen Miriam

The pregnancy: time for a new beginning! Exploring opportunities and challenges
for healthy nutrition promotion

Thesis Wageningen University – with references – with summary in Dutch

ISBN 978-90-8504-6707

ABSTRACT

In literature it has been suggested that there are certain special and critical transitions in life that may have a long-term impact on health and health behaviours in later periods of the life course. This is also known as the Life Course Perspective (LCP). The purpose of this thesis was to contribute to the rationale of healthy nutrition promotion activities aimed at women and their health behaviour in and around pregnancy, as such a special and critical transition in life. This was done by means of cross-sectional studies on nutrition awareness (qualitative and quantitative), nutrition-related information-seeking behaviours (qualitative) and underlying motivations (qualitative) among women before, during and after their pregnancy. In order to do this, the concept of nutrition awareness was explored and redefined. Mostly, awareness is defined as a matter of knowing about something. The result of this conceptualisation is that the link with behaviour becomes a problematic one. Therefore, we have chosen for a more 'active' conceptualisation. Nutrition awareness was defined as in saliency, preoccupation and supervision of nutrition. Furthermore, we looked at the autonomy of motivations of nutrition awareness. Autonomously motivated women in the period around the pregnancy are more likely to make longer lasting behavioural changes, which is favour of the LCP. Finally, special attention was paid to nutrition communication in the midwifery practice as a more specific setting for healthy nutrition promotion directed at all pregnant women.

The results of these studies showed that the LCP is a new and hardly or insufficient explored domain in nutrition promotion and pregnancy. It can be concluded that the LCP-concept provides interesting challenges and opportunities for healthy nutrition promotion directed at women who are starting a family. In transition to pregnancy and motherhood, women are motivated to change health-related behaviours that are difficult to modify at other times. Moreover, it can be concluded that our conceptualisation of awareness is fruitful in obtaining a better understanding of possible behavioural changes in health in relation to the LCP. Also nutrition awareness, nutrition-related information-seeking behaviours and

associated motivations are a good basis for distinguishing groups of women in the period around their pregnancy.

CONTENTS

Chapter 1	Introduction	11
Chapter 2	The life course perspective in relation to nutrition-related lifestyle transformations in and around the period of pregnancy: the importance of awareness and motivations. <i>Submitted for publication.</i>	17
Chapter 3	Written nutrition communication in midwifery practice: what purpose does it serve? <i>Submitted for publication.</i>	35
Chapter 4	Nutrition Awareness and Pregnancy: Implications for the Life Course Perspective. <i>Accepted 23 November 2006, Eur J Obstet Gynecol Reprod Biol. Available online 18 December 2006</i>	55
Chapter 5	Nutrition-related information-seeking behaviours before and throughout the pregnancy: implications for practice. <i>Eur J Clin Nutr 2005; 59: S57-65.</i>	71
Chapter 6	Nutrition awareness before and throughout different trimesters in pregnancy: a quantitative study among Dutch women. <i>Submitted for publication.</i>	91
Chapter 7	Postpartum nutrition awareness: the importance of the life course perspective for the promotion of healthy nutrition. <i>Submitted for publication.</i>	107
Chapter 8	Conclusion and discussion	127
References		137
Summary		151
Samenvatting		157

Dankwoord	163
List of publications	165
Curriculum vitae	167
Completed Training and Supervision Plan	169

Because the ambition of the thesis was to extensively describe and analyse nutrition awareness in relation to the life course perspective (LCP) and pregnancy from different aspects, the thesis consists of a number of peer-reviewed papers published in or submitted to international scientific journals. Consequently, the introductions and methods of the articles may show some overlap. Together, these chapters constitute, however, a coherent answer to our main objective, as stated before.

CHAPTER 1

INTRODUCTION

Introduction

From a Dutch television programme, called 'Human and Body'¹:

Announcement of voice over: 'As is the case with many Dutch people, Julia's stressful life, ruled by the clock, has had its consequences. Her pregnancy was an opportunity to drastically rethink her eating habits. She has learned to listen to her body and feels much better for it.'

Julia: 'Before I became pregnant, my life tended to be very hectic. I rarely took vitamins or anything like that. I tired fairly quickly, especially at the end of my working day. When I came home from work, I really felt like, 'pff...I don't feel like doing anything!' Yeah, just totally worn-out...I think that I'm an average Dutch person as far as eating habits are concerned. I generally like food that tastes good, but tasty food is not always healthy food. I have a busy job and work until six o' clock. I don't get home before quarter to seven. If I then were to first peel potatoes and cook vegetables, well, then I'd be eating impossibly late. So more often I just take what I can - we just drop something quickly into the microwave, or eat something simple and quick like French Fries. They are tasty if I am in a hurry. But eating like this, you have less chance of just eating really healthily and getting enough vitamins. We generally tend to quickly forget about fruit. It's not that we don't like fruit or don't want it, but it is just because of work and, yeah, society that we tend to forget to eat it.'

...Now, with the pregnancy, I intentionally focus more on nutrition. I notice that I actually have far more energy because of it. Suddenly, I am much more aware of my own nutrition. And I try to leave the grocery store with all kinds of fruits and vegetables. Because, yeah, I feel like I have to do that. When you are

¹ Humans and the Body, 'Mens en Lijf' in Dutch, is a medical program that looks at the human body and health. Doctors and patients talk about the prevention and treatment of a medical problem, and how to address it. These extracts were translated. Permission was granted by the producers of Mens and Lijf. For privacy reasons, the woman's name is fictitious (RTL7, episode September 11th 2005).

Chapter 1

pregnant that feeling is stronger and longer lasting. I also think to myself: "But I have to live according to my own standards and not try to force myself to be something I'm not". So I try to find a good compromise by still being somewhat more aware of nutrition but in a way that, after giving birth, I can continue eating in the same way and also pass those eating habits on to my child.'

As is described in the above fragment, the pregnancy, and particularly the first pregnancy, is a major transition in every woman's life (Hofberg & Ward, 2003; Schneider, 2002). Unlike other consumers, a pregnant woman finds herself in a unique and relatively new context, in which she undergoes major physical, psychological, and social transformations. She is now also a mother to be (from "I" to "we"), and her new state brings with it new responsibilities and social expectations (actual and perceived about how one should behave) (Koelen & van den Ban, 2004). Although the pregnancy is exciting, a woman may also experience doubts and uncertainties about her new identity as a (potential) mother and her life style. This may trigger her to rethink and reconsider a lot of her behaviour, including her nutrition. Since high quality nutrition is of extra importance during this period, the pregnancy might be one of the few logical moments in a woman's life when it is necessary to consider and deliberate about how to eat properly (Aarts & Dijksterhuis, 2000). Consequently, a pregnant woman may also be more sensitive to healthy diet promotion activities and may (actively) seek nutrition-related information (Anderson, 1996), as nutrition becomes more personally relevant. These are important conditions for rethinking nutrition habits.

An increased nutrition awareness and information-seeking behaviour are not necessarily only directed at specific pregnancy-related nutrition behaviours, but may also be directed at more general nutrition and life style issues that go beyond the pregnancy alone. In this context, they may not only benefit maternal, fetal and infant health and well-being, but could also have positive consequences for women's postpartum nutrition behaviours, as the repetitive character of these adjustments makes them turn into automatic responses after a while (Aarts & Dijksterhuis, 2000).

Introduction

The literature calls this the *life course perspective* (LCP). According to this perspective, there are certain special and critical events in life that may have a long-term impact on health and health-related behaviours in later periods of the life course (Osler, 2006). Pregnancy may be such an influential period in a woman's life. In their review, van Teijlingen et al. (1998) state that a woman does not only make dietary decisions for herself, but for her (future) offspring as well. In this context, the pregnancy may also benefit future nutrition behaviours of her family. Pregnancy is then an interesting and influential moment in life that provides a window of opportunity for the promotion of healthy nutrition.

Nowadays, still many healthy nutrition promotion activities are directed at the general public. According to Contento et al. (1995; 2002), the effects of 'traditional mass media campaigns' are questionable; they are far too general, they are not tailored enough, and the integration of media is insufficient. In reaction to these shortcomings, new efforts have been made to increase the quality of healthy nutrition promotion activities. Information and opinions on health and lifestyles from the target population are getting more appreciated and are used as input for healthy nutrition promotion activities for example. Also, the target population itself is getting more and more involved in the development, implementation and evaluation of these activities. In addition, new media enable healthy nutrition promotion activities to contain interactive elements.

Healthy diet promotion activities directed at critical and special life events, such as pregnancy, can be seen as another effort to increase the quality of healthy nutrition promotion activities. This enables to provide individuals to get more tailored information, which is more effective in influencing a person's health behaviour than general information (de Vries, 2000).

RESEARCH OBJECTIVES

The main objective of the study presented in this thesis is:

Chapter 1

To contribute to the rationale of healthy nutrition promotion activities aimed at women in and around their period of pregnancy.

A central concept will be nutrition awareness. This is an important determinant in many socio-psychological models and behavioural studies. However, there are no commonly used definitions of the terms “awareness” and “nutritional awareness”. In this thesis, we will explore this concept and redefine it in more active terms, to overcome the problem of purely cognitive, knowledge-based interpretations, which are too loosely connected with behaviour. Our conceptualisation of nutrition awareness will be applied to our research on the life course perspective in the period in and around pregnancy. With this conceptualisation, we think we can enhance the quality of healthy nutrition promotion activities. Moreover, nutrition-related information-seeking behaviours and underlying motivations for nutrition awareness and nutrition-related information seeking behaviours in the period around the pregnancy will be explored. Special attention will be paid to nutrition communication in the midwifery practice as a more specific setting for healthy nutrition promotion directed at all pregnant women in The Netherlands.

OUTLINE OF THESIS

Chapter 2 is aimed to advance our understanding of the LCP in relation to the formation of nutrition-related lifestyle behaviours as result of the pregnancy. The idea behind the LCP is portrayed and studies on pregnancy and lifestyle transformations are shortly described and discussed. Furthermore, a framework is provided to study the LCP with the aim of advancing our understanding of this phenomenon. Awareness and motivation are central concepts in this framework. Based on this, recommendations for research and practice are provided.

Chapter 3 contains a qualitative study on (the distinctive functions of verbal and written) nutrition-communication in Dutch midwifery practice, the first and

Introduction

foremost source for pregnancy-related information. With that, it contributes to the rationale behind healthy nutrition promotion during pregnancy.

Chapter 4 and 5 provide a cross-sectional qualitative exploration of nutrition awareness (chapter 4), nutrition-related information-seeking behaviours (chapter 5) and related motivations (chapter 4 & 5) of women wanting a child and women in different trimesters of their pregnancy.

The results of the qualitative study on nutrition awareness were used as input for a quantitative study, presented in chapter 6. To obtain insight of nutrition awareness and related motivations acquired during pregnancy in transition to motherhood, a cross-sectional qualitative study was done among women till one year postpartum. This study is described in chapter 7. Finally, the main conclusions, points for discussion, recommendations for further research and practice implications are formulated in chapter 8.

CHAPTER 2

THE LIFE COURSE PERSPECTIVE IN RELATION TO NUTRITION-RELATED LIFESTYLE TRANSFORMATIONS IN AND AROUND THE PERIOD OF PREGNANCY: THE IMPORTANCE OF AWARENESS AND MOTIVATIONS

Based on: Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. The life course perspective in relation to nutrition-related lifestyle transformations in and around the period of pregnancy: the importance of awareness and motivations.

Submitted for publication.

The Life Course Perspective: the importance of awareness and motivations

ABSTRACT

This article suggests that the period in and around pregnancy may be a unique moment in a woman's life that triggers her to make positive changes in her eating habits; these changes may influence not only maternal, foetal and infant health, but also the woman's future nutritional behaviour and that of her family. This is also known as the life course perspective (LCP). The present study, undertaken to explore and discuss interesting concepts that may advance our understanding of the LCP in relation to the formation of a nutrition-related lifestyle in and around the period of pregnancy, led to the development of a theoretical approach to study this phenomenon. *Awareness* and *motivation* are central and interconnected concepts in this approach. In this context, the concepts of awareness and motivations are explored. Consequently, the concept of awareness has been redefined in more active terms, i.e., saliency, preoccupation and deliberate supervision of nutrition and nutrition behaviour. What is interesting about this definition is that it is more closely connected with behaviour than the purely cognitive, knowledge-based interpretations of awareness.

Key words: life course perspective, awareness, motivation, pregnancy, nutrition, health promotion.

Chapter 2

INTRODUCTION

In the literature it has been suggested that there are certain special and critical passages in life that may have a long-term impact on health (behaviours) in later periods of the life course. This is known as the life course perspective (LCP). The purpose of this paper is to explore and discuss interesting concepts that may advance our understanding of the LCP in relation to the formation of a nutrition-related lifestyle in and around the period of pregnancy.

First, the idea behind the LCP is explained. Then, this idea is specifically related to pregnancy and nutrition-related behaviour. This is followed by a short overview of LCP studies on pregnancy and nutrition behaviours. The concept of nutrition awareness is then explored and redefined in more active terms more closely connected with behaviour than the purely cognitive, knowledge-based interpretations of awareness. In addition, its implications in relation to lifestyle transformations are discussed. Next, the additional importance of the type of motivation involved in nutrition behaviour change in relation to the LCP is stressed. A framework is provided to study the LCP with the aim of advancing our understanding of this phenomenon. Based on this, recommendations for research and practice are provided.

THE LIFE COURSE PERSPECTIVE

The idea behind the LCP

In her review, Wethington (2005) defines the LCP as a theoretical orientation that addresses the balance between stability and change in health and health behaviour across the life span of individuals. According to this theoretical orientation, individuals have relatively stable lifestyle patterns. These are shaped and formed over time from early childhood and are influenced by many factors, such as cultural factors (e.g., gender and race), contextual factors (e.g., socioeconomic status and living conditions) and social factors (e.g., being a member of a church or being married) (Wethington, 2005). Because of these different influencing factors shaped over time, it is difficult to change a person's

The Life Course Perspective: the importance of awareness and motivations

lifestyle trajectory, such as nutrition behaviour (Wethington, 2005). However, according to the LCP there may also be certain specific times or situations in life that exert influence on one's health and/or health behaviour. These could lead to so-called 'transitions' and/or 'turning points' that can influence or even break through a particular lifestyle trajectory (Wethington, 2005).

A transition, in this context, is defined as 'a change in social roles or responsibilities or a significant change in the responsibilities of an existing role, such as a transformation in family roles' (Wethington, 2005). This change could be unexpected and stressful, such as a divorce, but it could also be positive, such as marriage, leading to new role responsibilities. Transitions often lead to 'gradual adaptive strategies' rather than a sudden and entirely different lifestyle change (Elder, 1998). A turning point, on the other hand, really involves a fateful decision on the part of an individual about his or her future lifestyle pathway. An example of this is a decision made regarding education that affects the individual's career path (Wethington, 2005). However, in some cases, it is difficult to distinguish turning points from transitions. The period in and around of pregnancy, for example, can trigger a woman to make a decision about her future nutrition-related lifestyle behaviours. We expand on this in the next section.

The LCP in relation to the period in and around pregnancy

An adequate nutrition pattern is of major importance for one's health and well-being, especially during pregnancy. It is beneficial to maternal, foetal and infant health and should provide energy for the birth and future breastfeeding practices (Jackson & Robinson, 2001; van Teijlingen et al., 1998). In addition, it has been suggested that nutrition behaviour before conception affects fertilisation (van Teijlingen et al., 1998). An improvement of gestational nutritional status can also help to prevent maternal complications such as nausea, vomiting, diabetes, hypertension, eclampsia, bone demineralisation and obesity (Ortega, 2001). Furthermore, it allows the foetus to grow and develop physically and mentally to its full potential (van Teijlingen et al., 1998) and helps to protect against premature birth, congenital malformations and low birth-weight (Ortega, 2001). Since

Chapter 2

inappropriate foetal growth is associated with obesity and diabetes, it may even affect health in adult life (Armitage et al., 2004; van Teijlingen et al., 1998).

Unlike other consumers, a pregnant woman, and particularly a first-time pregnant woman, finds herself in a unique and relatively new context, in which she undergoes major physical, psychological, and social transformations (Anderson, 2001; van Teijlingen et al., 1998). She is no longer only a business woman, a wife or a daughter. She is now also a mother to be (from 'I' to 'we'), and her new state brings with it new responsibilities and social expectations (actual and perceived expectations about how one should behave) (Koelen & van den Ban, 2004) in respect to a woman's nutrition behaviour. Although exciting, pregnancy and even pre-conception may also lead to uncertainties and concerns about a woman's new identity as a (future) mother, triggering her to rethink and reconsider her nutrition (Deutsch et al., 1988). As a result, pregnancy is likely to be one of the few critical but positive periods when women find it necessary to consider and deliberate about how to eat properly (Anderson, Campbell & Shepherd, 2001). Consequently, a pregnant woman may also be more sensitive to healthy diet promotion activities and may actively seek nutrition-related information (Anderson, 1996), as nutrition becomes more personally relevant. These are important conditions for rethinking nutrition habits and are a first step in realising behaviour changes (Aarts & Dijksterhuis, 2000). For this reason, women in and around the period of pregnancy may also be more able to make real nutrition-related behaviour changes and fateful decisions about these that are difficult to modify at other times. Pregnancy can therefore be seen as a major transition or turning point in a woman's life and may have positive consequences for a woman's future health and nutrition behaviour, and that of her family (van Teijlingen et al., 1998; Hofberg & Ward, 2003).

However, there is also a negative aspect to the idea of pregnancy being a new beginning for healthier nutrition-related behavioural changes. In her review article on dietary change during pregnancy, Anderson (2001) comments that pregnancy may also be one of the few times in a woman's life when society understands and even accepts that she may gain weight as a result of overeating,

The Life Course Perspective: the importance of awareness and motivations

and this may lead to her eating more than is recommended for pregnant women ('eating for two').

So far we have elaborated on the LCP in relation to the period in and around pregnancy. The following section expands on the studies already undertaken in this area.

LCP studies in relation to nutrition-related lifestyle transformations in the period in and around pregnancy

Research on nutrition behaviours during pregnancy is mainly directed at topics such as maternal weight (Öhlin & Rössner, 1994; Fairburn & Welsch, 1990; Harris, Ellison & Lucassen, 1997; Walker, 1998; 1997; 1995), eating disorders (Fairburn, Stein & Jones, 1992; Franko & Walton, 1993; Killen et al., 1996), diabetes (Kieffer et al., 2002), and specific nutrient intake in relation to positive health outcomes of the foetus (Matthews et al., 2000; Siega-Riz, Bodnar & Savitz, 2002), rather than on healthy eating behaviours and what determines them.

Recently, more effort has been made to obtain insight into changes in maternal nutrition as a result of pregnancy and/or motherhood. Some of these studies were directed at nutrition behaviours of pregnant women only (Reron et al., 2003; Siega-Riz et al., 2002), others were directed at pregnant women as compared to non-pregnant women (Verbeke & De Bourdeauhuij, 2007; Reron et al., 2003; Takimoto et al., 2003). Attention has also been paid to nutrition behaviour of postpartum women as compared to the period prior to the pregnancy (Olson, 2005) and during the pregnancy (Arija et al., 2004; Cucó et al, 2005).

The majority of these studies made use of questionnaires (Verbeke & De Bourdeauhuij, 2007; Takimoto et al., 2003; Olson, 2005; Goldy et al., 2005), and dietary records (Cucó et al., 2006) (Verbeke & De Bourdeauhuij, 2007; Anderson et al., 1993; Olson, 2005; Goldy et al., 2005). In-depth interviews were also used (Devine, Bove & Olson, 2000). Both longitudinal (Goldy et al., 2005; Devine et al., 2000; Olson, 2005) and cross sectional designs (Verbeke & De Bourdeauhuij, 2007) or combinations of these (Takimoto et al., 2003) were applied. The studies were directed at a diverse range of nutrition-related aspects, such as dietary

Chapter 2

patterns and lifestyles (Cucó et al., 2006; Devine et al., 2000), dietary quality (Pick, Edwards, Moreau & Ryan, 2005), nutrition habits (Reron et al., 2003), dietary behaviour and the role of food for health (Verbeke & De Bourdeauhuij, 2007), nutritional status (Takimoto et al., 2003), food choices (Olson, 2005; Goldy et al., 2005), and nutritional knowledge and aptitudes (Anderson et al., 1993).

Reron et al. (2003) have shown that nutrition habits do not change significantly during pregnancy. Other studies have found support for behavioural changes, for example in relation to drinking milk (Olson, 2005), fruit and vegetable consumption, and taking breakfast (Arija et al., 2004; Olson, 2005). Verbeke and De Bourdeauhuij (2007), for example, found that pregnant Belgian women clearly show some changes in dietary behaviour during pregnancy. The consumption of fruit, beef, milk, and dairy desserts increased, and the consumption of all products with high safety-related health risks, such as alcohol, soft cheeses and pâté, reduced. Takimoto et al. (2003) found similar results. Their study showed higher intakes of carbohydrates, calcium, and vitamin B2, more fruit, milk and milk products, and less alcohol and fish/shellfish compared to controls. Anderson et al. (1993) study also showed that pregnant women tended to consume more milk and fruit and less chocolate, cakes, and pastries compared to non-pregnant women. Still, there is also evidence that pregnant women do not meet the recommended daily intakes (Arija et al., 2004, 2004; Pick et al., 2005).

Changes in nutrition behaviours found in most studies were simply attributed to the state of being pregnant (Verbeke & De Bourdeauhuij, 2007). Only few studies pay attention to the processes underlying these changes, but the results are contradictory. Anderson et al. (1993), for example, found that the differences in dietary behaviour between pregnant women and non-pregnant women could not be accounted for by nutrition knowledge (the same in both groups), but may be attributed to beliefs about healthier eating and the subjective norm. Reron et al.'s (2003) study, on the other hand, suggests that pregnant women do not make significant changes in their nutrition habits because they are insufficiently informed about the importance of a healthy diet during pregnancy by doctors, thus indicating a lack of knowledge.

The Life Course Perspective: the importance of awareness and motivations

Despite such reported results, it is not clearly evident that pregnancy is a specific life event that triggers nutrition behaviour change (Anderson, 2001). Results of studies are contradictory and difficult to compare due to the use of different methods.

In order to advance our understanding of the LCP in relation to nutrition-related lifestyle formations, the processes underlying nutrition behaviours in the period in and around pregnancy require more attention. In this context, we want to stress the significance of an over familiar but poorly defined concept: 'awareness'.

THE CONCEPT OF 'NUTRITION AWARENESS' AND ITS IMPORTANCE FOR NUTRITION-RELATED LIFESTYLE TRANSFORMATIONS

Definitions of 'awareness'

Awareness can be looked at from different disciplines, such as philosophy, biology, neurology, psychology, and communication. This article focuses on the exploration of nutrition awareness from a health promotion point of view, specifically with regard to pregnancy. Many studies in this field emphasise the significance of nutrition awareness in healthy diet promotion strategies. Awareness is an important determinant in many behavioural change models, e.g., the health belief model (Janz & Becker, 1984), the precaution adoption process model (Weinstein, 1988) and the transtheoretical model of behaviour change (Prochaska, DiClemente & Norcross, 1992), and in intervention studies (Abdulrazzaq et al., 2003; Cashel et al., 2001; Chatzis et al., 2004; French, Barr & Levy-Milne, 2003; Stables et al., 2002). However, there are no commonly used definitions of the terms 'awareness' and 'nutrition awareness'. Many articles do not actually define either term. However, the meaning ascribed to awareness can be deduced from these studies. Generally, three types of definitions for nutrition awareness are distinguished:

1. Having knowledge or some kind of understanding of nutrition (Bullen, 2000; Cashel et al., 2001; Chatzis et al., 2004; Kramish Campbell et al., 1999).

Chapter 2

2. An accurate estimation of one's own food intake compared to one's actual nutrition behaviour (measured by researchers) or to the recommended food intake (Bogers et al., 2004; Glanz, Brug & Assema, 1997; Oenema & Brug, 2003; Stables et al., 2002). An accurate estimation of one's own food intake is akin to knowledge of one's actual nutrition behaviour.
3. Realisation or gaining consciousness of (the causes, consequences, and solutions related to) one's own personal problem or risk behaviours regarding nutrition (from experience, observation, and confrontation) (Prochaska et al., 1992; van Dillen et al., 2003).

The first and second definitions are problematic in the sense that despite a person's having nutrition-related knowledge or not, the behavioural consequences are unclear. He/she is not really using his/her knowledge or putting it into practice (Povey et al., 1999). This is what we call *passive nutrition awareness*. Interestingly, the third definition acknowledges 'realisation or gaining consciousness of one's own personal health situation'. It is no longer simply about having knowledge. However, it is still unclear what 'realisation or gaining consciousness' actually means. Does it mean that a pregnant woman has identified a certain health problem for herself and is maybe even concerned by it? Or does it go further than that and mean that she is really involved in her personal health situation? Does a woman think about it a lot? Is she driven by this to act upon it? Whatever is meant exactly, there is an element of alertness in these descriptions. In this article, we call this *active nutrition awareness*.

Redefining 'awareness'

In redefining nutrition awareness, we would like to refer to Abelson and Rosenberg's distinction between cold (knowledge) and hot (appraisal) cognitions in mediating emotions. Cold cognitions can be surface cognitions (inferences and attributions that are easily consciously accessible) or deep cognitions (schemas and other meaning-based representations that are more difficult to make consciously accessible) (Abelson & Rosenberg, 1985; David, Miclea & Opre, 2004;

The Life Course Perspective: the importance of awareness and motivations

Lazarus & Smith, 1988; Eysenck & Keane, 2000). Cold cognitions become hot when they are evaluated in terms of their relevance (harmful, beneficial, threatening, or challenging) for personal goals and well-being; this relevance is triggered by a specific desirable and/or undesirable activation event (Smith & Mackie, 2000), with cognitive, emotional and behavioural consequences. From this perspective, a women's pregnancy (an important life event) could attract her attention to her health behaviour again. Latent cognition becomes more salient (Smith & Mackie, 2000); or as LaBerge (1997, p. 150) summarises it: 'an event of attending becomes awareness when the self becomes involved, that is, when "an experience" becomes "my experience"'. Passive nutrition awareness transforms into active nutrition awareness. In addition, new experiences such as pregnancy may also lead to new cognitions that were not previously relevant. According to Chalmers (1996, p. 25), 'awareness is the psychological correlate of consciousness, roughly explicable as the state wherein some information is directly accessible and available for the deliberate control of behaviour and verbal report'.

From this definition, three components of active nutrition awareness can be identified. Nutrition and nutrition behaviour become:

- *More salient* compared to other aspects in a woman's life. She attaches greater value to it than she used to do. It becomes more prominent.
- *Subjects of continuous attention*. A woman more often thinks about nutrition and everything to do with it. She is preoccupied by it.
- *Subjects of deliberate supervision* in daily life, rather than just nutrition habits. A woman takes care to accomplish her goal intentions. This can be seen as an *action rule* in a woman's mind preceding nutrition behaviour.

These components are explained as follows. In the first instance, a woman thinks that drinking milk is so important for her that she feels that she has to drink it regularly. In the second instance, a woman is really preoccupied about drinking milk regularly. In the last instance, a woman actually sees to it that she drinks milk regularly. In this manner, a woman establishes some kind of rule and makes it her own.

Chapter 2

Although the three components of active nutrition awareness can be analytically distinguished, the authors assume a relationship in practice. In our opinion, it is precisely the sequential combination of these three components of nutrition awareness that makes it an interesting concept in advancing our understanding of the LCP in relation to nutrition-related lifestyle formations. It makes a woman tick, as it were.

Nutrition awareness and habits in relation to nutrition-related lifestyle transformations

Most human behaviour is not reasoned, or driven by emotion or 'the heart', but controlled by habits (de Vries, 2000). Habits are represented as associations between goals and means that can be used for attaining goals in an automatic and less cognitively demanding manner; this leads to more cognitive capacity for other cognitively demanding and sometimes simultaneous tasks (Aarts & Dijksterhuis, 2000). Increasing nutrition awareness as a result of preconception, pregnancy, and/or motherhood, however, is an important condition for developing a new nutrition-related lifestyle. Habits often are the product of an earlier, more reasoned strategy that has become mechanical in order to achieve the economy of not having to go through the whole strategy selection process each time the decision task is encountered (Aarts & Dijksterhuis, 2000). Cognitive behaviours may thus become habitual over time. They can come increasingly under the control of an automatic process (Aarts & Dijksterhuis, 2000), certainly when performed frequently, as is the case with nutrition behaviours (Fishbein & Ajzen, 1975). There is a chance that nutrition behaviour changes in response to pregnancy will become habitual. On the other hand, women who acquired new nutrition behaviours in the period in and around pregnancy can also fall back into their old behaviours when entering motherhood. Habits are often associated with, and automatically triggered by, specific situations. When a woman enters motherhood, her situation changes. As a result, nutritional habits acquired during pregnancy may not be automatically triggered anymore. On the other hand, an increased nutrition awareness as a result

The Life Course Perspective: the importance of awareness and motivations

of the transition to motherhood can again lead to new nutrition-related adaptive strategies, which can also eventually turn into new habits.

However, before new nutrition-related habits become embedded, a woman may also experience obstacles. For example, deliberations about how to eat properly or more healthily may become irrelevant when a woman is experiencing physical pregnancy-related symptoms, such as being nauseous or suffering from hypertension. Despite this, an increased nutrition awareness could be an important condition for breaking out of nutritional habits (Aarts & Dijksterhuis, 2000). As for the persistence of new lifestyle behaviours, the role of motivations has received much attention recently (Deci & Ryan, 1985), especially in the smoking cessation literature (Baker et al., 2004; Lelong et al., 2001; Mullen et al., 1997; Williams et al., 1999).

MOTIVATIONS AND THEIR IMPORTANCE IN RELATION TO LIFESTYLE TRANSFORMATIONS

Motivations in relation to transformations in smoking behaviours in and around the period of pregnancy

In contrast to the dearth of studies on transformations in nutrition-related behaviours in relation to the LCP and the period in and around pregnancy, there are numerous studies on transformations in smoking behaviour before, during, and after pregnancy (Lelong et al., 2001; McBride et al., 1999; Pletsch & Kratz, 2004). These studies show that many women quit smoking when pregnancy is planned or after confirmation of the pregnancy. Although postpartum smoking relapse often occurs, the relapse percentage is lower than among other (non-pregnant) smokers (Piasecki, 2006; Willemsen, Wagena & van Schayck, 2003).

Many studies emphasise the importance of exploring *cognitive motivations* of pregnant women to quit smoking because these could provide powerful explanations for (postpartum) relapse (Baker, et al., 2004; Lelong et al., 2001; Mullen et al., 1997; Williams et al., 1999). When a pregnant woman quits smoking for physical reasons, such as aversion to the smell and taste of cigarettes, there is

Chapter 2

a greater chance of postpartum relapse (Pletch & Kratz, 2004) than when she quits because she sees her pregnancy as an extra motivation to quit smoking, including for her own health, for example.

Definition and importance of the concept of motivation

Motivation can be defined as an 'internal state of desire which stimulates a person to a certain course of action to perform behaviour' (Koelen & van den Ban, 2004, p. 244). These motivations vary in the extent of their autonomy, defined as 'a sense of volition, self-initiation, and personal endorsement of thought, a feeling or behaviour' (Williams et al., 1998, p. 1644). In their self-determination theory (SDT), Ryan and Deci (2000a, 2000b) distinguish between different kinds of motivations that differ in extent of autonomy:

- External regulation: "a pressure to think, feel or act in order to satisfy an external demand" (Ryan & Deci, 2000a, p. 61), i.e., when a woman feels pressured by her friends to eat healthily (social pressure), "or to obtain an externally imposed reward contingency" (Ryan & Deci, 2000a, p. 61), i.e., when a woman wants her friends to know that she is eating more healthily because she is pregnant (image).
- Introjected regulation: "a pressure to think, feel or act in order to satisfy an internal demand or to avoid guilt or anxiety" (Ryan & Deci, 2000a, p. 62), i.e., when a woman would feel bad about herself if she did not eat more healthily because of the pregnancy.
- Identification: a woman has "identified with the personal importance of an action and has accepted it as her own" (Ryan & Deci, 2000a, p. 62), i.e., when a woman really feels better by eating healthily because of the pregnancy.
- Integration: "identified regulations have been fully assimilated to the self" (Ryan & Deci, 2000a, p. 60), i.e., when eating healthily because of the pregnancy has become a habit in its own right, separate from the pregnancy.

These types of motivations are not necessarily sequential, but can act simultaneously with another (Ryan & Deci, 2000a, 2000b), i.e., a woman can be

The Life Course Perspective: the importance of awareness and motivations

motivated to eat more healthily because she feels pressured by her partner and her inner self at the same time. In addition to this distinction, it can also happen that there is no motivation at all to think, feel, or act differently, i.e., because a woman does not believe that eating healthily affects her health and that of her child.

As opposed to other cognitive theories, such as the health belief model (Janz & Becker, 1984) and the theory of reasoned action (Fishbein & Ajzen, 1975), the SDT can predict which types of motivations to feel, think, or act will have short-term and long-term effects. In this context, the distinction between different types of motivations is extremely interesting in relation to the LCP, and also in the development of strategies for the promotion of adequate healthy nutrition.

FRAMEWORK TO ADVANCE THE UNDERSTANDING OF THE LCP

Based on the exploration of cold and hot nutrition awareness and the autonomy of motivations, a framework is provided to study the LCP and nutrition-related lifestyle transformations in and around the period of pregnancy (see **Figure 1**). It must be seen as a theoretical approach to advance the understanding of this phenomenon. In the framework, the intensity and types of motivation are interconnected with the intensity of the three components of nutrition awareness: 1) saliency, 2) preoccupation, and 3) deliberate supervision.

The underlying idea is that many women know how to eat more healthily, but often do not translate this in to practice. Three hypotheses are derived from this theoretical framework.

1. Preconception/pregnancy and motherhood lead to an increased ('hotter') nutrition awareness as compared with earlier points in her life.
2. More autonomous types of motivations to eat healthily during preconception or pregnancy (identification/integration) will coincide with higher intensity levels of nutrition awareness than is the case for less autonomously motivated women (external regulation/introjected regulation).
3. Autonomous types of motivations (identification/integration), triggered by the pregnancy, are more likely to remain after delivery (postpartum) than less

Chapter 2

autonomous types of motivations (external or introjected regulation)
(Vansteenkiste et al., 2004; Vansteenkiste et al., 2005).

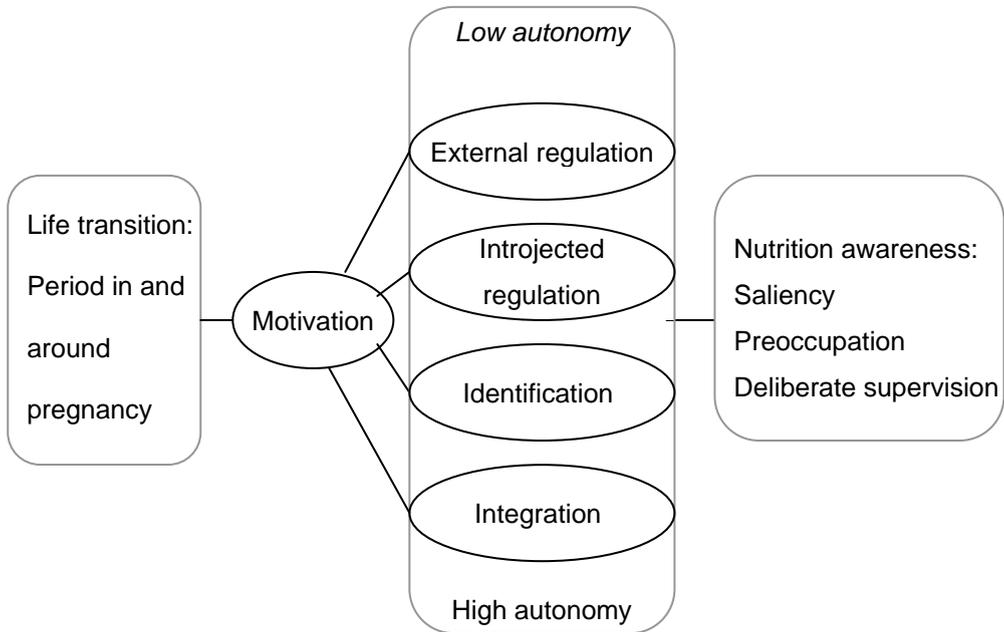


Figure 1 Theoretical framework to study nutrition awareness and motivations for healthy nutrition behaviour in relation to the LCP and the period in and around pregnancy

According to our first hypothesis, a pregnant woman becomes more aware of her nutrition. Ideally, healthy nutrition 1) becomes more salient, 2) receives more attention, and 3) is subject to deliberate supervision, as compared with earlier points in her life. According to our second hypothesis, the strength of awareness is interconnected with the type of motivation a woman has to eat healthily. According to our third and final hypothesis, autonomous types of motivations (identification/integration), triggered by the pregnancy, are more likely to remain after delivery (postpartum) than less autonomous types of motivations (external or introjected regulation). According to SDT (the theory behind these motivations), the extent of

The Life Course Perspective: the importance of awareness and motivations

autonomy of motivations predicts whether changes in thoughts, feelings, and actions have a temporary or a longer lasting character (the higher, the better).

CONCLUSION AND DISCUSSION

There is an abundance of healthy nutrition activities designed to promote adequate maternal nutrition behaviour (Contento et al., 1995). Most of them seem to use an implicit knowledge-attitude behaviour (KAB) model, where exposing persons to new information is assumed to lead to an attitude change that, in turn, leads to improved nutrition behaviour or practices (Contento et al., 1995). Drawing the correct conclusions about the effect of health education, such as healthy nutrition promotion activities directed at pregnant women, is a challenge (Rimer, Glanz & Rasband, 2001). According to Anderson (2001), they mostly influence knowledge about healthier eating, but have little effect on attitudes or indeed behaviour. There are also studies that do show improvement in certain aspects of nutritional intake, but these do not provide data on knowledge or attitudes (van Teijlingen et al., 1998). Although a pregnant woman may be responsive to such interventions, their effect has rarely been studied properly (Anderson, 2001).

In their review of the effectiveness of interventions to promote healthy eating in pregnant women and women of child bearing age, van Teijlingen et al. (1998) state that, because of the diversity of the interventions and the methodological flaws in some of the evaluations, it is difficult to identify whether or not healthy eating interventions in pregnancy are effective. This is supported by Contento et al.'s (1995) review; they found that study designs of evaluation measures in nutrition education intervention studies directed at adult pregnant women were mostly not strong and that the reliability and validity of such studies were often not addressed.

Our framework and studies based on our framework can provide a model for understanding a woman's responsiveness to different types of healthy nutrition promotion activities (peripheral route and/or central route), and her use and appreciation of different types information channels (media, social environment

Chapter 2

and/or health practitioners). A woman's motivation and nutrition awareness could be used as a frame of reference for developing tailored, healthy nutrition promotion strategies. A control motivated woman, for example, requires a different communications approach than a more autonomously motivated woman. A more control motivated woman should for preference be approached via heuristic cues, using informal channels in the social environment, whereas this is not necessary for the more autonomously motivated woman. Furthermore, it seems worthwhile to strategically consider the possibility of moving from a more controlled to a more autonomous orientation. SDT studies have shown that more autonomous types of motivation (identification/integration) are more likely to lead to deeper information processing and understanding than less autonomous, but more controlled, types of motivation (external and introjected regulation), which are more superficial and rigid (Black & Deci, 2000; Vansteenkiste et al., 2004; Vansteenkiste et al., 2005). This is in line with the elaboration likelihood model (ELM) (Petty & Cacioppo, 1986) that states that a woman who is highly involved (high nutrition awareness, triggered by autonomous types of motivations) is more likely to process solid arguments (central route), whereas low involvement will rather lead to information processing of superficial cues (peripheral route). According to the ELM, information processing via the central route is more effective than processing via the peripheral route.

This makes the framework proposed in this article highly interesting for further research.

Acknowledgements

We would like to thank the Dutch Dairy Association (Zoetermeer, The Netherlands) for their sponsorship of this project.

CHAPTER 3

WRITTEN NUTRITION COMMUNICATION IN MIDWIFERY PRACTICE: WHAT PURPOSE DOES IT SERVE?

Based on: Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Written nutrition communication in midwifery practice: what purpose does it serve?

Submitted For publication

Written nutrition communication in midwifery practice

ABSTRACT

Objective: To obtain an in-depth understanding of verbal and written nutrition communication in Dutch midwifery practice.

Design, setting and participants: Data were collected by recording 12 initial antenatal consultations (twelve weeks into the pregnancy – the last week of the first trimester) with first-time pregnant women from four Dutch midwifery practices spread over The Netherlands, followed by two semi-structured qualitative interviews with the relevant women, one on the day following the consultation, and the second, two weeks later.

Findings: Analysis of the recordings revealed that the nutrition brochure was offered in an information pack, but midwives did not actively use it or refer to it. Verbally, clients were informed about healthy nutrition only in general terms. Specific, personally relevant nutrition-related questions and motivators of nutrition behaviour were rarely clarified and addressed. Midwives tried to create a good relationship with their clients by being friendly, complimentary, confirmative and supportive. Women appreciated talking about nutrition with the midwife because of her expertise. The subsequent interviews with the women revealed, however, that nutrition communication took place relatively late in pregnancy at a point when women were more interested in 'hearing the baby's heart beat'. Furthermore, clients seldom looked through the nutrition brochure at home.

Key conclusion: The provision of a nutrition brochure does not serve any real purpose and, as long as it is just part of a package, is merely a nice thing to do.

Implications for practice: To reach optimal synergy between verbal and written nutrition communication in midwifery practice, midwives should actively use a brochure on nutrition in addition to verbal nutrition communication. Moreover, health organisations should realise that the provision of nutrition brochures to midwives does not mean that these brochures will be actively used as an integral part of midwives' nutrition communication with clients.

Key words: midwife, pregnancy, nutrition communication, brochures.

Chapter 3

INTRODUCTION

A first pregnancy is a major life event for all women (Hofberg & Ward, 2003; Schneider, 2002). A woman is no longer solely responsible for herself but also for the developing foetus (van Teijlingen et al., 1998). The promotion of healthy nutrition and other life style behaviours is then crucial.

In order to reach pregnant woman, many Dutch health organisations have been trying to involve midwives as an intermediary in their nutrition promotion activities by providing them with brochures to use in consultation with their clients. Women are expected to be more likely to accept information provided by midwives than by sources with less authority, expertise and trustworthiness on matters of pregnancy. Moreover, the provision of a brochure can be an interesting and useful supplement to verbal nutrition communication for the midwife as well.

Den Broeder et al. (1999) show that midwives attach high importance to brochures that women can read at home. At the same time, there has also been a degree of doubt expressed among health professionals regarding the benefits of providing written information to pregnant women. It is unknown what women actually do with this written information at home and whether there are any real effects. According to studies by Johnson (1999) and Johnson and Sandford (2005), health professionals wonder whether providing written information serves any real purpose or is just a nice thing to do. This study aims to obtain an in-depth understanding of the distinctive functions of verbal and written nutrition communication in Dutch midwifery practice.

Written and verbal nutrition communication in midwifery practices

Whereas efforts have been made to develop readable and usable brochures and strategies for verbal nutrition communication in consultations, (Rajasundaram et al., 2006; Hoffmann & McKenna, 2006), there are relatively few studies on nutrition communication in midwifery practices and the use of nutrition brochures during consultations; this warrants further study (Harvey & Fleming 2003; Smith & Whitfield 1995). Moreover, not much is known about what women actually do with these brochures at home. There are studies suggesting that pamphlets or

Written nutrition communication in midwifery practice

brochures are not always read (Walker et al., 2005; Savas & Evcik, 2001). An important reason for this is a lack of time (Rajasundaram et al., 2006).

In our view, to reach an optimal result, there must be some sort of synergy between verbal nutrition communication and the provision of brochures during consultations. According to the multi-medium approach (van Woerkum, 1984) and the media richness theory (Suh 1999; Trevino et al., 1989), this means that the strong and weak points of both communication channels should compensate and reinforce each other. Ideally, verbal nutrition communication should add an extra dimension to written information, something that cannot be reached with a brochure alone, and visa versa. In this way, both verbal and written communication serves a different purpose. In our view, synergy can be reached in three important ways.

Firstly, the interactive and repetitive contact between midwives and clients makes it possible to discuss the clients' specific information needs (DeVito, 2001; Schippers & de Jonge, 2002). The midwife can identify, help to clarify and personally address clients' nutrition questions, uncertainties and problems that cannot be answered or discussed via a brochure (Schippers & de Jonge, 2002; DeVito, 2001; cf. Suh, 1999; Berger, 1975). A brochure then serves as a reference book, providing general information and instructions that for practical reasons (cf. Suh, 1999, McQuail, 2000; Koelen & van den Ban, 2004), for example time constraints, cannot all be discussed during consultations.

Secondly, although brochures can be useful in teaching and persuading women about the benefits of healthy nutrition, real behavioural change cannot be established with brochures (Jamison, 2004). Brochures can only address general motivations for nutrition behaviour (change) (Croghan, 2005; Koelen & van den Ban, 2004); for example, 'Take care to vary your choice of vegetables and fruit, because they each contain good but different nutrients' (Dutch Dairy Association, 2002). In verbal nutrition communication, however, a midwife can identify, help clarify and appeal to specific personal motivators for nutrition behaviour (change) by pregnant women (DeVito, 2001; Schippers and de Jonge, 2002). This last point, in particular, has been receiving much attention in recent literature (Ryan & Deci,

Chapter 3

2006; Thogersen-Ntoumani & Ntourmanis, 2006; Williams et al., 2006). It is considered to play an important role in enhancing behavioural change. Motivators can function as 'an internal state of desire which stimulates a person to a certain course of action to perform behaviour' (Koelen & van den Ban, 2004 p244). A pregnancy can lead to an internal state of desire to give birth to a healthy child, and this in turn can stimulate a woman to be more aware of her nutrition.

Thirdly, the midwife can provide and refer to a nutrition brochure while talking about nutrition, and provide a short summary of the content of the brochure for those women who do not read or have trouble reading. In this way, verbal nutrition communication is reinforced by the brochure, which in turn leads to a deeper understanding of what has been said (Freda, 2004) and can be read at own pace (Weyts, 2003). At the same time, verbal nutrition communication can reinforce the information in the brochure (cf. Suh, 1999; van Woerkum, 1984). From this perspective, it can serve as a reminder of what has been said during verbal nutrition communication at the midwifery practice (cf. Suh, 1999; van Woerkum, 1984). Furthermore, brochures can make complex information easier to understand, for example by means of graphics (Givaudan et al., 2002).

Purpose of study

The purpose of this study is to explore the synergy between verbal nutrition communication and the provision of brochures, by obtaining an in-depth understanding of: 1) verbal nutrition communication in Dutch midwifery practices, 2) the context in which nutrition brochures are provided and used in midwifery practice, 3) how pregnant women perceive the brochure in addition to the verbal nutrition communication at the midwifery practice, and 4) what pregnant women do with the brochure at home. With this in-depth understanding, we aim to contribute to the rationale of nutrition interventions directed at pregnant women. This study focuses on first-time pregnant women in particular. These women are still actively constructing their identities in response to the life transition of being pregnant and are considered to be more critical for measurement than women who have been pregnant before (Deutsch et al., 1988; Olson, 2005).

METHODS

Qualitative research design

To explore these research questions, a qualitative study design is used (Denzin & Lincoln, 1994). To obtain an in-depth understanding of the characteristics of nutrition communication in Dutch midwifery practice, the initial ante-natal consultation of 12 first-time pregnant women at four midwifery practices across The Netherlands (4 x 3 consultations) were audio-recorded. This consultation takes place around the twelfth week of pregnancy, that is, in the last week of the first trimester, lasts about 35 minutes and is the principal consultation for nutrition communication (den Broeder et al 1999). The audio-recordings of consultations were used to explore meaningful distinctions in the ways midwives express themselves in verbal nutrition communication with clients in addition to the provision of the brochure.

The observations were followed by two semi-structured telephone interviews with the 12 pregnant women in order to obtain sufficient in-depth information while maintaining internal consistency (Emans, 2004).

The first interview took place one day after the consultation and aimed to get a better understanding of the women's experience of the midwives' nutrition communication. The second interview took place 14 days later and mainly aimed to explore what women did with the brochures provided by the midwife. The interviews took about 25 minutes. This results in a total of 24 interviews.

Our research population is homogenous in the sense that all women are in a similar and influential life phase and are visiting the midwife for the first time. From this perspective, the study is very narrow and focused. In this context, the number of 12 respondents conforms to the requirements of qualitative research (Patton, 1990; Mays & Pope, 2000; Silverman, 2001). Before the interviews were held, the interview protocol was thoroughly talked through among the four authors of this article.

Chapter 3

Selection procedure

Midwives were selected from the DDA database (Dutch Dairy Association) of midwives that ordered the brochure *A healthy pregnancy*. For the purpose of this study, it was important that the participants all received the same nutrition brochure. The selected midwives received two letters, one for themselves and one to give to pregnant women just before the consultation. Both letters conveyed the focus of the study. It was mentioned that the study was called 'a healthy pregnancy' and that it aimed to study pregnant women's opinion about the content of the initial ante-natal consultation and how they used the information provided by the midwife. In this way, study participants were generally informed about the aim of the study. To avoid bias, neither the women nor the midwives were informed that the study specifically focused on nutrition. Participating midwives were given an audio-recorder to tape the consultations. They were asked to proceed as if the recorder were not there and to pass on the telephone details of the participating pregnant women to the researcher to do the follow-up telephone interviews.

In order to avoid language difficulties, participating women had to have been born and reared in The Netherlands. For practical reasons, it was agreed with midwives that they would tape the consultations of three pregnant women (provided they agreed to participate). Selected women were aged between 25 and 36 years and had different educational backgrounds, spanning the spectrum of the Dutch education system. Selected midwives had to practice their profession for at least five years.

Analysis

The consultations and interviews were transcribed verbatim. Then the consultation fragments on verbal nutrition communication and on the provision of written information were selected from the transcripts. The transcripts were analysed in two ways. First, we looked at how midwives identify, clarify and address their clients' nutrition-related questions, concerns and personally relevant motivations for nutrition behaviour. In addition, we looked at the ways nutrition brochures were

Written nutrition communication in midwifery practice

used and how they related to verbal nutrition communication between the midwife and her clients. After this initial analysis, we searched for other interesting characteristics of nutrition communication using the constant comparison method (Strauss & Corbin, 1990). This method involves identifying, coding and categorising themes, trends and patterns in data by comparing and contrasting communication within and across the consultations in an inductive manner (Coffey & Atkinson, 1996).

The interviews conducted the day after the consultations were analysed on the basis of: 1) women's general impression of the initial ante-natal consultation, 2) their opinion about nutrition communication with the midwife, 3) the relevance that women attach to nutrition communication with their midwife, 4) women's opinion of the midwife as a source for nutrition information during pregnancy, and 5) the usage and appreciation of the written (nutrition-related) materials they received from the midwife. The second interview was again analysed on the basis of women's usage and appreciation of the written (nutrition-related) materials they received from the midwife. NUD*IST (a computer-assisted qualitative data processing package) was used to store and organise the data into themes and sub-themes for more effective data analysis.

FINDINGS

Characteristics of verbal nutrition communication at the midwifery practice

On average, five minutes of the consultation were devoted to discussing nutrition. Using the constant comparison method, our analyses revealed four specific functions displayed in this five minute period in the communication between midwives and clients:

1. An information and instruction function: providing information, answering questions, making clients understand something, and telling clients what they should and should not eat.
2. A social function: being kind, empathising, humorous, using informal language.

Chapter 3

3. A reassurance function: putting a client's mind at ease by complimenting her good eating habits or confirming her correctness about a nutrition-related issue.
4. A risk reduction function: providing objective information by measuring, for example, blood pressure and iron levels, generally asking whether the client has any questions and assuring her that she can always return if necessary.

The communication functions did not stand on their own but were used interchangeably. This is illustrated in the following two prototypical quotations from the consultations (Devine et al., 2000; Lincoln & Guba, 1985).

Illustration 1.

Midwife: 'Well, you don't have to worry about your iron level.' (*reassurance*)

Client: 'No?'

Midwife: '9.0, (*risk reduction*) oh wonderful! You really did your best on that.' (*reassurance and social*)

Client: 'Is that a sign that I'm healthy?'

Midwife: 'Well, it's not that really. It means that you eat healthily.' (*informative and reassurance*)

Illustration 2.

Midwife: 'If you go on the Internet, don't let yourself be driven crazy by anything. Because, if you ask thirty different people a question, you get thirty different answers (*social; empathising*). I'd rather have you come to me (*risk reduction*). Also, whenever you are at a party, somebody will butt in. Yes? If you take camembert on toast, "Oh, you shouldn't eat that, you are pregnant!" yes? (*social; empathising*) Well, you may have cheese, but not unpasteurised cheese.' (*instructive and informative*)

When discussing nutrition, midwives generally started by giving information and instructions about the main nutrition-related points to which clients should pay attention now that they were pregnant. This can be seen as a short summary of the

Written nutrition communication in midwifery practice

content of a nutrition brochure, fulfilling a reinforcement function. The summary involved both pregnancy-specific nutrition-related issues, such as unpasteurised cheeses, raw meat and the use of folic acid, and more general nutrition-related issues, such as the consumption of enough fruit and vegetables. Generally, clients responded to this information as if they were already familiar with it and were already putting it into action. In turn, midwives complimented clients on their actions and provided complementary nutrition-related information. The pleasant (*social function*) and interactive character of this conversation resulted in clients themselves taking the initiative to ask specific, personally relevant nutrition-related questions or raising concerns to which in turn midwives could respond.

Client: 'I became really dizzy while teaching yesterday and had to sit down; then I stand up and poing! But, sometimes also in normal situations, I walk and everything starts spinning.' (*concern of client*)

Midwife: 'Yes, yes, that is caused by your pregnancy hormone. Yes, and a bit of low blood pressure, you get a widening of your blood vessels and, if you don't walk that actively, then your blood sinks a bit easier to your legs so that it doesn't get to your head very easily, and that is why you get like that, you feel not so well. (*informative*) The only thing you can do is listen to your body, and when you feel like having salt, just get it. It is often indeed something like, that you say, "oh, I want something savoury", and, if you still like coffee, then you take that. Coffee gives your blood pressure a boost'. (*informative and instructive*)

However, not all opportunities for nutrition communication were fully utilised in situations that involved the interactive problem-solving function and the specific information and instruction function. Midwives rarely helped women identify and clarify their nutrition-related questions and problems. Also, implicit questions or concerns were not always identified and addressed, particularly when it involved a client's weight.

Chapter 3

Midwife: 'Alright, good, how tall are you?'

Client: '1.59 meter or so'

Midwife: 'What was your weight before you became pregnant?'

Client: 'Well, 70 or so. I'm now 74, much too heavy.'

Midwife: 'Come and stand on the scale for a moment.'

Client: 'I wanted to lose weight, but it is not allowed.'

Midwife: 'No, did you want to take it easy for a while? It's going to get higher, ha ha.'

Client: 'Hopefully not too much.'

Midwife: 'Ha ha, great X, that was it!'

In this fragment, the pregnant woman is clearly not satisfied with her weight. She expresses concern about gaining too much weight. The midwife does not pursue this. Instead, she is humorous (*social*) about it. Also, midwives did not explain the reasons why pregnant women had to be careful of their nutrition. Neither general motivation nor personally specific motivation functions were fulfilled.

The use of brochures during the consultation

Verbal nutrition communication and the provision of a nutrition brochure were not simultaneous. In fact, somewhere at the beginning or at the end of the consultation, pregnant women were given a pack containing different kinds of pregnancy-related materials from all sorts of organisations (profit/non-profit), among which a nutrition brochure. When they were handing over the pack, midwives explained what was in it. They displayed an ambiguous orientation towards these packs: they were both enthusiastic, telling about the nice and interesting information or products in them, and at the same time patronising, laughing and making as if the pack did not really contain much.

Written nutrition communication in midwifery practice

Midwife: 'Well, here you have a whole bunch of folders. It's a bit much and it contains a tiny tube of toothpaste. That's it, ha ha. I'm always ashamed to death when I give that [referring to toothpaste] away. But I will put this inside [in the pack], then, at least, it [the pack] looks like something.'

Client: 'Ha ha, that is good.'

Midwife: 'There is some information about how your baby is growing for example, so you can look at it a bit to see how it works. There are also some nice, cosy, babble stories in it [referring to pregnancy magazines]. This is, eh, those are brochures and advertisements, so that's it, it is nothing really.'

Furthermore, midwives told their clients to look through the information in the pack.

Midwife: 'Great, take your pack (with brochures) and look through it sometime.'

They also referred to a particular brochure:

Midwife: 'This brochure is very important. This is a brochure about the pregnancy and how things work here in the midwifery practice'. [a general brochure]

Client: 'This one?'

Midwife: 'Yes, so in any case read it a bit and for the rest...there are some other folders in the pack about how you should eat during pregnancy.'

When discussing nutrition, midwives generally did not fulfil either a passive or an active reference function with respect to the nutrition brochure.

Women's reflections on nutrition communication at the midwifery practice

Women generally were content about their first consultation at the midwifery practice. The informal atmosphere was appreciated. Women stated that they had

Chapter 3

been looking forward to this visit. For them, the consultation was mainly about hearing the baby's heart beat. Women found it correct that nutrition was discussed. However, this was overridden by 'hearing the baby's heart beat'.

Women said that they were more aware of their nutrition; it had become more personally relevant, they thought about it more often and were keener on it in their daily lives, mainly due to feeling responsible for the health and well-being of the developing foetus. Women's feelings about nutrition communication with the midwife were two-sided. On the one hand, they were of the opinion that it came too late. They did not feel that the midwife added much to their existing knowledge. The first three most important months of the pregnancy (development of the foetus) had already elapsed. Inconveniences of pregnancy, such as morning sickness, were over. In addition, women themselves had already acquired nutrition-related information earlier in the pregnancy. On the other hand, it also was appreciated because of its affirmative character.

Client: 'It's pleasant that the midwife repeats what you already know about nutrition'.

Compared to other sources of nutrition information, women felt that midwives had an additional value. Other sources of information were not always unambiguous, for example about the number of cups of coffee one may drink while pregnant, whereas midwives could help clarify this. Furthermore, women felt secure because midwives also fulfilled a paramedical role, for example checking blood pressure and iron levels. In addition, a few women mentioned that verbal information from the midwife was preferred over printed information.

Client: 'You have read and heard so much already, but she still is the expert'.

Women felt that the midwife gave them opportunities to ask nutrition-related questions, but they did not always feel the need to do so because they considered themselves not to have real nutrition-related problems. Although, when analyzing

Written nutrition communication in midwifery practice

the intake-consults, women did express their concerns about nutrition, without explicitly asking the midwife about it.

Client: 'My husband says that I don't eat properly.' *(The client refers to another person who is judging her nutrition behaviour. This can be seen as an implicit question to the midwife as to how she feels about this.)*

Finally, women did not feel that the information pack gave an extra impetus to nutrition communication. Again, the information about nutrition came too late. In addition, respondents mentioned that the midwife did not actively refer to the brochure when discussing nutrition. Nonetheless, women did appreciate getting the pack.

Client: 'It's always nice to get something'.

Women did not think that midwives attached much value to the pack, except for one particular brochure on how things work in the midwifery practice. Based on the consultation, women had the impression that the pack contained nice things to read.

Women's use of the brochure

Back home from the consultation, women were in no rush to examine the information pack. After a while, women briefly scanned through it. Women who were advised to read a particular brochure (procedures in the midwifery practice) followed through on this advice. However, women who had not received specific advice to do so hardly looked through the brochures at all. They were seen as not so critical for the second trimester of pregnancy. Again, women considered themselves to have sufficient nutrition-related information already; this had been confirmed by the midwife during the consultation. Furthermore, women generally felt that they wanted to enjoy their pregnancy more, now that the midwife had confirmed that the pregnancy was going well.

Chapter 3

DISCUSSION

To our knowledge, this is the first study exploring the synergy between verbal and written nutrition communication in initial ante-natal consultations at midwifery practices. This study yielded useful insights.

In the introduction, we suggested three ways in which midwives can establish such a synergy: midwives can 1) identify, clarify and personally address clients' specific nutrition questions and concerns, 2) identify and appeal to clients' specific personally relevant motivators of nutrition behaviour, and 3) actively make use of a brochure in addition to verbal nutrition communication.

This study provided indications that the pleasant ambiance and the interactive character of the consultation offered many opportunities to discuss nutrition. However, information and instructions about nutrition provided by midwives were very general. Not all specific, personal, nutrition-related questions and concerns of clients were identified, clarified and addressed by midwives. Midwives did invite clients to ask questions, but only in a very general manner. This is consistent with Methven's (1989) study on ante-natal booking interviews, in which she found that midwives did invite clients to ask questions, but only in a very general manner. In addition to this, we found that motivations for nutrition behaviour (change) were not discussed either. Also, verbal nutrition communication and the provision of written information were not simultaneous. The brochure was offered as part of a pack containing all sorts of other materials, originating from a diverse group of organisations (profit/non-profit). Midwives did not refer to the nutrition brochure.

Midwives did, however, fulfil a social function (being kind, empathising, humorous, using informal language), a reassurance function (putting a client's mind at ease by complimenting her good eating habits or confirming her correctness about a nutrition-related issue) and a risk reduction function (providing objective information by measuring, for example, blood pressure, generally asking if the client has any questions and telling her that she can always return if necessary).

Written nutrition communication in midwifery practice

With these functions, midwives distinguish themselves from the functions a brochure can fulfil. However, because the nutrition brochure was provided in a package and was not an integral part of the verbal nutrition communication, the synergetic effect was not achieved.

This study has shown that pregnant women did appreciate being able to discuss nutrition with the midwife, because of her expertise on pregnancy and her paramedical role. However, pregnant women were more interested in hearing the baby's heart beat than discussing nutrition during the consultation. Furthermore, they also felt that this nutrition communication came too late in the pregnancy as women were already familiar with this information. This also explains why women looked at the contents of the pack very superficially. This is in line with studies suggesting that pamphlets or brochures often are not read (Walker et al., 2005; Savas & Evcik, 2001). On the other hand, there is also literature indicating that the combination of verbal and written patient education enhances greater levels of knowledge, understanding, satisfaction, compliance and retention of information in clients and decreases stress and anxiety (Segador et al., 2005; Johnson et al., 2005; Freda, 2004). However, these effects can only be achieved when brochures are indeed an integral part of verbal communication during consultations.

It is remarkable that the women in our study who were advised to read a particular brochure (procedures in the midwifery practice) followed through on this advice and women who did not receive this advice did not.

Although this study yielded useful insights, its limitations should be acknowledged. As Rowe et al. (2006) argue, evaluations that involve the observation of community health workers in a hospital setting may overestimate the quality of care that they normally give their village. This could also be the case in our study. However, we are convinced that the observation bias is minimal because this study was not so much about the content and quality of nutrition communication in the midwifery practice as about the possible synergy between verbal and written communication materials.

Another limitation is that the qualitative research design makes it impossible to interpret the findings of the study as conclusive. Therefore, it is not easy to

Chapter 3

generalise it to a larger and broader population (Stewart & Shamdasani, 1990). This is a subject for quantitative research.

The study described in this article is exploratory in character. The design of the study was well-suited to meet the study's purpose.

Practice implications

Three important implications for practice can be derived from this study. Firstly, by the time pregnant Dutch women have an initial ante-natal consultation at the midwifery practice, they themselves had already searched for nutrition information. As a result, the five minutes of very general verbal and written nutrition communication at the initial ante-natal consultation does not really add anything extra. General nutrition communication between midwives and clients would ideally be part of pre-conceptual advice or take place earlier in pregnancy. At the moment, Dutch women still have to find nutrition information for themselves in the first three months of pregnancy. In the future, pre-conceptual advice this will be part of the job description of Dutch midwives. Around the twelfth week of pregnancy, nutrition communication should be directed at specific and personally relevant nutrition-related questions, concerns and motivations for nutrition behaviours of clients (den Broeder et al., 1999; Croghan, 2005), for example questions on maternal weight and lack of energy. Midwives need to obtain more detailed information from their clients by adopting a less automatic approach to nutrition communication in order to provide a service that is designed specifically to meet individual women's needs (Methven, 1989). Midwives must be adequately prepared to be accurate and consistent in their nutrition communication, and they must recognise their potential in this aspect of health communication (Mulliner et al., 1995). For this to happen, midwives require adequate education in nutrition and nutrition communication, both during basic education and following qualification (Mulliner et al., 1995).

Secondly, if midwives wish to make use of brochures, the synergy between verbal and written nutrition communication must be right. A nutrition brochure should not be provided in a pack with all sorts of other materials. Ideally, it should

Written nutrition communication in midwifery practice

be provided on a stand-alone basis and be an integral part in the verbal nutrition communication between midwives and clients. This means that midwives show the brochure to their clients, talk about its content in relation to personal nutrition-related questions, concern and motivations of clients, and advice them to read it. For this to happen, midwives must be convinced of the added value of using nutrition brochures in conjunction with verbal nutrition communication.

Finally, health organisations should realise that the provision of nutrition brochures to midwives does not mean that these brochures will be actively used as an integral part of midwives' nutrition communication with clients. For this to happen, health organisations should take the initiative to develop a brochure that is suitable to be actively used and that adds value to verbal nutrition communication in the midwifery practice. The brochure can best be developed in collaboration with midwives so that they can identify with the contents of the brochure and therefore take ownership of it.

Suggestions for further research

This study indicates that women are more aware of their nutrition during pregnancy and look for nutrition-related information. It would be interesting to study how this develops throughout and after pregnancy. This is a relatively new and unexplored research area. Furthermore, relatively little is known about the types of motivations women have for their nutrition behaviour during pre-conception and pregnancy. Yet, these motivations are of great importance for healthy nutrition promotion in order to develop effective programmes.

CONCLUSIONS

It can be concluded from this study that, as long as it is just part of a package, the provision of a brochure on nutrition does not serve any real purpose and is merely a nice thing to do (Johnson, 1999; Johnson & Sandford, 2005). Furthermore, the strategy of health organisations to involve midwives in their nutrition promotion activities by offering them brochures to use during consultations works differently

Chapter 3

than intended. Offering brochures to midwives does not automatically mean that they will actively use them as an integral part of their nutrition communication with clients.

Acknowledgements

We would like to thank the midwives and pregnant women and the research bureau Motivaction for their participation in this study. We also would like to thank the Dutch Dairy Association (Zoetermeer, The Netherlands) for their sponsorship of this project.

CHAPTER 4

NUTRITION AWARENESS AND PREGNANCY:

IMPLICATION FOR THE LIFE COURSE PERSPECTIVE

Accepted for publication as: Sz wajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. European Journal of Obstetrics & Gynecology and Reproductive Biology; accepted 23 November 2006. Available online 18 December 2006.

Nutrition awareness and pregnancy: a qualitative study

ABSTRACT

Objective: To explore the influence of a life event (pregnancy) on nutrition awareness and the motivations for nutrition behaviour.

Study design: In-depth, face-to-face interviews with five groups of 12 women: women wishing to conceive a child, women in the first, second, and third trimesters of their first pregnancy, and women in the first trimester of their second pregnancy. As is common in qualitative research, participants were selected on the basis of diversity together with maximum representativeness within normal populations with respect to socio-demographic characteristics.

Results: With respect to nutrition awareness, three groups of women can be distinguished: (1) those who are 'going all the way'; these women try to live precisely by the book, (2) those who are 'taking the flexible way'; these women are more aware of their nutrition, but are more flexible in handling it, and (3) women who 'continue the same way'; these women have a no-nonsense mentality and do not experience essential shifts in their nutrition awareness. The extent and fluctuations in nutrition awareness throughout preconception and pregnancy are based on three types of motivations, the interest of (1) the child, (2) the mother, and (3) the social environment.

Conclusions: This study provides indications that preconception and pregnancy could indeed be a life event leading to increased general nutrition awareness that might influence women's future nutrition-related behaviours.

Keywords: Nutrition; Awareness; Motivation; Preconception; Pregnancy

Chapter 4

INTRODUCTION

Adequate nutrition is of major importance for one's health and well-being, especially during preconception and pregnancy. It is beneficial to maternal, foetal and infant health and should provide energy for the birth and future breastfeeding practices (Jackson & Robinson, 2001; van Teijlingen et al., 1998). In addition, it might affect fertilization (van Teijlingen et al., 1998).

In previous qualitative in-depth studies on nutrition-related information seeking behaviours among first-time pregnant women (Szwajcer et al., 2005; 2007a), we found that pregnancy is an occasion when women become more aware of the health aspects of nutrition, and seek for more nutrition-related information. Compared to the period before preconception and pregnancy, pregnant women were more keen to know what they should eat and what not.

These results raised the question as to whether increased *nutrition awareness* is mainly temporary in character and diminishes as soon as the pregnancy has ended, or whether it can have longer lasting effects that extend beyond the pregnancy. In the literature, this phenomenon has been introduced as the 'life course perspective', which means that certain special events in life may have a long-term impact on health and health behaviour in later periods of the life course (Osler, 2006). If preconception and pregnancy are such an influential period in a woman's life, these events could possibly provide a window of opportunities for the promotion of healthy nutrition.

The life course perspective in relation to nutrition during preconception and pregnancy is a relatively new and unexplored research territory. Until now, studies have mainly focused on topics such as maternal weight (Baker et al., 1999) and (Devine, Bove & Olson, 2000) and specific nutrient intake (Kieffer et al., 2002) and (Klusmann et al., 2005), rather than on healthy eating (van Teijlingen et al., 1998). Also, relatively little is known about the *motivations* women have for their nutrition behaviour during preconception and pregnancy. For the effective development of programmes to promote healthy nutrition however, these motivations are of great importance.

The purpose of this study is to explore the influence of preconception and pregnancy as a life event on: (1) nutrition awareness and (2) how this awareness is

Nutrition awareness and pregnancy: a qualitative study

related to motivations for nutrition behaviour. The study aims to provide a greater understanding of the life course perspective in relation to nutrition during preconception and pregnancy and to contribute to the rationale of nutrition interventions aimed at involved women.

Awareness

Awareness is often phrased in terms of gaining knowledge or having some kind of understanding (Chatzis et al., 2004), (Stables et al., 2002 and (Abdulrazzaq et al., 2003). This is what we call 'passive' or 'cold' awareness. For example, many people (more or less) know what is healthy and what is not, but this knowledge is not translated into behaviour. Nutrition awareness, then, becomes 'active' or 'hot', when (1) a latent cognition becomes more salient, (2) the self becomes more pre-occupied by it, and (3) cognitions become available for deliberate control or supervision of behaviour (Chalmers, 1996). These are important conditions for rethinking and breaking out of (nutritional) habits.

Motivation

Motivation can be defined as an internal state of desire which stimulates a person to a certain course of action to perform behaviour (Koelen & van den Ban, 2004). Motivations vary in the extent of their autonomy (Ryan & Deci, 2000a), defined as a sense of volition, self-initiation and personal endorsement of thought, a feeling or behaviour (Williams , Freedman & Deco, 1998). The self-determination theory (SDT) distinguishes four types of motivations on the basis of the extent of their autonomy: (1) external regulation: a pressure to think, feel or act in order to satisfy an external demand or obtain an externally imposed reward, (2) introjected regulation: a pressure to think, feel or act in order to satisfy an internal demand or to avoid guilt or anxiety, (3) identification: identification with the personal importance of an action, and (4) integration: identified regulations have been fully assimilated to the self. According to the SDT (Ryan & Deci, 2000a), the more autonomous types of motivations (identification and integration) are more likely to have a longer lasting effect than other, less autonomous types of motivations (external regulation and introjected regulation).

MATERIALS AND METHODS

Interviews

Data were collected by means of qualitative, in-depth, face-to-face interviews of one hour duration. A semi-structured interview protocol was used to address all relevant topics, to maintain sufficient exploratory flexibility and to allow for communicative validation (Flick, 2002). The first questions on a topic were open and generic. These questions were designed to explore whether a woman had experienced shifts in her nutrition awareness, since preconception or pregnancy. Shifts in nutrition awareness could be related to general nutritional topics applicable to all consumers, such as the consumption of fruit, vegetables and dairy products, and to more pregnancy-specific nutritional topics, such as the consumption of folic acid and unpasteurised cheeses and meat. After each nutritional topic had been touched upon, in order to explore her underlying motivations, the respondent was asked why particular shifts did or did not take place. Next, the respondent was asked about her nutrition awareness during the previous three months compared to earlier phases in life, she was questioned about why these shifts did or did not take place. In order to obtain reliable and valid answers, the interviewer sought confirmation that she had understood correctly by summarising what the participant had said. To establish reproducibility, the interviewer used an interview protocol that contained a standard introduction, purpose and conclusion (Emans, 1989). To ensure reliability, a part of the interviews were watched by the second author of this article, through the use of a live video of the interview in another room.

Most interviews took place in conference rooms of hotels, near the residence of the participants. For practical reasons, some women were interviewed at their homes. To avoid bias, other family members were asked to leave.

Nutrition awareness and pregnancy: a qualitative study

Participants

As is common in qualitative research, participants were selected on the basis of diversity and maximum representativeness within normal populations of women wishing to conceive a child or pregnant women, in relation to age, education level, place of residence and employment status (social characteristics that may affect an individual's experience of, and attitudes towards, a particular phenomenon) (Patton, 1990), (Mays & Pope, 2000) and (Silverman, 2001).

Five groups of 12 women (60 women in total) were selected for this study. The first group consisted of nulliparous women with a serious child wish. The second, third and fourth groups consisted of nulliparous pregnant women at the end of the first, second or third trimester of the pregnancy. The fifth group consisted of pregnant women who were at the end of the first trimester with their second child. Women included were aged between 20 and 40 years. The total number of 60 women in a similar and eminent life phase (all involved in becoming or being pregnant) conforms with the requirements of qualitative research (Patton, 1990) and (Silverman, 2001). To avoid language difficulties in the research groups, the respondents had to have been born and reared in The Netherlands.

Selection

Most women were selected through midwifery practices in different-sized cities in The Netherlands (Amsterdam, Den Bosch, Zwolle, Breda, Wageningen/Veenendaal and Leeuwarden). The midwives were asked for their cooperation by way of a letter that provided a short explanation of the study. They were furthermore asked to hand out invitation letters to women who fitted the parameters of one of the four groups of pregnant women sought. If the midwife practices agreed to participate, they received a second letter with instructions. This letter was accompanied by an introductory letter for pregnant women that informed them that the study was about lifestyle changes during pregnancy and asked for their cooperation. To avoid bias, women were not informed that the interview would focus on nutritional awareness and motivations for nutrition behaviour. The letter also contained information about the duration of the interview and expressed

Chapter 4

assurances regarding confidentiality. If the pregnant woman indicated an interest in participating, she was asked to contact the research team by telephone to arrange an interview.

For (time-saving) practical considerations, the following additional selection methods were used: word of mouth advertising, distribution of letters in districts with many children, and recruitment through representative panels of selection agencies in the above-mentioned cities. Only pregnant women treated by a midwife were included. In The Netherlands, women with serious complications are treated by a gynaecologist rather than by a midwife or an obstetrician. (The concept of obstetrician does not exist in the Dutch health system.) Such women were thus excluded from participation.

Beforehand, all respondents were promised a small monetary compensation (€15) and a small gift (a cookery book) in appreciation for their contribution.

Analysis

The interviews were tape-recorded and transcribed verbatim. Then, they were summarised per case and analysed using the constant comparison method. This is a strategy in which there is continuous, simultaneous collection and processing of data (Strauss & Corbin, 1990). Analysis of awareness involved (1) case-based approaches: vertical comparison of differences and similarities in nutrition awareness of individual participants as compared to earlier points in time and (2) concept-based approaches: horizontal comparison of differences and similarities in nutrition awareness between individual participants (Arcury & Quandt, 1998) and (Miles & Huberman, 1994). This resulted in the identification of different patterns of nutrition awareness before and throughout pregnancy (Dalhgren & Fallsberg, 1991).

Statements by participants about motivations for nutrition behaviours were sorted on the basis of extent of autonomy (Ryan & Deci, 2000a). A computer assisted qualitative data processing package (NUDIST) was used to store and organise the data per theme.

Nutrition awareness and pregnancy: a qualitative study

RESULTS

Characteristics of participants

The average age of participants was 31, varying from 21 to 39 years of age. Of the participants, 50% had a low to average education level and the other 50% had a high to academic educational level, spanning the spectrum of the Dutch education system.

PRESENTATION OF THE RESULTS

Nutrition awareness

All the pregnant women, and nearly all the women wanting a child, had considered nutrition to some extent at least once, such as thinking about taking folic acid. Over time (throughout the pregnancy) intensity shifts in nutrition awareness occurred. However, at the time of the interview, each woman's nutrition awareness over the previous three months could be adequately classified in one of three groups: (1) those 'going all the way', (2) those 'taking the flexible way', and (3) those 'continuing the same way'.

For women going all the way, nutrition became a more dominant part of their lives. It became more salient, a subject of pre-occupation and deliberate supervision. These women tried to live precisely by the book. This applied both to pregnancy-specific nutrition-related guidelines, such as taking folic acid and cutting out alcohol, cigarettes, raw meat and unpasteurised cheeses, and to more general nutritional issues, such as ensuring that they consumed more dairy products, juices and vegetables instead of their previously more unhealthy alternatives.

Woman taking the flexible way experienced increased nutrition awareness, although they were more flexible in dealing with it than the previously mentioned group, and they found their own ways of doing so. This applied both to pregnancy-specific nutrition guidelines and to more general nutritional issues.

Women continuing the same way did not experience essential changes in nutrition awareness, in either the preconception or the pregnancy group. In this category,

Chapter 4

two sub-groups could be observed: (1) women who did not find it necessary to become more aware because they had always been aware of their nutrition, and (2) women who did not really care about their nutrition.

Nutrition awareness in relation to motivations for nutrition behaviour

With respect to nutrition awareness, three types of motivations were distinguished: (1) the interest of the child, (2) the interest of the mother, and (3) expectations from the social environment.

The interest of the child

During preconception, some women were already thinking about the possible influences of their nutrition behaviour on the health and the well-being of the future child. For these woman, nutrition became the subject of consideration, especially after ovulation, because of the possibility of being pregnant already. Sometimes these considerations also emerged before ovulation, so that women did not have to constantly remind themselves to think about the guidelines after ovulation.

However, most often preconception was seen as a period in which it was not necessary to become more aware of nutrition (particularly general nutrition), because there was no child yet. Some women considered that it was not necessary to eat more healthily for the child: 'The baby (fetus) gets what it needs anyway'. Furthermore, it was mentioned that women in developing countries also conceived healthy children, without having proper nutrition.

Pregnant women whose nutrition awareness was mainly driven by the interest of the child would preferably not take any risks, particularly during the first trimester, when the child is still developing: 'I'm now responsible for somebody else, so I have to be extra careful'. At the same time, women became more relaxed regarding their nutrition in the second and third trimester of pregnancy, when the chance of a miscarriage decreased. On the other hand, the visual appearance of being pregnant and hearing the baby's heart beat for the first time at the midwifery practice (around the 12th week of pregnancy) was a reason for a woman to

Nutrition awareness and pregnancy: a qualitative study

become more aware of her nutrition in the second rather than the first trimester of pregnancy.

The interest of the mother

In addition to the interest of the child, the interest of the mother herself was mentioned as a motivation to become more aware of nutrition. Women with a child wish, for example, were seeking to build up strength and vitality for the future pregnancy: 'When you are pregnant, your body undergoes a lot; it is good to be a little fit when you are getting pregnant'. In addition, they believed and were hoping that a healthy diet would stimulate conception: 'It seems to me that if your body is fit, you get pregnant more easily.' On the other hand, women also mentioned that they did not want to be too involved: 'When you focus too much on getting pregnant, then it does not happen.'

Pregnant women mentioned that the changes (in taste, smell, figure, posture, cravings for or revulsion towards certain foods) and inconveniences (such as nausea and tiredness) that come with pregnancy made them more aware of nutrition. This was expressed in different ways. There were those thinking about nutrition more often (latent cognitions become hot), while there were also those who were acting upon these changes and inconveniences (supervision of nutrition), for example, by making adjustments in their eating pattern to avoid nausea or trying to overcome their tiredness with nutrition, in addition to resting more. As far as the nutritional guidelines (general and pregnancy-specific) were concerned, women taking the flexible way did not want to carry the guidelines to excess. Furthermore, they felt that small compromises such as occasional alcohol consumption would not do that much harm to the baby, as long as it was not overdone. Some women justified smoking as a stress reduction mechanism, because stress is good neither for mother nor for baby.

The expectations of the social environment

Chapter 4

Women with a child wish mostly did not share their wish with the social environment. Consequently, there were no expectations from the social environment with regard to their nutrition. However, women did remember others talking about pregnancy-specific guidelines when they were wishing for a child or were pregnant, such as taking folic acid. In the event of a wish for a child being shared with others (often close friends), women were often pointed towards taking folic acid.

Once the pregnancy was made public, the social environment became more prominent: magazines and books were exchanged, advice (whether sought or not) was given and experiences were shared. Lessons were learned from this: 'I did not know that I was supposed to take folic acid until she told me'; comparisons were made: 'I know a woman who drank alcohol during her pregnancy, I would never do that', and social support was experienced: 'My partner also eats healthier snacks because of my being pregnant'. However, well-intentioned advice was not always appreciated: 'Me and my pregnant girlfriend smoked secretly together sometimes. Our partners would otherwise get angry and everybody would stare at you like you were a bad mother or something.'

Balancing priorities: a moment of reconsideration

Generally, women felt that making nutritional adjustments was one of the few things they could actually do to positively influence the well-being and health of the child. Women going all the way tended to be somewhat more driven by the interest of the child than the other two groups. Furthermore, women continuing the same way tended to think somewhat less of the expectations of the social environment. However, as time elapsed, shifts in motivations for nutrition behaviour could be observed; firstly, a shift from interest of the child to interest of the mother. Women who became more aware of their nutrition mainly out of interest for the child saw that good nutrition was in their own interest too. They experienced advantages with regard to their own well-being, by feeling (mentally/physically) healthier. In addition, women with an increased nutrition awareness right from the start of their pregnancy became somewhat laxer later in pregnancy. Their child was doing fine. Consequently, tastiness became more prominent than the health aspect of

Nutrition awareness and pregnancy: a qualitative study

nutrition. Furthermore, other things in life became somewhat more important again, such as work.

Second, the analysis shows that the influence of expectations from the social environment becomes less prominent during the second pregnancy as compared to the first, at least when no new pregnancy-related inconveniences were experienced. Generally, second-time pregnant women felt more experienced and independent, and less insecure. Looking back on the period between their first and second pregnancy, women mentioned that a healthy diet was more important to them than it used to be before they were pregnant with their first child. An important reason for this is that a healthy diet had become a postpartum habit, plus they were feeling better due to the healthier diet.

As for differences in socio-demographic backgrounds, less educated women tended to lean somewhat more on their social environment to obtain information (learn) than more educated women. No other essential differences were observed.

CONCLUSIONS AND DISCUSSION

Conclusions

This study provided indications in favour for the life course perspective. It showed that pregnancy and also preconception could indeed be periods in a woman's life causing increased nutrition awareness (saliency, pre-occupation with and deliberate attention to pregnancy-specific nutrition-related issues and more general nutrition-related issues). Based on the results, three groups were distinguished: (1) women who are going all the way, trying to live precisely by the book, (2) women who are taking the flexible way, being more aware of their nutrition, but more flexible in handling it than group (1), and (3) women who continue the same way. Our study showed that the intensity of nutrition awareness is based on three types of motivations, (1) the interest of the child, (2) the interest of the mother, and (3) expectation from the social environment. Women going all the way tended to be somewhat more driven by the interest of the child than the other two groups. Women continuing the same way seemed to care somewhat less about the expectations of the social environment than the others.

Chapter 4

These types of motivation vary in autonomy. Generally, the interest of the mother is the most autonomous type of motivation in favour for the life course perspective (Ryan & Deci, 2000a). However, throughout preconception and pregnancy, shifts in the extent of nutrition awareness and types of motivations took place. Women started to realise that good nutrition was in their own interest too, and for woman pregnant for the second time it had become a habit; this also favours the life course perspective.

Discussion

On the basis of the results of our study, we argue that pregnancy and the period before pregnancy can have positive consequences for a woman's future health and nutrition behaviour, and that of her family. To date, studies on the life course perspective in relation to (awareness of and motivations for) nutrition behaviours and pregnancy are scarce. The studies that have been conducted in this area are debatable, difficult to compare and often not representative (Verbeke & De Bourdeauhuij, 2007), (Reron et al., 2003) and (Takimoto et al., 2003). Some of them have shown that nutrition habits do not change significantly during pregnancy (Reron, 2003), while others have found support for the proposition that pregnant women clearly do show some changes in dietary behaviour (Verbeke & De Bourdeauhuij, 2007) and (Takimoto et al., 2003).

Relatively little is known about the processes that underlie the nutrition behaviour change of women of child bearing age. Yet, a woman's motivations for these nutrition behaviours are her frame of reference and of great importance for the promotion of healthy nutrition. At present, most of the abundance of healthy nutrition activities directed towards promoting adequate maternal nutrition behaviour seem to be using an implicit knowledge-attitude behaviour (KAB) model, where exposing persons to new information is assumed to lead to an attitude change which, in turn, leads to improved nutrition behaviour or practices (Contento et al., 1995). However, due to the diversity of such activities and methodological flaws, ascertaining the effect of these activities is often a challenge and has rarely been studied properly (van Teijlingen et al., 1998) and (Anderson, 1996). In

Nutrition awareness and pregnancy: a qualitative study

addition, they lack theoretical underpinning (van Teijlingen et al., 1998) and (Anderson, 1996).

The results of our study provide a worthwhile perspective. The study not only provides insights into nutrition awareness and underlying motivations in the context of the life course perspective, but also predicts which types of thoughts, feelings and actions have a temporary or a longer lasting character, and why. Thus, pregnancy, and maybe even the period before pregnancy, could have positive consequences for a woman's future health and nutrition behaviour, and that of her family.

Limitations and practice implications

The study described in this paper is exploratory in character. We made use of in-depth interviews, which are well-suited to meet the purpose of this study, as well as addressing private and sensitive topics such as wanting to conceive a child. The findings should not be interpreted as conclusive, but should be seen as a picture depicting a deeper understanding of the rationale behind nutrition behaviours of women with a child wish and pregnant women. No conclusions can be drawn from this study with respect to characteristics over the population. This is a subject for quantitative research.

The purpose of this study was to find indications for the life course perspective in relation to nutrition awareness before and during pregnancy. It was not an intervention study (which communication strategies are effective for which types of women?). Nevertheless, a number of preliminary practice implications can be inferred anyway. First, health promoters should realise that pregnancy in particular can indeed be a life event that triggers a woman to become more nutritionally aware and interested in nutrition-related information (Szwajcer et al., 2007a). Second, health promoters should recognize that women are driven by different motivations to become more involved in their nutrition. This stresses the importance of conditional and interactive healthy nutrition promotion rather than a one-size-fits-all approach. Finally, health promoters should bear in mind that autonomous types of motivation for healthy nutrition behaviour are more likely to have longer lasting effects. Therefore, healthy nutrition promotion should not be

Chapter 4

directed mainly at readjustments of nutrition behaviour in the interest of the child. Rather, women's interests must be addressed as well. In this context, motivational interviewing techniques might be useful (Vansteenkiste & Sheldon, 2006). What makes these techniques interesting is that they are not about harsh confrontations, but about personal responsibility and free will of a woman.

Further research

This study has indicated that pregnancy leads to increased nutrition awareness in relation to health. It would also be interesting to study if the patterns recognised in this study also apply to awareness of other life style factors before and during pregnancy, such as physical exercise. In order to study the possibility of the pregnancy being a catalysing life event that gives rise to longer-term consideration of more general nutritional issues, we suggest that postpartum women should also be interviewed.

Acknowledgements

We would like to thank the respondents, the midwives and the research bureau 'Motivaction', Amsterdam, for the recruitment of the participants through representative panels. Furthermore, we would like to thank the Dutch Dairy Association for sponsorship of this project.

CHAPTER 5

NUTRITION-RELATED INFORMATION-SEEKING BEHAVIOURS BEFORE AND THROUGHOUT THE COURSE OF PREGNANCY: CONSEQUENCES FOR NUTRITION COMMUNICATION

Published as:

Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition-related information-seeking behaviours before and throughout the course of pregnancy: consequences for nutrition communication. *European Journal of Clinical Nutrition* 2005; 59: S57-S65.

Nutrition-related information-seeking behaviours and pregnancy

ABSTRACT

Background: Research has shown that especially pregnant women, and also women with a wish for a child, have increased nutrition awareness. Seeking nutrition information seemed to be an important determinant for nutrition awareness. However, little research has been carried out about nutrition-related information-seeking behaviours before and during pregnancy.

Objective: This study aimed to explore nutrition-related information sources, nutrition information-seeking behaviours and motives for seeking nutrition information before and throughout the course of pregnancy.

Design: Data were collected by means of retrospective in-depth face-to-face interviews of 1 h with five groups of 12 women: women with a child wish, women in their first, second and third trimester of the first pregnancy and women in their first trimester of the second pregnancy. Women were mainly selected via midwifery practices. The interviews took place at conference rooms or at the respondent's home. Qualitative data were analysed with the software program NUD*IST (QSR, Melbourne). This was based on the research objectives and relevant text segments of transcripts.

Results: Women with a child wish generally sought little nutrition information because they were not pregnant yet. Information sources were the Internet (anonymous) and the social environment (models). In relation to the manifestation of nutrition-related information-seeking behaviours during first-time pregnancies, three groups of women could be distinguished: (1) women who feel like a mother from the moment they know that they are pregnant, (2) women who feel like a mother later in pregnancy and (3) women who do not feel like a mother yet. Each group had its own specific information-seeking behaviour. Important information sources of the first group were the Internet (anonymous and up to date), books (extended) and midwives (expert) during the first trimester; the 9-month calendar (fun and tips), friends (experienced) in the second trimester; and friends (information on breastfeeding) in the third trimester. Information sources of the second group of women were mainly brochures provided by the midwife and the midwife herself. The third group of women mainly relied on their own common

Chapter 5

sense. Second-time pregnant women mainly relied on their experience, the midwife and books for specific questions.

Conclusions: Pregnant women perceive pregnancy-specific nutrition information as important because it is one of the few things that they can apply in their daily lives to protect the health of the fetus. Nutrition-related information-seeking behaviours mainly were pregnancy specific in character, rather than directed to general nutrition information.

Sponsorship: Dutch Dairy Association, Zoetermeer, the Netherlands.

Keywords: nutrition, health, information sources, information-seeking behaviour, child wish, pregnancy, qualitative

Nutrition-related information-seeking behaviours and pregnancy

INTRODUCTION

Our previous in-depth qualitative study (Szwajcer et al., 2007a) on nutrition-related information-seeking behaviours among 12 first-time pregnant Dutch women in their first trimester of pregnancy showed that these women have an increased nutrition awareness and increased information-seeking behaviours, mainly for protection of the well-being of the baby.

The results of that study raised the question of whether the pregnancy might also be an occasion that gives rise to thinking and looking for information about more general lifestyle and nutrition-related matters that go beyond the pregnancy alone. In the last case, pregnancy, and even the period preliminary to the pregnancy (child wishing period), might crucially influence women's future lifestyle and nutrition behaviours and that of their families. In this perspective, pregnancy can be seen as an important turning point in the life of women who were not really aware of, or interested in, nutrition before. The provision of general lifestyle and nutrition information to women with a child wish and women who are already pregnant is then of importance as a first step in realising behaviour changes that go beyond the pregnancy alone.

To explore this in more detail, a large qualitative, in-depth study was performed on both lifestyle and nutrition awareness and nutrition information-seeking behaviours during the child wishing period and throughout the different trimesters in pregnancy. We particularly focused on nutrition. This is an important aspect contributing to a healthy pregnancy.

This article is specifically devoted to the exploration of nutrition information-seeking behaviours before and throughout pregnancy. As far as we know, little research has been carried out on this. Nutrition-related information-seeking behaviours are important factors influencing nutrition awareness and *vice versa* (van Dillen et al., 2003, 2005; Szwajcer et al., 2006; 2007a). From this research, it should be possible to define strategies for a healthy diet promotion for these women.

Information sources we studied are the mass media, the social environment and the health professionals. Research among Dutch consumers showed that

Chapter 5

these are important information sources (van Dillen et al., 2004). We will first consider the information sources.

Mass media

Applying the Users and Gratification Theory (Blumler & Katz, 1974), pregnant women and women with a child wish use those media alternatives that best comply with their needs and which are most gratifying. According to McQuail (2000), there are four motives for media usage:

1. information: seeking advice, getting oriented about events in the environment, learning;
2. personal identity: gaining self-knowledge, finding models of behaviour, reinforcing personal values;
3. integration and social interaction: finding out about others, relating to others, finding out how to play one's roles, establishing a basis for social interaction;
4. entertainment: relaxation, escaping from everyday problems, filling time.

These motives help to explain the differential patterns of media usage before and during pregnancy. Our study among first time pregnant women in their first trimester of pregnancy (Szwajcer et al., 2007a) showed that information (especially learning), finding out about others and entertainment functions (fun, relaxation) of the media were particularly important.

The social environment

According to the Social Support Theory (Sarason & Sarason, 1985), social support can provide a sense of belonging (eg sharing a child wish together with other women), assistance with acquiring needed goods or services (eg getting baby clothes from friends), guidance and advice in uncertain circumstances (eg getting advice on how to decrease a high blood pressure) and access to new information (eg getting books from other pregnant women). Applying the Social Comparison Theory (Festinger, 1954), pregnant women are likely to evaluate themselves by

Nutrition-related information-seeking behaviours and pregnancy

comparison of their ideas, opinions and feelings with people in a similar situation who have the same values. In this way, they can evaluate if they are doing well. Pregnant women are more likely to communicate about the pregnancy with other pregnant women or those who have (recently) been pregnant.

Health professionals

Health professionals are often perceived as credible sources (Hiddink et al., 1995; De Almeida et al., 1997; van Woerkum, 1998; van Dillen et al., 2003; Benoit & Stratheman, 2004) because of their expertise (the level of source's knowledge of the discussed topic, established by education, training or experience in the field) and trustworthiness (the source can be expected to provide an objective or unbiased perspective on the topic and is willing to help clients with their diverse questions) (Benoit & Stratheman, 2004). Therefore, women are more likely to accept nutrition-related information from health professionals, than from sources perceived to be less credible, such as (recently) pregnant friends (Benoit & Stratheman, 2004).

In the Netherlands, the midwife is the most common health professional for the guidance of pregnant women. Only a few pregnant women visit their general practitioner (GP). The intake-consults at the midwifery practice usually take place around the 12th week of pregnancy (at the last week of the first trimester). These are the first and the most common consults to talk about nutrition.

Interaction among the media, the social environment and health professionals

The media, the social environment and health professionals often interact with each other. Questions and concerns derived from one of these sources are often checked with, or completed by, information from the others.

Some women, for example, may not accept information from the media alone, but need confirmation from the social environment or the midwife. Information sources have their own characteristics and fulfil differential functions.

Chapter 5

The essential difference between most mass media and interpersonal sources is that most of the conventional mass media are characterised by one-sided communication, while interpersonal communication sources have the possibility of feedback (Koelen & Van den Ban, 2004). In face-to-face interpersonal communication, the sender can react on the receiver, at least to some extent, and sender and receiver can easily change roles (Koelen & Van den Ban, 2004), and therefore it may be much more effective (Van Woerkum & Meegeren, 1999).

Aim of the study

Based on the above perspectives, the aim of this study was to explore the following:

1. the use of nutrition-related information sources (mass media, social environment and health professionals) and nutrition-related information-seeking behaviours before and throughout pregnancy;
2. motives for nutrition-related information-seeking behaviours before and throughout different trimesters in pregnancy;
3. the functions and the pros and cons of each of the nutrition-related information sources in comparison to each other.

We particularly looked at nutrition-related information sources and information-seeking behaviours during first-time pregnancies. Research showed that the nutrition awareness effect among these women is greater than among second-time pregnant women (Szwajcer et al., 2006). We expect that these women may also have higher needs for nutrition information. To examine this expectation, women in the first trimester of their second child are also included. Based on our previous study (Szwajcer et al., 2006), we expect that women in the first trimester of their first pregnancy have the highest information needs, for example, due to pregnancy inconveniences.

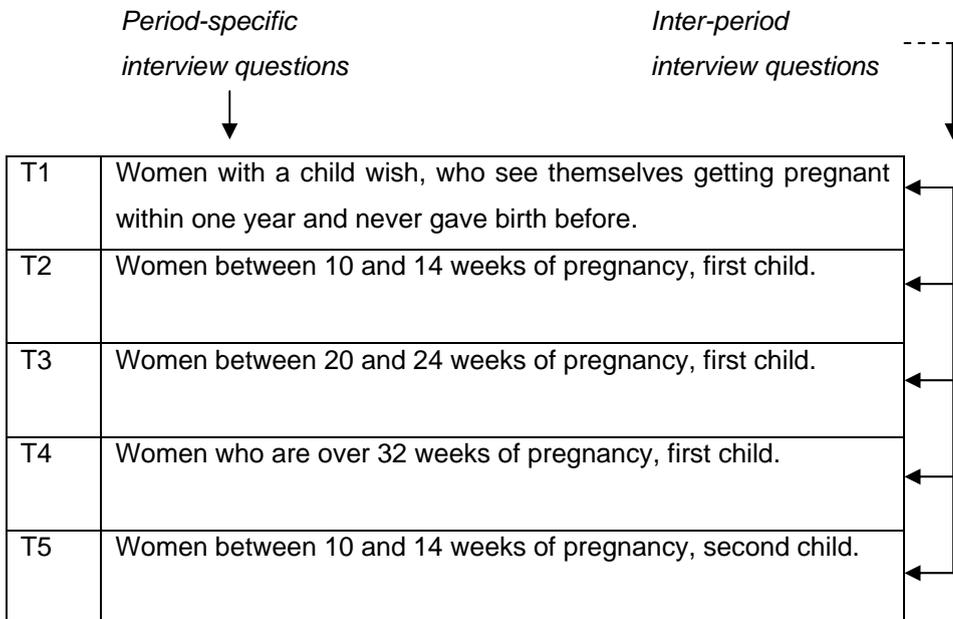
METHODS

Qualitative study design

Nutrition-related information-seeking behaviours and pregnancy

Data were collected by in-depth face-to-face interviews of 1 h with 60 women from different parts of the Netherlands (Amsterdam, Den Bosch, Zwolle, Breda, Wageningen/Veenendaal and Leeuwarden). They were selected via midwifery practices in the above cities, via word-of-mouth advertisement, via distribution of letters in districts with many children and via research databases of a selection agency. Age and educational level were taken in to account. Women with pregnancy-related complications were excluded.

Participants were divided into five groups (**Figure 1**). Different interview guidelines were developed for each group. Each interview contained period-specific questions and interperiod questions. Period-specific questions are questions on nutrition-related information sources and information-seeking behaviours during the child wish period, or over the last 3 months in the case of the pregnant respondents (see Figure 1). We assumed that this time can still provide an accurate picture of self-reported information-seeking behaviours.



T = period

Figure 1 Qualitative study design

Chapter 5

Interperiod questions refer to questions regarding nutrition-related information sources and information-seeking behaviours over the period of time they represent compared to the preliminary period(s) (see **Figure 1**). These questions are important to gain an idea of changes in information-seeking behaviours. The interviews were prestructured to address all relevant topics, but not in a rigid way.

Most interviews took place in conference rooms of hotels/restaurants; some respondents were interviewed at their homes. To avoid bias, family members of these women were asked to leave. Afterwards, the respondents received financial compensation and a cook book for their contribution. The study took place from July 2004 to October 2004. Interviews were audio recorded and transcribed verbatim.

Data analysis

The data were analysed with the software program NUD*IST (Qualitative Solutions and Research Non-numerical Unstructured Data Indexing, Searching and Theorizing).

Before and during analysis, coding frameworks were constructed based on the research objectives and relevant text segments of the transcripts.

Examples of main codes of data analysis for this article were (1) health (mental, social, physical and environmental) and nutrition-related (general and pregnancy specific) topics of interest, (2) information sources used, (3) functions of information sources, (4) interaction among usage information sources, (5) patterns in information-seeking behaviours before and throughout different pregnancies and (6) factors influencing information-seeking behaviours (individual and environmental).

RESULTS

Characteristics of participants

Nutrition-related information-seeking behaviours and pregnancy

The average age of the participants was 31 y, 50% with a low to average education level and 50% with a high educational level.

Nutrition-related information-seeking behaviours and information sources used during the child wish period

Women with a child wish generally seek little to no nutrition information. However, most women at least searched for some pregnancy-related information. They are confronted with it in their daily lives by the social environment, by the media or during their formal education and in some cases by their GP.

Women, who do look for information, mainly seek practical information for earlier conception, for example, on fertility and the use of folic acid. The main information source for this kind of information is the Internet because of its anonymous character. Books and magazines have to be bought in public areas and therefore are less anonymous.

However, there are also women who can be characterised as information absorbers. These women are interested in everything that has to do with having children, including information on nutrition during pregnancy. They already behave like real mothers. Important information sources on these topics are the social environment and magazines on pregnancy and children. Experiences of having a child wish or having children were often discussed with significant others, like (recently) pregnant friends, friends with a child wish, colleagues and family. Pregnancy magazines were perceived as fun to read because of their glossy appearance and articles on experiences of other women on being pregnant or having children.

Women generally experienced difficulties in finding information on the specific harm of poor nutrition behaviour after ovulation, a period when they might be pregnant. This also applies to pregnant women in their first trimester of pregnancy. Some women were very concerned about this.

Nutrition-related information-seeking behaviours throughout pregnancy

All pregnant women seek or are confronted with at least some pregnancy-specific nutrition information. Most pregnant women perceive this information as

Chapter 5

important. Next to avoiding stress, making adjustments in their daily nutrition behaviour is one of the few concrete things that they do to protect the health of the fetus.

During first-time pregnancies, the following three groups of women could be distinguished:

1. women who feel like a mother from the moment they know that they are pregnant;
2. women who feel like a mother later in pregnancy;
3. women who do not feel like a mother yet.

The nutrition-related information-seeking behaviours of the first group were generally highest in the first trimester of pregnancy, declined in the second trimester and increased slightly in the third trimester of pregnancy (Figure 2).

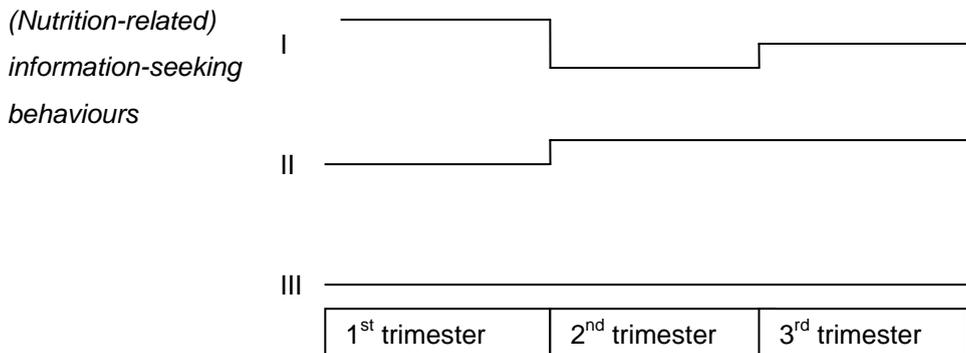


Figure 2 Main patterns in nutrition-related information-seeking behaviours of first-time pregnant women: groups I–III.

These women mention several factors influencing their information-seeking behaviours (Figure 3). At the beginning of the pregnancy, being pregnant is experienced as a new phenomenon, an occasion that gives rise to many nutritional questions: questions of what they should and should not consume and what can be done to decrease pregnancy inconveniences, like vomiting. Questions are also raised when acquired nutrition-related information is inconsistent with information

Nutrition-related information-seeking behaviours and pregnancy

from other sources or with a woman's own nutrition habits; for example, when the amount of the recommended diet is perceived as too high.

However, at the end of the first trimester of the pregnancy, most of these women experienced an information overload. At a certain point in time, most information needs are fulfilled. Most pregnancy inconveniences are over and more attention can be paid to other aspects in life, such as work. By now, women experience less pregnancy-related concerns because of the confirmation of the pregnancy and (reassurance after) the paramedical check-up at the midwifery practice, usually around the 12th week of pregnancy. The most risky period in pregnancy is over by then. These women were getting more selective in their search for information and now focused more on practical information, such as where to find maternity clothes.

The information-seeking behaviours of some of these women increased slightly again during the third trimester of pregnancy, due to questions about breastfeeding or because of pregnancy inconveniences. Other women did not want to look for information during this trimester to avoid stress before birth.

The second group (women who feel like a mother later in pregnancy) generally started to look for nutrition information after the intake-consult at the midwifery practice, at the beginning of the second trimester. After this, the pregnancy became more real. They often heard the babies' heartbeat and felt reassured by the midwife. The chance of a miscarriage was perceived as more unlikely. The pregnancy was shared with (more actors in) the social environment. This group of women generally sought less nutrition information than the first group. The main reason for this is that they got through the first trimester just fine, a period with the highest chance of miscarriage. The next group consisted of some women who did not feel the need to look for (more) nutrition information in the media and the social environment, because they already gained information at the intake-consult at the midwifery practice at the end of the first trimester.

The third group (women who do not feel like a mother yet) seek only a little nutrition information. These women often think of their pregnancy as a natural event in life. Other women also feel that they already have enough knowledge or

Chapter 5

were already aware of their nutrition behaviour before they became pregnant. Gaining nutrition information, therefore, is perceived to be less useful than in the first two groups.

Nutrition-related information-seeking behaviours of second-time pregnant women were generally lower than during their first pregnancy. These women mainly rely on their own experiences and feel much more competent with being pregnant (Figure 3).

Information sources used throughout pregnancy

Women in the first group (Figure 2) mainly sought nutrition information in the media, such as the Internet, books, magazines, 9-month calendars and, to a lesser extent, in brochures. The Internet was appreciated because of its anonymity. The Internet, magazines and brochures were seen as up-to-date information sources, whereas books were perceived as reliable and extensive. Magazines and 9-month calendars (provides information on the development of the mother and fetus) were found to be informative and nice, as were the stories on pregnancies. The 9-month calendars in the magazines were read 2 weeks in advance. Books, magazines and brochures were found more comfortable to read than information on the Internet. Brochures often gave a quick overview of basic nutrition knowledge, which made them less informative.

Conversations with the social environment about the pregnancy generally took place later in pregnancy, particularly after the intake-consult at the midwifery practice or when pregnancy inconveniences could not be hidden. Women particularly liked talking with friends, colleagues, family and neighbours who are or recently have been pregnant, mainly to exchange experiences, for comparison, reassurance and advice. Nutrition was mainly discussed if there were specific nutrition-related questions. Gaining or losing weight was another topic of conversation.

The first contact with the midwife takes place around the 12th week. Although midwives were seen as pregnancy-experts, the provision of nutrition information was already redundant. At this point in pregnancy, some women expect

Nutrition-related information-seeking behaviours and pregnancy

more specific nutrition information from the midwife that could not be found in the media. The midwife often did not provide this kind of information. Yet, nutrition-related advice from the midwife was appreciated, as some nutrition information sources were found incomplete or contradictory and nutrition-related problems or questions were discussed during this occasion. Compared to the midwife, conversations (about nutrition) with the social environment were experienced as more personal and profound. Women, who did pay a visit to the GP, mentioned that nutrition information was not always provided or was incomplete.

Important information sources in the second trimester of pregnancy were books. The midwife was used as a source in case of specific nutrition-related questions; calendars (in magazines) were used to look for the week of their pregnancy; and, to a lesser extent, the Internet was used for entertainment and addresses for baby equipment. Pregnancy magazines became less interesting—'it's always the same'. The (functions of the) conversations with other pregnant women or women who (recently) have been pregnant did not change. Brochures, books and the social environment were important information sources about breastfeeding; this issue became more relevant in the third trimester of pregnancy. Other women expected to receive information about this topic from the maternity nurse in the lactation period.

The information-seeking behaviours of the second group were postponed to the second trimester of pregnancy. Important information sources at that time, therefore, were the brochures provided by the midwife, and the midwife herself. The brochure provided a good overview of the most important nutrition information. Information from the midwife was perceived as reliable. However, there were also women who used similar information sources as the first group of women.

The main nutrition information source of the third group was the midwife, and these women relied on their own common sense.

Second-time pregnant women mainly relied on their experience. They used the midwife and books for specific nutrition-related questions. Some women sought just as much or even more nutrition-related information because of excitement or pregnancy inconveniences.

Chapter 5

Figure 3 Factors influencing nutrition-related information-seeking behaviours before and throughout pregnancy.

FACTORS INFLUENCING NUTRITION-RELATED INFORMATION –SEEKING BEHAVIOURS	
Child wish	
<p><i>Pro's:</i></p> <ul style="list-style-type: none"> - Excitement - Preparation on pregnancy - For faster conception 	<p><i>Con's</i></p> <ul style="list-style-type: none"> - Not pregnant yet - Getting pregnant is a natural process - Afraid for too much involvement - Already familiar with preconceptional nutrition information - Want to keep their child wish a secret
1st pregnancy, 1st trimester	
<p><i>Pro's:</i></p> <ul style="list-style-type: none"> - Excitement - Being pregnant is a new phenomenon, there is a lot to learn - Experiencing/ not experiencing changes in weight - Experiencing inconsistencies between information from different sources - Inconsistencies between nutrition information and own nutrition behaviour 	<p><i>Con's</i></p> <ul style="list-style-type: none"> - Waiting to get through the first trimester out of own protection - Not feeling pregnant yet, it does not show yet - Being pregnant is a natural process - Already gained nutrition information - Expecting information at intake-consult midwifery practice (around 12th week) - Want to keep the pregnancy a secret

Nutrition-related information-seeking behaviours and pregnancy

1st pregnancy, 2nd trimester

<i>Pro's:</i>	<i>Con's</i>
<ul style="list-style-type: none">- First trimester is over- Feeling pregnant; pregnancy shows- Experiencing/not experiencing changes in weight- Inconsistencies between nutrition information and own nutrition behaviour- Pregnancy inconveniences, like iron shortage	<ul style="list-style-type: none">- Information overload First trimester, now time to enjoy pregnancy- First trimester went fine, no need for further information

1st pregnancy, 3rd trimester

<i>Pro's:</i>	<i>Con's</i>
<ul style="list-style-type: none">- Pregnancy inconveniences- Information needs for lactation period	<ul style="list-style-type: none">- Already gained nutrition information- Expect information on lactation after pregnancy- Nearby birth, not reading information

2nd pregnancy, 1st trimester

<i>Pro's:</i>	<i>Con's</i>
<ul style="list-style-type: none">- More/less pregnancy inconveniences compared to last pregnancy period- Excitement- Retrieving forgotten information to avoid risks	<ul style="list-style-type: none">- Still remember nutrition information- Enjoy this pregnancy more

Media vs the social environment

Chapter 5

As in our previous study (Szwajcer et al., 2007a), the need for nutrition information from the media and the social environment differed. In general, four groups of women could be distinguished:

1. Women who mainly depend on nutrition information from the media: they mainly relied on the Internet and books because of its objective information. They often do not want 'to bother' their social environment with their pregnancy.
2. Women who mainly depend on nutrition information from the social environment: these women often do not like to read much and/or are of the opinion that their environment possesses enough knowledge.
3. Women who depend evenly on the advantages of nutrition information from both media and the social environment.
4. Women who mainly depend on nutrition information from the midwife. They do not actively search for information.

Finally, women with a relatively high education level often felt the need for more in-depth nutrition information, rather than just standard information. They more often made use of the Internet and books rather than the social environment. There was also a group of highly educated women, who hardly looked for nutrition information because of their busy schedule. These women more or less relied on common sense.

CONCLUSION AND DISCUSSION

Conclusions

- Previous research showed that pregnant women and women with a child wish are more aware of their general nutrition behaviour (Szwajcer et al., 2006). However, this study showed that they do not seek general nutrition information, because this is perceived as common knowledge.
- Women with a child wish generally seek little to no nutrition information. Those who do, mainly seek information on fertility and the use of folic acid. Important nutrition information sources are the Internet (anonymous) and the

Nutrition-related information-seeking behaviours and pregnancy

social environment (social support and comparison) (Sarason & Sarason, 1985).

- Pregnant women perceive pregnancy-specific nutrition information as important because it is one of the few things that they can apply in their daily lives to protect the health of the fetus.
- Three groups of first-time pregnant women could be distinguished: (1) women with high nutrition-related information-seeking behaviours, especially in the first trimester of pregnancy (immediately take over their role as an expectant mother), (2) women who started looking for nutrition information in the second trimester of pregnancy (when there is a higher chance that the embryo will survive and the pregnancy begins to show) and (3) women who seek little nutrition information (see the pregnancy as a natural process).
- Important information sources during first-time pregnancies were the Internet (anonymous and up to date) and books (extended) during the first trimester, midwives (expert), the 9-month calendar (fun and tips) and pregnant friends (in the same position) in the second trimester and friends (information on breastfeeding) in the third trimester.
- Second-time pregnant women mainly relied on their experience, and a midwife and books for specific questions.
- In the Netherlands, the midwife is the most common health professional during pregnancy. The intake-consult at the midwifery practice takes place in the 12th week of pregnancy, that is, at the end of the first trimester. The midwife is an important nutrition-related information source and provider for women of groups 2 and 3 in particular. For women in group 1, midwives have a more corrective, confirmative, reassuring and reinforcing role rather than an informational role. This is in agreement with our previous study (Szwajcer et al., 2007a).

Limitations and practice implications

The interviews seemed to be particularly useful to address private or sensitive topics, such as having a child wish. The data were relatively unambiguous and

Chapter 5

consistent with findings of our previous study (Szwajcer et al., 2007a). We have to keep in mind that the respondents had to think back in time. Some respondents experienced difficulties answering questions because they were not always that conscious of their information-seeking behaviours. However, generally, we got the information we were aiming at rather easily. Based on this study, a number of preliminary practice implications can be made.

First, women with a child wish often do not see the relevance of looking for nutrition information because they are not pregnant yet. In our opinion, it would therefore be fruitful to make women aware of the fact that already during the preconception period a few nutrition and lifestyle adjustments (healthy nutrition, taking folic acid, possible adjustments in drug and medicine intake, etc) could be made to reduce the chance of infectious diseases and congenital abnormalities. Efforts in this area have been made already. In the near future, the current practice of Dutch midwives will be expanded to preconceptional care for women with a child wish. The objection to this initiative is that women have to go to a midwifery practice themselves. This study showed that women who do look for preconceptional information often make use of the Internet (anonymous) instead of going to the library (public space), for example. Having a child wish is often kept a secret. The provision of tailored preconceptional information by an 'online midwife' may also be an option.

Secondly, this study confirmed our thoughts about the fruitfulness of the nutrition information exchange contact between midwives and pregnant women earlier in pregnancy (Szwajcer et al., 2007a). At this time, pregnant women experience higher nutrition information needs. This would be particularly useful for pregnant women who mainly depend on their midwife for nutrition information (groups 2 and 3). Each of the above-described groups of pregnant women has its own specific ways of looking for nutrition information that deserve different communicative healthy diet approaches. To gain more insight into the nutrition-related information-seeking behaviours of these groups, more research would help.

Nutrition-related information-seeking behaviours and pregnancy

Finally, the 9-month calendar is a popular medium among first-time pregnant women and is being used in all three trimesters of the pregnancy. This offers opportunities in providing tailored nutrition information per month.

Further research

This study will be used as input for a large-scale quantitative study of nutrition-related information-seeking behaviours before and during pregnancy in order to define adequate healthy diet strategies for these women.

CHAPTER 6

NUTRITION AWARENESS BEFORE AND THROUGHOUT DIFFERENT TRIMESTERS IN PREGNANCY: A QUANTITATIVE STUDY AMONG DUTCH WOMEN

Based on: Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition awareness before and throughout different trimesters in pregnancy: a quantitative study among Dutch women. *Submitted for publication.*

Nutrition awareness and pregnancy: a quantitative study

ABSTRACT

Objective: To establish an active measure of nutrition awareness, and to examine the nutrition awareness of women before and during pregnancy in order to provide a greater understanding of the life course perspective in relation to nutrition behaviours and pregnancy.

Design: Data were collected in a cross-sectional study with the aid of a face-to-face interview, based on our conceptualisation of nutrition awareness and the 'rules of thumb' designed by the Dutch Nutrition Centre.

Respondents: The sample consisted of five groups of about 100 Dutch nulliparous women each: women not trying to conceive a child, women trying to conceive a child, and women in their first, second or third trimesters of pregnancy.

Results: Our operationalisation of nutrition awareness in the form of a Likert scale resulted in a Cronbach's Alpha of .84. Pregnant women are significantly more aware of their nutrition than women who are not trying to conceive. The scores on nutrition awareness do not differ significantly between the three trimester groups of pregnant women. Women who are trying to conceive are not significantly more aware of their nutrition than women who are not.

Conclusions: Our conceptualisation of nutrition awareness is fruitful in obtaining a better understanding of behavioural changes in health. The study provided indications in favour of the life course perspective; pregnancy could indeed be an event in a woman's life that causes increased nutrition awareness. This should be borne in mind when healthy nutrition promotion activities are being developed.

Chapter 6

INTRODUCTION

An adequate nutrition pattern is of major importance for one's health and well-being, especially during pregnancy when a woman undergoes major biological, physical, psychological and social transformations (Anderson, 2001; Van Teijlingen et al., 1998). Although exciting, pregnancy and even pre-conception may also lead to uncertainties and concerns about a woman's new identity as a (future) mother, triggering her to rethink and reconsider her nutrition (Deutsch et al., 1988). As a result, pregnancy, and particularly a first pregnancy, is likely to be one of the few critical periods when women are able to change nutrition-related behaviours that are difficult to modify at other times. Pregnancy can therefore be seen as a major transition in a woman's life and may have positive consequences for a woman's future health and nutrition behaviour, and that of her family (Van Teijlingen et al., 1998; Hofberg & Ward, 2003). In the literature, this phenomenon has been introduced as the 'life course perspective' (LCP). This life transition plays a role in addition to the more traditional variables, such as individual patterns of behaviour or health across time and cultural and contextual influences (Wethington, 2005), and provides a whole new window of opportunities for healthy nutrition promotion activities.

Efforts have been made to gain insights into the behavioural patterns of pre-conceptional, pre-natal and natal smoking behaviours in relation to the LCP (Baker et al., 2004; Lelong et al., 2001; Mullen et al., 1997). However, studies on nutrition behaviours are scarce. The studies that are available are mainly directed at, and restricted to, topics such as maternal weight (Baker et al., 2004; Devine, Bove & Olson, 2000) and diabetes (Kieffer et al., 2002). However, in order to obtain insight into the LCP in relation to pregnancy and nutrition, it is interesting to ascertain whether women indeed become more aware of their nutrition and what importance they place on this in comparison to other lifestyle factors, such as physical exercise and hygiene. By awareness, we do not mean that women acquire more knowledge or a greater understanding of nutrition and nutrition behaviour. Many women know, more or less, what is healthy and what is not, but this knowledge is not translated into behaviour. This is what we call 'passive' or a 'cold' type of nutrition awareness.

Nutrition awareness and pregnancy: a quantitative study

In this article, we use a more 'active' or 'hot' definition of awareness. Awareness is hot when it becomes (Chalmers, 1996; Lazarus & Smith, 1988):

- *more salient* compared to other aspects in a woman's life. She attaches greater value to nutrition than she used to do.
- a subject of *continuous attention*. A woman thinks more often about nutrition and everything to do with it. She is preoccupied by it.
- a subject of *deliberate supervision* in daily life. A woman actively watches her nutrition.

In a qualitative, in-depth study among 60 pregnant women and women trying to conceive (Szwajcer et al, 2006), indications were found that the period around the pregnancy could indeed be an occasion in a woman's life in which she becomes actively aware of her nutrition. The purpose of this study is to examine cross-sectionally the nutrition awareness of women before and during pregnancy in order to provide a greater understanding of the LCP in relation to nutrition behaviour and pregnancy. In this way, we aim to contribute to the rationale of nutrition interventions aimed at women of child bearing age. More specifically, this study aims to answer the following research questions:

1. How do women, who are not trying to conceive, women trying to conceive and pregnant women perceive the influence of nutrition, as compared to other lifestyle factors, on health in general?
2. Are women who are trying to conceive more aware of their nutrition than women not trying to conceive?
3. Are pregnant women more aware of their nutrition than both women not trying to conceive and those trying to conceive, and are women in the different trimesters of pregnancy differently aware of their nutrition?

METHOD

Design and study participants

Data were collected by means of a face-to-face questionnaire administered at the homes of the study participants. Five groups of women were selected for this

Chapter 6

study. The first group consisted of nulliparous women who did not wish to become pregnant in the following year. The second group of women consisted of nulliparous women who had stopped using contraceptives in order to become pregnant. The third, fourth and fifth group consisted of nulliparous pregnant women at the end of the first, second or third trimester of their pregnancy. To avoid bias, women were informed that the questionnaire contained questions on lifestyle during pregnancy. They were not informed that it was particularly directed at nutrition, or that the questionnaire would focus on nutritional awareness.

The criteria for 'healthy' nutrition were derived from the 'rules of thumb' designed by the Dutch Nutrition Centre (DNC) and aimed at all Dutch consumers. The DNC is an official, independent and scientifically based organisation that is primarily financed by the Dutch government and informs consumers on healthy nutrition. The rules of thumb focus on the importance of a healthy and varied diet in general, and more specifically on the importance of: fruit, vegetables, bread, dairy produce, number of calories, healthy and unhealthy fats, soft drinks, breakfast.

The operationalisation of 'awareness' in the concept 'nutrition awareness' (Szwajcer et al, 2006) was based on three constructs of awareness derived from integrated theory:

1. Salience of nutrition; for example, *'I need to eat vegetables every day'*.
2. Pre-occupation with nutrition; for example, *'I never think about whether or not I eat enough vegetables.'*
3. Deliberate control of nutrition behaviour; for example, *'I make sure that I eat enough vegetables every day'*.

These three constructs were applied to each of the nine nutrition topics singled out by DNC and to a general question about healthy eating, see **Table 1**. Nutrition awareness was thus assessed by $(3 \times 9) = 27$ items. Reliability analysis of the measurement instrument resulted in a Cronbach's Alpha of .84. A Likert Scale including all 27 items was constructed based on Z-scores. The total score is the linear combination of the ratings (in Z-scores) on the separate items; the minimum possible total score being -70 and the maximum possible total score being +36. Factual scores for nutrition awareness ranged between -46 and +29.

Nutrition awareness and pregnancy: a quantitative study

Table 1 Statements contained in questionnaire for this study, answer options were: totally disagree; disagree; somewhat disagree, somewhat agree; agree; totally agree; 'I did not take this before anyway' (this last category was no option for statements on healthy eating and calorie intake).

Healthy Eating
1. I need to eat healthy food every day.
2. I never think about whether or not I eat healthy food.
3. I rarely pay attention to whether or not I eat healthy food.
Vegetables
4. I need to eat vegetables every day.
5. I never think about whether or not I eat enough vegetables.
6. I make sure that I eat enough vegetables every day.
Fruit
7. I do not need to eat fruit every day.
8. I often think about whether or not I eat enough fruit.
9. I rarely pay attention to whether or not I eat enough fruit every day.
Bread
10. I do not need to eat bread every day.
11. I often think about how much bread I eat.
12. I rarely pay attention to whether or not I eat enough bread every day.
Dairy
13. I need to consume dairy products every day.
14. I often think about the amount of dairy I consume.
15. I rarely pay attention to the amount of dairy I consume daily.
Calorie intake
16. I need to control myself to adhere to a strict daily calorie intake.
17. I often think about my calorie intake.
18. I rarely pay attention to how many calories I take in every day.

Chapter 6

Saturated and unsaturated fats
19. I should limit the saturated fat that I eat daily.
20. I never think about the amount of saturated fat I take in.
21. I always limit the saturated fat that I take in.
Soft drinks
22. I need to limit how many soft drinks I consume daily.
23. I never think about how many soft drinks I consume daily.
24. I pay attention to the number of soft drinks I drink each day.
Breakfast
25. I need to eat breakfast every day.
26. I never think about eating breakfast.
27. I make sure that I eat breakfast every day.

The questionnaire also provided insight into the position of nutrition as compared to other lifestyle factors. Before implementation, the questionnaire was pilot tested and improved on readability of the containing questions.

Sample size

Respondents were approached through access panels of three market research organisations:

1. 'GFK Script Panel': this panel contains names and addresses of a sample of the Dutch population broken down by age, education level and residence (GFK, 1999).
2. 'We Special Media': this is an organisation that has almost all the names and addresses of pregnant women in The Netherlands because it offers a free information pack to pregnant women.
3. 'Intomart': this organisation undertook a study directed at intended childlessness. The nulliparous women in that study who appeared to have a future child wish were excluded for the Intomart study and approached for our study.

Nutrition awareness and pregnancy: a quantitative study

The target was to have at least 100 women in each of the following five groups: nuliparous women not trying to conceive, nuliparous women trying to conceive, and nuliparous pregnant women in their first, second and third trimester of their pregnancy. Women included had to meet the following criteria: aged between 20 and 40 years, born and reared in The Netherlands and, if pregnant, treated by a midwife. (In The Netherlands, women with serious complications are treated by a gynaecologist rather than by a midwife. The profession of obstetrician does not exist in the Dutch health system.) Women who were seen exclusively by gynaecologists were excluded from participation in this study. Beforehand, all respondents were promised a small monetary compensation in the form of a €5 voucher and a gift (a cookery book) in appreciation for their participation.

For an overview of the origin of the sample and the distribution over the five groups studied, see **Table 2**.

Analyses

Statistical analyses were performed using SPSS 12.0. Comparisons within groups were performed using paired sample t-tests. Comparisons between groups were performed using General Linear Models (Analyses of Variance) with F-tests and Student-Newman-Keuls post hoc tests done to test differences in nutrition awareness. In General Linear Models (GLMs), the following covariates were considered: education level, age and interactions.

Table 2 Breakdown of the selection process

		Number	In %
Gross approached and screened		788	
	Refused to participate during screening phase	38	4.8%
	Did not meet screening conditions	66	8.4%
	Met screening conditions	684	86.8%
Approached		684	

Chapter 6

Did not meet screening conditions when contacted		83	12.1%
Net approach in field		601	100%
Non-response	Refused to respond during field work	27	4.5%
	Address incorrect/not home	25	4.2%
	Questionnaire not completed	26	4.3%
Response		523	87%

RESULTS

In total, 523 women completed the face-to-face questionnaire. Socio-demographic characteristics of the respondents are shown in **Table 3**. Values are expressed as a mean or as a percentage of respondents. The mean age of the group of women trying to conceive was significantly higher than that of women in their first and second trimester of pregnancy (post hoc test, $p=0.01$). The education level did not differ significantly between the groups (chi-square 8.9, df 8, $p=.35$).

The importance of healthy nutrition as a lifestyle factor

The first research question addressed the issue of the perceived influence of nutrition, as compared to other lifestyle factors, on health in general. Data analysis showed that all groups of women perceived excessive alcohol consumption and smoking as the two most important factors. Unhealthy nutrition came third, followed by stress, little physical exercise and bad hygiene, see **Table 4**. In all three groups, unhealthy nutrition was considered more important than little physical exercise (paired t-test, all $p < 0.0001$) and less important than smoking (all $p < 0.006$). This order was similar in both the smoking and the non-smoking group.

Table 3 Socio demographic characteristics of the sample by groups (N=523)

Socio demographic characteristics	Groups						Total
	Not trying to conceive	Trying to conceive	Pregnant 1 st trimester	Pregnant 2 nd trimester	Pregnant 3 rd trimester		
	N=101	N=100	N=102	N=110	N=110	N=523	
Age in years (mean, sd)	29.8±.56	31.4±.42	28.5±.40	28.3±.36	29.3±.39	29.5±4.5	
Working	96%	98%	95%	96%	96%	96%	
Education level							
Low	4%	10%	9%	7%	6%	7%	
Middle	41%	34%	49%	45%	44%	43%	
High	55%	56%	42%	48%	51%	50%	

Chapter 6

Table 4 Relative importance of lifestyle factors on health in general, on a scale from 1 (very low impact) to 10 (very high impact), by groups (mean scores and standard deviations) (N=523).

<i>Perceived influence of lifestyle factors on health in general</i>	<i>Groups:</i>		
	Not trying to conceive	Trying to conceive	Pregnant women
Excessive alcohol consumption	8.6±1.4	8.9±1.3	9.2±5.2
Smoking	8.7±1.4	9.0±1.3	8.9±1.5
Unhealthy nutrition	7.8±1.4	7.8±1.5	8.2±1.4
Stress	7.6±1.5	7.6±1.3	8.0±1.5
Little physical exercise	7.4±1.5	7.2±1.4	7.3±1.6
Bad hygiene	6.6±1.8	6.2±2.0	6.8±1.8

Nutrition awareness

The second and third research questions were directed at differences in nutrition awareness between women not trying to conceive, women trying to conceive and pregnant women. Scores for nutrition awareness ranged between -46 and +29. The over all mean score was -0.01 (st. dev. 12.18). The effect of groups on nutrition awareness was significant, although R^2 s were low, see **Table 5**, model I.

This means that the group to which a woman belongs makes a difference in respect of her nutrition awareness. Including education level in the model slightly increased group contrasts, see **Table 5**, model II. Results from the models

Nutrition awareness and pregnancy: a quantitative study

including both age and education level and interactions are not presented because neither age nor interactions had a significant effect on nutrition awareness.

The group of women not trying to conceive had the lowest nutrition awareness score, followed by the group of women trying to conceive and then the pregnant group. The difference between pregnant women and women not trying to conceive was significant using S.N.K. post hoc tests in GLM, see **Table 5**. There is a clear trend in mean scores towards women who are trying to conceive being slightly more aware of their nutrition than women who are not trying to conceive. Examined in further detail, the data showed that there were no significant differences in nutrition awareness among the three trimester groups in pregnancy.

Table 5 Estimated marginal means and standard errors for the three groups on nutrition awareness

	Estimated marginal means and standard errors	
Groups	Model I Independent variable: groups (N=521)	Model II Independent variables: groups and education (N=519)
Not trying to conceive	-2.70 ± 1.20 (N=101) ^a	-4.55 ± 1.33 (N=101) ^a
Trying to conceive	-1.71 ± 1.21 (N=100) ^a	-3.33 ± 1.30 (N=99) ^{a b}
Pregnant	^b 1.36 ± 0.68 (N=320) ^b	-0.22 ± 0.86 (N=319) ^b
F-statistic Group (dF ₁ , dF ₂), p-value	5.561 (2, 518) .004	6.196 (2, 514) .002
F-statistic Educ (dF ₁ , dF ₂), p-value		6.043 (2, 514) .003
R ²	2.1%	4.3%

^{a b} = groups with different letters differ significantly from each other on nutrition awareness scores (Post hoc test p=0.03)

Chapter 6

DISCUSSION

As far as we know, this is the first quantitative study about nutrition awareness before and throughout pregnancy in relation to the life course perspective. Our conceptualisation of nutrition awareness is based on integrated theory and is distinctive from the more commonly used definitions of this concept. Generally, nutrition awareness has been defined as having knowledge or some kind of understanding of nutrition (Bullen, 2000; Cashel et al., 2001; Chatzis et al, 2004; Kramish et al., 1999). It has also been associated with having an accurate estimation of one's own food intake compared to one's actual nutrition behaviour (measured by researchers) or to the recommended food intake (Bogers et al., 2004; Glanz, Brug & van Assema, 1997; Oenema & Brug, 2003; Stables et al., 1997). However, many people know, more or less, what healthy nutrition is and what is not, but this knowledge is not translated directly into behaviour; they are not really using their knowledge or putting it into practice (Povey et al., 1999).

This study shows that our conceptualisation of awareness (saliency, pre-occupation with and deliberate control of nutrition) is fruitful in obtaining a better understanding of behavioural changes in relation to health (Szwajcer et al., 2006). It reveals how personally relevant nutrition-related knowledge actually is to women during pre-conception and pregnancy. This is an important condition for rethinking nutrition habits (Aaarts & Dijksterhuis, 2000). As far as we know, this is the first effort to measure nutrition awareness in more active terms. In addition, the measurement of our concept of nutrition awareness is extremely interesting for the development of healthy nutrition promotion activities. It is directed at women's world of reference, their personal involvement in nutrition and their nutrition behaviour.

The objective of this study was to examine cross-sectionally the nutrition awareness of women before and during pregnancy. In this way, the authors wish to provide a greater understanding of the life course perspective in relation to nutrition

Nutrition awareness and pregnancy: a quantitative study

behaviours and pregnancy and to contribute to the rationale of nutrition interventions aimed at women of child bearing age.

In a range of six lifestyle behaviours, unhealthy nutrition takes in the third place, after excessive alcohol consumption and smoking and followed by stress, little physical exercise and bad hygiene. The study provided indications in favour of the life course perspective; pregnancy could indeed be an event in a woman's life causing an increased or 'hotter' nutrition awareness. Pregnant women are most aware of their nutrition, followed by women with a wish to conceive a child, and then the women with no such wish. No significant differences were found in nutrition awareness among the three trimester groups in pregnancy.

The few LCP-studies available on pregnancy and nutrition are difficult to compare because of the diversity in focus and methodological designs (Verbeke & De Bourdeauhuij, 2007; Reron et al., 2003; Takimoto et al., 2003). In addition, they often do not have a sound theoretical base (Contento et al., 1995). Some of them have shown that nutrition habits do not change significantly during pregnancy (Reron et al., 2003), whereas others have found support for the proposition that pregnant women clearly do show some changes in dietary behaviour, such as an increased consumption of fruit, vegetables and dairy produce (Verbeke & De Bourdeauhuij, 2007; Takimoto et al., 2003). The results of our current study, however, are in line with our previous studies (Szwajcer et al., 2006): pregnant women are more aware of their nutrition and there is a clear trend towards women who are trying to conceive being slightly more aware of their nutrition than women who are not trying to conceive.

An important methodological limitation is that the sampling did not meet the highest criteria required to guarantee randomness. We had to rely on existing panels. For practical reasons, the study participants originated from different, though representative, access panels. Although we made corrections for education and age, the samples are biased towards more highly educated and slightly older women trying to conceive. This limits the possibility of generalising the results to the overall Dutch population of women in this phase of life. The average age of

Chapter 6

Dutch mothers giving birth to their first child was 29 years in 2003 (Sanoma Uitgevers Vrouwen, 2005).

Implications for research and practice

A number of implications for research and practice can be inferred from this study. First, health promoters should realise that pregnancy can indeed be one of the few special or critical events in life that trigger women to become more nutritionally aware. This increased awareness may not only benefit maternal, foetal and infant health and well-being, but equally have positive consequences for postpartum nutrition behaviours, as the repetitive character of these adjustments could make them automatic responses for women after a while²⁴. Adequate healthy nutrition promotion activities directed at general nutrition would then be of major importance.

In order to study the possibility of the pregnancy being a catalysing life event that gives rise to longer-term revision of nutrition issues, a longitudinal study is required to track the whole process from pre-conception and pregnancy to the period after delivery in relation to the factors that might influence nutrition awareness during these transitions. It would be interesting to study women's awareness of pregnancy-specific nutrition-related issues, such as the consumption of folic acid and unpasteurised cheeses and meat, and other lifestyle factors, such as physical exercise and stress. Measurement of nutrition awareness in other special or critical transitions in life, such as adolescence, moving out of the parental home and retirement, would be interesting as well.

Acknowledgements

We would like to thank the market research office, GFK, for their collaboration with this research. We gratefully thank the participants for their time and contributions. Finally, we extend our appreciation to the Dutch Dairy Association for their unconditional financial support.

CHAPTER 7

EXPLORING NUTRITION AWARENESS AND MOTIVATIONS FOR NUTRITION BEHAVIOUR OF DUTCH PRIMIPAROUS MOTHERS: CONSEQUENCES FOR THE LIFE COURSE PERSPECTIVE

Based on: Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Exploring nutrition awareness and motivations for nutrition behaviour of Dutch primiparous mothers: consequences for the life course perspective. *Submitted for publication.*

Nutrition awareness and motherhood: a qualitative study

ABSTRACT

This study aims to explore postpartum nutrition awareness and associated motivations. Data were collected by means of 45 semi-structured, face-to-face interviews of one hour with women who were either between 2 and 4 months postpartum or between 10 and 14 months postpartum. Four postpartum nutrition awareness routes could be distinguished: 1) the 'new routine route': increased nutrition awareness acquired during pregnancy transforms into a new postpartum lifestyle identity, 2) the 'attentive route': nutrition awareness becomes a 'hot' or even 'hotter' cognition during the postpartum period, 3) the 'relapse route': nutrition awareness acquired during pregnancy reverts to prenatal levels, and 4) the 'steady route': nutrition awareness does not change compared to pregnancy and pre-pregnancy. Motivations for women's choice of routes include: feelings of responsibilities accompanying pregnancy and motherhood, a lack of energy, and the wish to regain old weight and shape. Health practitioners could benefit from these distinctions in consultations.

Keywords: postpartum; nutrition; awareness; communication; qualitative.

Chapter 7

INTRODUCTION

This study aims to obtain an in-depth understanding of the development of nutrition awareness *in the transition* from pregnancy to motherhood – a critical life event. The impetus for this study originated out of curiosity about the results of our previous study. In that study it was stated that pregnancy, particularly a first pregnancy, is a major transition in every woman's life (Hofberg & Ward, 2003; Schneider, 2002), and that she undergoes considerable physical and psychological transformations over the course of her pregnancy. Although pregnancy is exciting, a woman may also experience uncertainties and concerns about her new identity as a (potential) mother (Deutsch et al., 1988). Therefore, it is likely to be one of the few critical periods in life when women are able to change health-related behaviours that are difficult to modify at other times. Our previous qualitative study among 60 pregnant women and women wishing to conceive a child indicated that nutrition is one of these behaviours (Szwajcer et al., 2005; 2006). Women went from a passive or 'cold' type of nutrition awareness to a more active or 'hot' type of nutrition awareness (Chalmers, 1996; Lazarus & Smith, 1988); nutrition became more personally relevant in their daily lives. This was triggered by the need to protect the health and well-being of the developing baby as well as that of the prospective mother.

The results of that qualitative study made us wonder whether nutrition awareness acquired during pregnancy is predominantly of a temporary character or whether it could have longer lasting effects influencing a woman's future health and nutrition behaviour, and perhaps that of her family. In addition, perhaps motherhood could be an additional catalyzing event that prompts women to seriously consider their own health and that of their baby (Lazarus & Smith, 1988).

In the literature, this phenomenon has been introduced as the 'life course perspective' (LCP), which says that there are certain stages and transitions or events in life, such as pregnancy and motherhood, that may lead to conscious changes in health behaviour and that may also influence health behaviours in later life (Wethington, 2005). These play a role in addition to the more traditional variables, such as individual patterns of behaviour or health across time and

Nutrition awareness and motherhood: a qualitative study

cultural and contextual influences (Wethington, 2005). If women indeed make healthy nutrition changes during pregnancy, this may present a window of opportunity to encourage long-term adoption of healthier behaviours through the maintenance of healthy eating habits in the postpartum period and beyond (Szwajcer et al., 2005; 2006; 2007ab).

The life course perspective in relation to nutrition and motherhood

Whereas efforts have been made to gain insights into the behavioural patterns and motivations of pre-conceptual, prenatal and natal smoking behaviours in relation to the LCP (Baker et al., 2004; Lelong et al., 2001; Mullen et al., 1997), nutrition behaviours have received relatively less attention. Research on nutrition behaviours during pregnancy is mainly directed at, and restricted to, topics such as maternal weight (Baker et al., 1999; Devine, Bove & Olson, 2000), diabetes (Kieffer et al., 2002), and specific nutrient intake in relation to positive health outcomes of the foetus, rather than on healthy eating patterns themselves (Matthews et al., 2000; Siega-Riz, Bodnar & Savitz, 2002; van Teijlingen et al., 1998). Also, relatively little is known about the motivations women have for their postpartum nutrition behaviour in relation to the LCP.

Yet, these are of great importance for the promotion of healthy nutrition because they form a woman's frame of reference and stimulate a woman to a certain course of action to perform behaviour (Koelen & van den Ban, 2004). Moreover, the extent of the autonomy (free will) of these motivations is an important predictor of whether the changes in nutrition awareness are of a temporary or a longer-lasting character (Ryan & Deci, 2000a). Its importance as a personal, autonomous choice, one that is not based on the prescriptions of health officials or the expectations of the social environment, has also been emphasised by studies on quitting smoking in the period around the pregnancy (Pletch & Kratz, 2004; Baker et al., 2004; Lelong et al., 2001; Mullen et al., 1997; Williams et al., 1999).

Purpose of study

Chapter 7

The first purpose of this article is to explore postpartum nutrition awareness. The second purpose is to explore the associated motivations for postpartum nutrition awareness. With this, we want to provide a greater understanding of the LCP in relation to postpartum nutrition and to contribute to the rationale of nutrition interventions aimed at women of child bearing age.

METHOD

Qualitative research design

Data were collected by means of qualitative, in-depth, face-to-face interviews of one hour duration with two groups of women in different phases in motherhood: 1) women between 2 and 4 months postpartum and 2) women between 10 and 14 months postpartum. In line with the LCP, these two groups were included to explore nutrition awareness and related motivations in different phases throughout the first postpartum year. The first group of women, women between 2 and 4 months postpartum, were subdivided in women who were breastfeeding and women who were bottle-feeding their child. We expected that the type of baby feeding would have consequences for the women's engagement in nutrition (Goldberg, 2005). Lactating women, for example, have restrictions on their diet, such as avoiding cabbage, whereas women who are formula-feeding their baby have more flexibility. Furthermore, we looked particularly at primiparous women because these women are still actively constructing their identities in response to the life transition to motherhood (Deutsch et al., 1988; Olson, 2005). Therefore, the impact of nutrition awareness acquired throughout pregnancy on primiparous mothers is considered to be more critical and suitable for measurement than that of (experienced) multiparous mothers.

The total number of women interviewed was 45 (30 women in the first group, and 15 women in the second group). As all women are in a similar and eminent life phase (all women have recently become a mother of their first child), this number conforms to the requirements of qualitative research (Patton, 1990; Mays & Pope, 2000; Silverman, 2001).

Nutrition awareness and motherhood: a qualitative study

A semi-structured interview protocol was used to address all relevant topics, to maintain sufficient exploratory flexibility and to allow for communication validation (Morrison-Beedy, Cote-Arsenault & Feinstein, 2001; Emans, 2004). This approach allows for the exploration of new topics and directions, and for the use of the respondents' own words to give meaning to their world (Maso & Smaling, 1998).

First, mothers were questioned about their current nutrition awareness. These questions were open and generic. Nutrition awareness was operationalised by asking them about saliency, pre-occupation with, and supervision of, nutrition and nutrition behaviours. Next, they were asked how they felt about this compared to earlier phases in their lives (i.e. during the first three postpartum months, during pregnancy and during pre-pregnancy). Shifts in nutrition awareness could relate to general nutrition topics applicable to all consumers, such as the consumption of vegetables, fruit and dairy products, and, if applicable, to more breastfeeding-specific nutrition topics, such as no consumption of cabbage and strong vegetables (i.e. onions, peppers). After each nutrition topic had been touched upon, the respondent was asked why particular shifts did or did not take place, in order to explore her underlying motivations. These could be either raised spontaneously by the participants or, if this did not happen, introduced by the interviewer, who was following the interview protocol. Motivational conditions introduced by the interviewer were: the pregnancy itself, nurturing practices, and weight and physical shape. In order to obtain reliable and valid answers, the interviewer sought confirmation that she had understood correctly by summarising what the participants had said. To establish reproducibility, the interviewer used an interview protocol that contained a standard introduction, purpose and conclusion (Emans, 2004). To ensure in-depth and thoughtful information, output from former interviews was used as input for later interviews.

All respondents were interviewed at home in order to create an informal atmosphere that stimulated them to express themselves freely as to feelings and experiences about their nutrition awareness. Before the interviews were conducted,

Chapter 7

the interview protocol was thoroughly talked through among the four authors of this article, and its suitability was tested with five pilot interviews.

Participants

Women included were aged between 20 and 40 years and had to have been born and reared in The Netherlands in order to avoid language difficulties. As is common in qualitative research, participants were selected on the basis of diversity and maximum representativeness within normal populations of postpartum women. This was done to ensure that a cross-section of Dutch postpartum women were studied while at the same time acknowledging the variability of certain social characteristics that may affect an individual's experience of, and attitudes towards, a particular phenomenon (Patton, 1990; Mays & Pope, 2000; Silverman, 2001). The social characteristics taken into account were age, education level and employment status.

Respondents were selected via 'well-baby' clinics from different-sized districts in The Netherlands. To avoid bias, women were not informed that the interview would focus on nutrition awareness and underlying motivations for nutrition behaviour. Beforehand, all respondents were promised confidentiality, a small monetary compensation and a small gift (a cookery book) in appreciation for their contribution.

Characteristics of selected participants

The selected groups of women show similar socio-demographic characteristics (age, education level, employment status). The women interviewed were aged between 24 and 37 years, with an average age of 28.4. Of the participants, 50% had a low to average education level and the other 50% had a high to academic education level, spanning the spectrum of the Dutch education system. Nearly all women had part-time jobs. Seven women were unemployed or full-time mothers by choice.

Nutrition awareness and motherhood: a qualitative study

Analysis

The interviews were tape-recorded and transcribed verbatim. Then, they were summarised per case and analysed using the constant comparison method. Analysis involved 1) case-based approaches: vertical development of postpartum nutrition awareness per participant as compared to earlier postpartum periods, pregnancy and pre-pregnancy, and 2) concept-based approaches: horizontal comparison across the respondent group in relation to postpartum nutrition awareness and associated motivations for nutrition behaviour (Arcury & Quandt, 1998; Miles & Huberman, 1994).

This method of constant comparison is a strategy in which there is continuous, simultaneous collection and processing of data (Glaser & Strauss, 1967; Lincoln & Guba, 1985; Strauss & Corbin, 1990). The task for this research was to establish a set of categories that account for differences and similarities in postpartum nutrition awareness and to determine motivations for nutrition behaviour (Marton, 1981; Dahlgren & Fallsberg, 1991). This resulted in the identification of different postpartum nutrition awareness *routes*, reflecting the narratives recounted by the women (Dahlgren & Fallsberg, 1991). These routes, at the minimum, describe and organise possible observations or, at the maximum, interpret aspects of the phenomena (Boyatzis, 1998). The routes were repeatedly discussed with, and checked by, the four authors of this article.

Statements by participants about motivations for nutrition behaviours were sorted on the basis of extent of autonomy (Ryan & Deci, 2000a). A computer assisted qualitative data processing package (NUDIST) was used to store and organise the data per theme.

RESULTS

Nutrition awareness

The first purpose of this study was to increase our understanding of the development of nutrition awareness in the transition to motherhood. The results of analyses of the interviews suggest that over time (throughout the first three to four

Chapter 7

months [group 1] and first postpartum year [group 2]) intensity shifts in nutrition awareness occurred. However, women's nutritional awareness in the postpartum period could be adequately categorised into four different routes:

New healthy routine route

Nutrition awareness acquired during pregnancy by women on this route has transformed into a new postpartum lifestyle identity, without thinking about it or feeling pressured into doing so. The new routine is particularly manifested in the consumption of dairy products, fruit and vegetables, eating breakfast (instead of skipping it or delaying it) and preparing 'old-fashioned Dutch meals' (potatoes, vegetables and meat) that are thought to be healthier (less fat).

During pregnancy I really had to think about eating fruit. I ate almost no fruit before; too lazy, I guess – never made the effort. Now, I eat an apple almost everyday. I don't even think about it anymore.

Attentive route

Nutrition awareness becomes a 'hot' or even 'hotter' cognition postpartum. Nutrition is still, or becomes even more, personally relevant after giving birth.

...I'm still very much involved in my nutrition behaviour, maybe even more so than during pregnancy. My body has been through so much. It still has to recover.

Relapse route

Nutrition awareness acquired during pregnancy reverts to prenatal levels. Women are just as engaged in their nutrition as they were before they were pregnant or had an urgent desire for a child.

Nutrition awareness and motherhood: a qualitative study

and normal is crazy enough.

Steady route

Nutrition awareness does not change throughout the transition to pregnancy and motherhood. Consequently, postpartum nutrition awareness remains about the same as in the period before the pregnancy. These women do not really find it necessary to be extra aware of their general nutrition during pregnancy and postpartum.

I don't find it necessary to eat very healthily all of a sudden just because of the pregnancy or motherhood.

Nutrition awareness in relation to motivations for nutrition behaviour

The second purpose of this study was to explore the motivations associated with postpartum nutrition awareness. Generally, three types of motivations could be distinguished: 1) responsibilities accompanying pregnancy and motherhood, 2) a lack of energy, and 3) the wish to regain old weight and shape. The four routes were influenced by these three types of motivations.

Responsibilities accompanying pregnancy and motherhood

Pregnancy as well as motherhood was associated with a change in responsibilities compared to the period pre-pregnancy.

There were also women who felt healthier and good about themselves as a result of the increased nutrition awareness acquired during pregnancy. This motivated them to continue paying more attention to healthy nutrition after the birth of their child to maintain the level of healthiness, taking up the attentive route or the new healthy routine route (in this case, they had already become used to the way

Chapter 7

they dealt with nutrition as adjusted during pregnancy). Motherhood was seen as an opportunity to begin healthier lives, not only for themselves, but also out of a sense of responsibility to stay in good condition as a parent while setting 'the right example for the child'.

A while back, a mother of three kids at the school where I teach died of a heart attack. Horrible. It really hit me now that I am a mother myself. Not that this would happen to us. I'm pretty big, myself. But she was three times as big as me. It made me think about my health and the responsibility that I have for my daughter's and my own nutrition.

These women intentionally chose, for example, to cook more old-fashioned Dutch meals instead of pasta and (sugar rich) packaged sauces (with strong herbs and spices). It was believed that Dutch meals were healthier.

Another group of women were of the opinion that their child no longer depended directly on their nutrition behaviours, as was the case during pregnancy. As a result, these women felt less responsible. Furthermore, they were of the opinion that they would not have to adjust their eating pattern completely and 'hold themselves back from everything tasty', following the relapse route.

For the final group of women, neither pregnancy nor motherhood made a difference in their nutrition awareness; they can thus be seen as adopting the steady route. These women either consider themselves to have been sufficiently nutritionally aware pre-pregnancy and/or do not feel the need to be more nutritionally aware 'just because of pregnancy or motherhood'. 'I always was very into my nutrition and health. Pregnancy or motherhood did not really change that.'

Breastfeeding practices required a special sort of responsibility because of the associated restrictions on the diet. Women dealt with this responsibility in different ways.

There were women who considered that the nutrition restrictions were very similar to those imposed by pregnancy. As a result, this responsibility had become somewhat casual and no longer required further consideration, except in the case

Nutrition awareness and motherhood: a qualitative study

of eating out (in a restaurant, at a friend's house, or take-aways). These women were taking up the new routine route.

For other women, this feeling of responsibility did make a difference to their nutrition awareness; they were following the attentive route. However, the personal relevance of the nutrition restrictions varied. To some of the women, they provided a sense of certainty in the relatively new situation of being a mother and having doubts about 'doing what's right for the child'. 'I'm very strict as to the advice regarding what I should and should not eat. My baby is getting everything from what I eat. I don't want her to have cramps because of me.' These women felt very responsible. They did not want to take any risks that might harm their new baby and were under the impression that the quality of breast milk depended on their nutrition behaviour. The rest of the women mainly relied on their own feelings and rationality with regard to nutrition while breastfeeding. 'I don't believe in all those rules. I prefer to be king of my own kingdom.' In addition, these women mentioned that they were advised by the maternity nurse and the social environment to be flexible with the restrictions in order to observe the baby's response because 'each child has its own manual'. 'I'll choose my own way a bit'. 'I have living proof that she (baby) is doing well. During pregnancy you are more insecure because you can't see your child.' These women did not want to eat flavourless meals. It was also reasoned that, because they had consumed hot and spicy foods during pregnancy, their child must be accustomed to them.

Being unfamiliar with the restrictions was mentioned as a reason for falling back onto the relapse route. When these restrictions became known at a later stage, women did not always feel so responsible anymore because everything had been going well until that point. Women who did not breastfeed (or had stopped breastfeeding) were able to start eating whatever they chose, and this could lead women to take the relapse route as well. 'If I had breastfed my daughter, I would probably now be a little more thoughtful regarding my diet.' The feeling of responsibility was gone.

A lack of energy

Chapter 7

Women mentioned that the first few weeks after pregnancy were both joyful and hectic. Baby visits and disrupted nights absorbed a lot of energy, while they were still recovering from the birth and regaining their strength. Women who have/had been breastfeeding often experienced frustrated and tiresome difficulties (baby did not latch on, fed very frequently, breastfeeding took a long time, nipple splits and breast inflammation). Daily schedules in the first postpartum months primarily revolved around the baby and demanded a lot of energy. Sleeping, ignoring it and making sure to get enough liquid were mentioned as the main remedies to cope with this lack of energy. However, for some of the women this lack of energy was also a motivation to be more attentive to their nutrition, particularly when they were breastfeeding. These women reasoned and noticed that their body needed something extra, in quantity as well as in quality. Women also mentioned being extra hungry, and this motivated them to think about food more often, both healthy and unhealthy. On the other hand, being first and foremost a mother also led women to lose touch with their own (nutritional) needs, e.g. by skipping, delaying or interrupting meals. As a result, women were spending less time preparing healthy dinners and resigned themselves to cooking easy, one-pan meals, falling back into the relapse route or worse.

The wish to regain old weight and shape

Weight gain was accepted as part of pregnancy, or even appreciated when it led to a more feminine body shape. It was not always considered to be a motivation to pay extra attention to nutrition. However, generally women were curious about their progressing weight loss in the first few weeks after birth. Women who found that this was going too slowly or too quickly often related this to the way they dealt with their diet, and this made them more aware of their nutrition. Physical exercise was considered to be of most influence in losing weight or regaining their figure. Nevertheless, dieting was also found to be important.

Nutrition awareness and motherhood: a qualitative study

Generally, women who were not breastfeeding were more involved in getting back into shape than women who were breastfeeding. 'You cannot diet if you are still breastfeeding, because you get toxic substances in your blood when you are dieting.' Women who wished to lose weight had different coping strategies. There were those who strongly followed dieting rules, e.g. by avoiding unhealthy snacks, taking up the attentive route. Other women felt that it was better not to focus so much on losing weight because the weight would come off again naturally by listening to their own body. These women were attentive in an intuitive manner.

LCP in relation to nutrition awareness throughout the first postpartum year

Women could adequately be classified into one of the four routes described above. However, some mixed forms did arise and, as time elapsed, three eminent shifts in nutrition awareness and motivations for nutrition behaviour could be observed.

First, women who were/had been breastfeeding their child generally became more relaxed and confident. As a result, they were more in touch with their intuition and their 'motherly instincts' or fell back onto the relapse route. As time passed and the babies grew older, mothers thought that their child should be able to tolerate a lot of foods better.

At first I was very strict in terms of not drinking alcohol. I mean, they do not advise that [teetotalism] for nothing. But now I do have a drink once in a while. You can see he's doing very well. He's not such a fragile little boy anymore. He should now be able to tolerate it.

A second shift took place when women got used to the responsibilities of motherhood and developed some kind of daily routine in which other things in life became important again. This generally happened when they went back to work and adjustments had to be made in schedules, picking up 'normal' life again. As a result, women often switched over to bottle-feeding and no longer had to keep in mind restrictions in their diet. For women who were still on maternity leave, or those who were full-time mothers, or had cut back on working hours to be at home

Chapter 7

with their child, losing weight could be quite tough. They were more often tempted to take a 'tasty snack' from the kitchen.

Third, women up to four months postpartum generally did not have a clear idea about how they would manage their own nutrition once the child could eat the same food as they did.

Healthy nutrition ... that's not what I'm really thinking about yet ... I think it will become more important when he starts to eat with us. Once he is eating normal food, you know. Certainly nowadays, if you see those fat little children ... we are also a bit chubby. I absolutely want to prevent him from getting fat. He has to get enough vegetables, may not have quick snacks just before dinner and things like that. Yeah, and then we will have to join him. I will not make two dinners, of course, just set a good example, let's say. Yeah, and why is it only important then? Why shouldn't we be doing it already, eh...?

However, some of the women up to one year postpartum said that this was a period during which to become increasingly aware of their nutrition in relation to health, as per the attentive route. As time went by however, this increased awareness became a new routine or weakened due to practical considerations, e.g. lack of time for cooking healthy meals and the importance ascribed to flavourful meals, as per the relapse route.

In this study, no essential differences in socio-demographic backgrounds were observed that could explain women's choice of route and motivations for nutrition behaviour.

CONCLUSIONS AND DISCUSSION

Conclusions

The purpose of this study was firstly to explore postpartum nutrition awareness and secondly to explore the motivations associated with this in order to contribute to the

Nutrition awareness and motherhood: a qualitative study

rationale behind healthy nutrition interventions directed at women who have recently given birth.

As far as the first purpose was concerned, this study showed that both motherhood and pregnancy could indeed be periods in a woman's life causing increased nutrition awareness (saliency, pre-occupation with and deliberate attention to general and breastfeeding-specific nutrition-related issues). Four possible postpartum nutrition awareness routes were distinguished: 1) the new routine route: increased nutrition awareness acquired during pregnancy transforms into a new postpartum lifestyle identity, 2) the attentive route: nutrition awareness becomes a hot or even hotter cognition postpartum, 3) the relapse route: nutrition awareness acquired during pregnancy reverts to prenatal levels, and 4) the steady route: nutrition awareness does not change compared to pregnancy and pre-pregnancy.

The existence of the new routine route and the attentive route provide indications in favour of the life course perspective, whereas the relapse route and the steady route do not. The new routine route shows that the increased nutrition awareness triggered by pregnancy in fact can have a continued postpartum effect. Our study revealed that this awareness mainly manifested itself in ensuring that one consumed fruit, vegetables and dairy products, and ate breakfast. The existence of the attentive route indicates that motherhood can be a life transition triggering increased nutrition awareness as well, but has not yet become part of a new routine. The relapse route shows that pregnancy and/or motherhood are life transitions leading to a temporary increased nutrition awareness.

As far as the second purpose is concerned, motivations for women's choice of route are generally dependent on: 1) feelings of responsibilities accompanying pregnancy and motherhood, 2) a lack of energy, and 3) the wish to regain old weight and shape. These motivations vary in extent of autonomy and in character. Generally, women who are more nutritionally aware as a result of pregnancy or who see motherhood as a new beginning for healthy life practices (in order to set an example for the child) are more highly autonomously motivated than women who are more aware of their nutrition because of breastfeeding practices or those

Chapter 7

wanting to lose maternal weight (internal regulation). The interviews suggest that throughout the first postpartum year three shifts in nutrition awareness and types of motivations took place: 1) as time elapsed, women who were/had been breastfeeding their child generally became more relaxed, and the nutritional restrictions became less personally relevant; 2) after about four months, other things in life became more important again: women resumed normal life and nutrition became part of a daily routine; and 3) when the child began to eat the same dinner as the rest of the family, women generally became more attentive to their nutrition in relation to health.

Discussion

This article addresses a very important topic. Pregnancy is a time when people are able to change nutrition behaviours that are difficult to modify at other times. It cannot be said that the life course perspective is presumable. The choice of nutrition awareness route depends on the predominating postpartum motivations. However, even though the changes in postpartum nutrition awareness might be temporary, it is an area we need to know more about because of its importance for the promotion of healthy nutrition. To date, studies on the life course perspective in relation to awareness of, and motivations for, nutrition behaviours in pregnancy and motherhood are scarce. The studies that have been conducted in this area are debatable. They are difficult to compare because they have different theoretical underpinnings and are often not representative. As far as pregnancy is concerned, some studies have shown that nutrition habits do not change significantly during pregnancy (Reron et al., 2003), whereas others have clearly found support for at least some changes in nutrition behaviour and nutrition awareness (Szwajcer et al., 2006; 2007ab; Verbeke & De Bourdeaudhuij, 2007; Takimoto et al., 2003; Pick et al., 2005). In her study on tracking food choices across the transition to motherhood, Olson (2005) found some positive changes in fruit and vegetable consumption and breakfast habits. Our study supports these findings. This is also in line with research by Aarts and Dijksterhuis (2000) that suggests that behaviour performed repeatedly over a long period of time becomes habitual. In such

Nutrition awareness and motherhood: a qualitative study

situations, one may become less aware of the underlying motivations for engaging in a particular behaviour and no longer require any extra cognitive attention (Aarts & Dijksterhuis, 2000). A study by George, Milani, Hanss-Nuss and Freeland-Graves (2005) among multiethnic low-income women in transition from pregnancy to postpartum, however, found that the mean daily servings of grains, vegetables and fruit declined following childbirth, while the percentage of energy from fat and added sugar increased. On the other hand, they also found that women who breastfed their infants reported higher intakes of fruit and vegetables postpartum than those who bottle-fed.

The literature does not provide concrete information about the motivations underlying postpartum nutrition behaviours. However, entry into the maternal role has been associated with fatigue (Troy, 2003; Gjerdingen & Froberg, 1991), changes in sleep patterns (Kumar & Clark, 2002; Stowe & Nemeroff, 1995), weight gain and expectations for weight loss (Carter, Baker & Brownell, 2000; Devine & Olson, 1991). In addition, our previous study indicated that pregnant women's postpartum intentions with regard to healthy nutrition were influenced, in part, by a desire to set a good example for their children (Szwajcer et al., 2006). These associations are consistent with the findings of the study reported in this article.

Limitations and implications for practitioners

The study described in this paper is exploratory in character. We used semi-structured interviews, which are well-suited to the purpose of this study, as well as addressing private and sensitive topics, such as weight gain, in relation to motivations for postpartum nutrition behaviour. The findings should not be interpreted as conclusive, but rather seen as a picture depicting a deeper understanding of the ways differences in postpartum nutrition awareness can develop and how they can be explained. However, no conclusions can be drawn from this study with respect to characteristics over the population. This is a subject for quantitative research.

Based on the above, the study reported in this article provides a worthwhile perspective. It not only provides insights into nutrition awareness and underlying

Chapter 7

motivations in relation to the life course perspective, but also predicts which types of thoughts, feelings and actions have a temporary or a longer lasting character, and why. This is very valuable for the development for healthy-nutrition interventions directed at postpartum women. However, it should be borne in mind that this study was designed to find indications in favour of the LCP and was not an intervention study (which communication strategies are effective for which types of women?). Nevertheless, a number of preliminary practice implications can be adduced anyway.

First, health practitioners should realise that pregnancy and postpartum can indeed be life transitions triggering a woman to become more nutritionally aware – something that is difficult to modify at other times. This provides a window of opportunity for the promotion of healthy nutrition of which we need to make more use (Szwajcer et al., 2005; 2006; 2007ab; Goldberg, 2005). Until now, health promotion literature directed at mothers is still mainly focused on improving breastfeeding practices and nutritional restrictions (de Oliveira et al., 2006; Ekstrom & Nissen, 2006; Ingram, Rosser & Jackson, 2005).

Second, health practitioners should be aware of the fact that women are driven by different motivations to become more or less involved in their nutrition. The postpartum nutrition awareness routes outlined in this article provide a model for understanding existing typologies. This underlines the importance of conditional and interactive healthy nutrition promotion rather than a one-size-fits-all approach; and a standard knowledge-attitude behaviour (KAB) approach, where exposing persons to new information is assumed to lead to an attitude change that, in turn, leads to improved nutrition behaviour or practices (Contento et al., 1995; Contento, Randell & Basch, 2002), is not effective in realising real behaviour change. Instead, each route requires differently tailored communication approaches, as do the factors influencing postpartum nutrition awareness. It would also be fruitful to capitalise on the dynamism in nutrition awareness throughout the first postpartum year, e.g. by preventing women from falling back into the relapse route.

Finally, health practitioners should bear in mind that autonomous types of motivation for healthy nutrition behaviour are more likely to have longer lasting

Nutrition awareness and motherhood: a qualitative study

effects. In this context, motivational interviewing techniques might be useful (Vansteenkiste & Sheldon, 2006; Miller & Rollnick, 1991). What makes these techniques interesting is that they are not about harsh confrontations, but about women's personal responsibility and free will.

Suggestions for further research

For the purpose of this study, we used an ad hoc research design as a first step to obtain insight into this relatively new and unexplored research area. The results of our studies in this area (Szwajcer et al., 2005; 2006; 2007ab) could be used as input for a larger scale (and eventually longitudinal) quantitative study on the development of postpartum nutrition awareness and its underlying motivations among both primiparous and multiparous women of childbearing age. It would also be interesting to study whether the patterns recognised in this study also apply to awareness of other postpartum lifestyle factors. Finally, our results could also be used as input for an intervention study. Ideally, such knowledge would contribute to adequate, tailored (route-specific and motivation-specific) forms of healthy nutrition communication strategies for women of childbearing age.

Acknowledgements

We gratefully thank the participants and the well-baby clinics for their time and contributions. Finally, we extend our appreciation to the Dutch Dairy Association for their unconditional financial support.

CHAPTER 8

CONCLUSIONS

Conclusions and discussion

This thesis aimed to advance the understanding of the life course perspective in relation to the formation of a nutrition-related lifestyle in and around the period of pregnancy. With this we want to contribute to the rationale of healthy nutrition promotion activities aimed at women wanting to become pregnant, pregnant women and women who recently gave birth. This research was done by exploring nutrition awareness (qualitatively and quantitatively), nutrition-related information-seeking behaviours (qualitatively) and underlying motivations (qualitatively) in the period around the pregnancy. Special attention was paid to nutrition communication in the midwifery practice as a more specific setting for healthy nutrition promotion. Five main conclusions can be derived from this research:

1. *The life course perspective – concept provides interesting opportunities for healthy nutrition promotion directed at women who are starting a family.*

The results of the thesis showed that transitions in the period of preconception, pregnancy and motherhood are associated with an increased nutrition awareness and increased nutrition-related information-seeking behaviours. These transitions are one of the few special and critical moments in life when women are motivated to change health-related behaviours that are difficult to address at other times. This increased awareness may not only benefit maternal, fetal and infant health and well-being, but could possibly also have positive consequences for postpartum nutrition behaviours and that of her family. The repetitive character of these adjustments could make women turn into automatic responses after a while (Aarts & Dijksterhuis, 2000). Adequate healthy nutrition promotion activities directed at general nutrition is then of major importance and should be encouraged.

2. *The conceptualisation of awareness in this thesis is fruitful in obtaining a better understanding of behavioural changes in health.*

In this thesis, two types of awareness are distinguished: a *passive or cold* awareness and *active or hot* awareness. Cold nutrition awareness is defined as

Chapter 8

having knowledge or an understanding of nutrition and nutrition behaviour. A woman's awareness is not when it becomes: 1) more salient compared to other aspects in a woman's life; she attaches greater value to nutrition than she used to do, 2) a subject of continuous attention; a woman thinks more often about nutrition, and 3) a subject of deliberate supervision in daily life; a woman actively watches her nutrition. As far as known, this is the first effort to measure nutrition awareness in more active and operational terms. Moreover, measurement of awareness is fruitful in obtaining a better understanding of behavioural changes in nutrition and other health related behavioural changes. It is directed at women's world of reference and reveals how personally relevant nutrition-related knowledge actually is to women during preconception, pregnancy and motherhood. This is an important condition for rethinking nutrition habits (Aarts & Dijksterhuis, 2000). In this context, the measurement of our concept of nutrition awareness is extremely interesting for the development of healthy nutrition promotion activities.

3. *Nutrition awareness and nutrition-related information-seeking behaviours are a good basis for distinguishing groups of women in the period around their pregnancy.*

Generally, women not trying to conceive have the lowest nutrition awareness, which increases when they are trying to conceive and get pregnant. During pregnancy, generally three groups of women were recognised. The first group of women are going all the way and feel like a mother from the moment they know they are pregnant. These women are intensively aware of their nutrition and immediately look for all sorts of information from all kinds of sources. The second group of women is more flexible. These women are more aware of their nutrition, but are not as strict as following the nutritional guidelines as the first group. They also do not necessarily have to look for nutrition-related information immediately after they find out that they are pregnant. The third group of women do not experience any real changes in nutrition awareness and nutrition-information seeking-behaviours. They continue more or less the same way as they did before

Conclusions and discussion

they were pregnant. These women do not feel like a 'mother' yet. They did not find it necessary to become more aware because they had always been aware of their nutrition or they did not really care about their nutrition.

After birth, we again could make meaningful distinctions between different groups of women. In the first group, the increased nutrition awareness acquired during pregnancy becomes a new habit or routine. In the second group, nutrition is hot or even hotter than during pregnancy. In the third group, nutrition awareness reverts back to as it was before preconception and pregnancy. The nutrition awareness in the third group of women did not really change as a result of preconception, pregnancy or motherhood.

Generally, women in the period in and around their pregnancy are first and foremost interested in nutrition information that is pregnancy-specific in character. Nevertheless, general nutrition information is considered to be of interest as well. Women perceive pregnancy-specific nutrition information as important because it is one of the few things that they can apply in their daily lives to protect the health of the fetus. Important information sources are the Internet (anonymous and up to date), books (extended), midwives (expert), friends (experienced) and the 9-month calendar (fun and tips). During preconception and the first trimester of pregnancy the Internet is important because of its anonymity. After making the pregnancy public, friends become more important as from the second trimester. The 9-month calendar is being used in all three trimesters of the pregnancy.

4. Motivations for nutrition awareness and nutrition-related information-seeking behaviours are another important criterion for distinguishing groups of women in the period around their pregnancy.

The extent and fluctuations in nutrition awareness and nutrition-related information seeking behaviours during preconception, pregnancy and motherhood were based on different motivations, like thinking about weight and body shape, feelings of nausea, awareness of nutrition before the pregnancy, feelings of responsibility towards the baby, stories and advices of friends. Generally, all these motivations

Chapter 8

can be subdivided into three sources: 1) the interest of the child; feelings of responsibilities accompanying preconception, pregnancy and motherhood, 2) the interest of themselves; thinking about the own health and physical, psychological and social needs and wishes, and 3) the interest of the social environment; the influences and expectations of significant others. The sources of motivations can both have positive and negative influences on nutrition awareness and can be conflicting as well. For example, on the one hand a woman might want to eat healthy for the well-being of the child, on the other hand she might also want to want to satisfy her own needs for a snack. Furthermore, the sources of motivations are related to the feeling of autonomy. Generally, women who are more motivated because of their own interest are more autonomously aware of their nutrition than women who feel pressured by their social environment or do this out of responsibility towards the child. Autonomously motivated women in the period around the pregnancy are more likely to make longer lasting behavioural changes, which is favour of the life course perspective. Therefore, healthy nutrition promotion should not only be directed at readjustments of nutrition behaviour in the interest of the child. Rather, women's interests must be addressed as well. Throughout this period however, shifts in sources of motivations can take place. For example, women who were more aware of their nutrition in the interest of the child started to realise that good nutrition was in their own interest too; which also favours the life course perspective. This stresses the importance of conditional and interactive healthy nutrition promotion rather than a one-size-fits-all approach.

5. *The promotion of healthy nutrition behaviour in midwifery practices could be improved by taking into account the concerns with regards to motivations.*

This thesis showed that the pleasant ambiance and the interactive character of the consultation offered many opportunities for nutrition communication. Midwives tried to create a good relation with their clients by being friendly, reassuring, complimentary, confirmative and supportive. Pregnant women did also appreciate

Conclusions and discussion

being able to talk about nutrition with the midwife, at least, when they were confirmed that everything was all right with the baby. However, nutrition communication in the midwifery practice took place relatively late in pregnancy. In addition, verbal and written information about nutrition provided by midwives was very general and did not happen simultaneously. Midwives can enhance their nutrition communication by identifying and addressing personal relevant nutrition-related questions concerns and motivations. These are directed at women's world of reference and stimulate women to a certain course of action to perform nutrition behaviour. To enhance the synergetic approach between written and verbal nutrition communication, written information should ideally be provided on a stand-alone basis and be an explicit and integrative part in verbal nutrition communication on motivations for nutrition behaviour (change).

DISCUSSION

Comparison of latest evidence with the results of our studies

To date, the majority of studies in the field of health promotion are directed at risk behaviours, such as unhealthy nutrition, little physical exercise, smoking and alcohol consuming stress, or at risk situations, like an illness or a high blood pressure (Wethington, 2005). In these situations, a woman is likely to have a certain resistance giving up or change a particular lifestyle behaviour that will benefit her health. This thesis is distinctive because it is directed at opportunities for healthy nutrition promotion activities directed at a positive life transition, that of starting a family. Pregnancy is an opportunity to develop good health in stead of preventing bad health.

To date, studies on the life course perspective in relation to (awareness of and motivations for) nutrition behaviours and pregnancy are scarce. Most studies in directed in this area are directed at smoking behaviours. Until now, studies have focused on topics such as maternal weight (Öhlin & Rössner, 1994; Fairburn & Welsch, 1990; Harris, Ellison & Lucassen, 1997; Walker, 1998, 1997, 1995), eating disorders (Fairburn, Stein & Jones, 1992; Franko & Walton, 1993; Killen et al.,

Chapter 8

1996), diabetes (Kieffer et al., 2002), and specific nutrient intake in relation to positive health outcomes of the foetus (Matthews et al., 2000; Siega-Riz, Bodnar & Savitz, 2002).

These studies are valuable at obtaining insight in the existence of the life course perspective in relation to pregnancy. However, it does not really say much on whether nutrition is something that becomes more prominent in a woman's life. In this thesis, we look whether women indeed become more aware of their nutrition, as in 1) saliency, 2) pre-occupation and 3) deliberate control of nutrition and nutrition behaviour. Our conceptualisation of nutrition awareness, based on several theories and conceptualisations, is distinctive from the more commonly used definitions of this concept. Generally, nutrition awareness has been defined as having knowledge or some kind of understanding of nutrition (Bullen, 2000; Cashel et al., 2001; Chatzis et al., 2004; Kramish Campbell et al., 1999). It also has been associated with having an accurate estimation of one's own food intake compared to one's actual nutrition behaviour (measured by researchers) or to the recommended food intake (Bogers et al., 2004; Glanz, Brug & Assema, 1997; Oenema & Brug, 2003; Stables et al., 2002). However, many people know (more or less) what is healthy and what is not, but this knowledge is not translated directly into behavior. They are not really using their knowledge or putting it into practice (Povey et al., 1999). In this context, our conceptualisation of awareness (saliency, pre-occupation with and deliberate control of nutrition) is much more useful and practical. It reveals how personally relevant nutrition-related knowledge actually is to women during preconception and pregnancy. The measurement of our concept of nutrition awareness is fruitful in obtaining a better understanding of behavioural changes in health. In addition, it is extremely interesting for the development of healthy nutrition promotion activities. It is directed at women's world of reference, their personal involvement in nutrition and their nutrition behaviour.

Finally, this thesis is distinctive in the sense that it is directed at motivations for behaviour (change) as well. Determination of the autonomy of these motivations predicts what types of thoughts, feelings and actions are likely to have a temporary or a longer lasting character, and why. Thus, it provides an understanding of critical

Conclusions and discussion

transitions and turning points that are associated with lasting nutrition behaviours changes. In addition, motivations for nutrition behaviour (change) are extremely interesting for the development of healthy nutrition promotion activities. It is directed at women's world of reference; their personal involvement in nutrition and their nutrition behaviour.

Awareness and motivations in and around the period of pregnancy: implications for the LCP

Although, the identification of different typologies of nutrition awareness and different types of motivations in the qualitative studies among pregnant women and the postpartum women arose independently, they tend to show interesting similarities. In either periods, three more or less the same groups of women could be distinguished: 1) those that are going all the way and are very strict with regard to the nutritional guidelines, 2) those who are more flexible and rely on their own intuition with regard to the nutritional guidelines and, 3) those that are more steady and don't experience any real changes in nutrition awareness as compared with the period before pregnancy. On first notice, one might say that women going all the way seem to be most aware and therefore would have the most positive consequences for the LCP. However, this does not necessarily have to be the best way. The danger of being very strict with regard to the nutritional guidelines is relapse, a problem of many diets. Over-reliance on cognitive control over eating often lead to a lack of self control when disrupted by emotions or the intake of forbidden food (Herman & Polivy, 1980; Larsen et al., Ahead of print).

From this perspective, a more flexible and intuitive type of nutrition awareness may be more likely to lead to long-term behavioural changes. When having a closer look at our data, we found important support for this presupposition. Generally, we saw that pregnant women, who had an intuitive type of nutrition awareness, tended to have an intuitive postpartum nutrition awareness as well, whereas many women going all the way were inclined to eventually fall back into the relapse route. We also found that women going all the way tended to be more aware mainly because of the interest of the child. Women, who were more

Chapter 8

intuitively aware on the other hand, were more often were inclined to think about their own “benefits”, which is a more autonomous type of motivation than thinking about the interests of the child. Since the cross-sectional qualitative research designs were explorative in nature, no solid statements can be made to determine which type of awareness has the most positive consequences for the LCP. The results however suggest that the type of awareness acquired during preconception/pregnancy provides indications for the manifestation of postpartum nutrition awareness. This is an interesting hypothesis for further research.

Implications for research

Generally, two main implications for research can be inferred. Firstly, the cross-sectional studies on groups of nutrition awareness and information-seeking behaviours in the period around the pregnancy reported in this thesis must be seen as a first and feasible step to obtain insight into the life course perspective. In order to study the possibility of the pregnancy being a catalysing life transition that gives rise to longer-term consideration of nutritional issues, a longitudinal study will be the next step. In this context, it would be interesting as well to study women’s awareness on other lifestyle factors, such as smoking behaviour, alcohol consumption and hygiene. Measurement of nutrition awareness and underlying motivations in other special or critical transitions in life, such as adolescence, moving out of the parents’ home, retirement and having an illness, would be also interesting.

Secondly, as the midwife is seen as the first and foremost information source during pregnancy in The Netherlands, further research on healthy nutrition communication in Dutch midwifery practice must be undertaken. In this context, an observational study is recommended. Observations can provide valuable insight into midwives’ actual nutrition communication behaviour throughout the whole pregnancy by registering the percentage of consultations in which nutrition is discussed by midwives. In addition, it provides insight in the quality of general and pregnancy-specific nutrition communication in consultations with pregnant women and future preconceptional consults with women wanting to conceive. Observations

Conclusions and discussion

of nutrition communication in consultations could also be used to evaluate communicative and nutrition-related practical knowledge and skills of midwives.

REFERENCES

- Aarts H, Dijksterhuis A. Habits as knowledge structures: Automaticity in goal-directed behavior. *J Pers Soc Psychol* 2000; 78: 53-63.
- Abdulrazzaq YM, Al-Gazali LI, Bener A et al. Folic acid awareness and intake survey in the United Arab Emirates. *Reprod Toxicol* 2003;17: 171-176.
- Abelson RP, Rosenberg MJ. Symbolic psycho-logic: A model of attitudinal cognition. *Behav Sci* 1985; 3: 1-13.
- Anderson AS. Constipation in pregnancy: is your advice on diet effective? *Prof Care Mother Child*, 1996; 6: 87-90.
- Anderson AS. Symposium on 'Nutritional adaptation to pregnancy and lactation' pregnancy as a time for dietary change? *Proc Nutr Soc* 2001; 60: 497-504.
- Anderson AS, Campbell D, Shepherd R. Nutrition knowledge, attitude to healthier eating and dietary intake in pregnant compared to non-pregnant women. *J Hum Nutr Diet* 1993; 6: 335-353.
- Arcury TA, Quandt SA. Qualitative methods in arthritis research: sampling and data analysis. *Arthritis Care Res* 1998; 11: 66-74.
- Arija V, Cucó G, Vila J, Iranzo R, Fernández-Ballart J. Food consumption, dietary habits and nutritional status of the population of Reus: follow-up from preconception throughout pregnancy and after birth. *Med Clín* 2004; 5: 5-11.
- Armitage JA, Khan IY, Taylor PD, Nathanielsz PW, Poston L. Developmental programming of the metabolic syndrome by maternal nutritional imbalance: how strong is the evidence from experimental models in mammals? *J Phys* 2004; 561: 355-377.
- Baker CW, Carter AS, Cohen LR, Brownell KD. Eating attitudes and behaviours in pregnancy and postpartum: global stability versus specific transitions. *Anal Behav Med* 1999; 21:143-148.
- Baker TB, Piper ME, McCarthy DE, Majeskie MR, Fiore MC. Addiction motivation reformulated: An affective processing model of negative reinforcement. *Psychol Rev* 2004; 111: 35-51.

- Benoit WL, Stratheman A. Source credibility and the elaboration likelihood model. In: Seiter JS, Gass RH. (ed). *Perspectives on Persuasion, Social Influence, and Compliance Gaining*, 95–111. USA: Pearson Education Inc, 2004.
- Berger CR, Calabrese RJ. Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Hum Commun Theory* 1975; 1: 99-112.
- Black AE, Deci EL. The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Sci Educ* 2004; 84: 740-756.
- Blumler JG, Katz E. *The Uses of Mass Communications: Current Perspectives on Gratifications Research*. Beverly Hills, CA: Sage, 1974.
- Bogers RP, Brug J, van Assema P, Dagnelie PC. Explaining fruit and vegetable consumption: The theory of planned behaviour and misconception of personal intake levels. *Appetite* 2004; 42: 157-166.
- Boyatzis RB. *Transforming qualitative information: thematic analysis and code development*. Thousand Oaks, CA: Sage, 1998.
- Bullen C. Taking public health to the streets: the 1998 Auckland meningococcal disease awareness program. *Health Educ & Behav* 2000; 27: 363-370.
- Carter AS, Baker WC, Brownell KD. Body Mass Index, Eating Attitudes, and Symptoms of Depression and Anxiety in Pregnancy and the Postpartum Period. *Psychol med* 2000; 62: 264-270.
- Cashel KM, Crawford D, Deakin V, Talbot B. Is the link between nutrients and foods understood? The case of fibre and folate. *Public Health Nutr* 2001; 4: 912-918.
- Chalmers D. *The conscious mind: In search of a fundamental theory*. Oxford: Oxford University Press, 1996.
- Chatzis C, Karvounis K, Hatzilara P et al. Greek employee awareness of carcinogenic exposure. *Prev Med* 2004; 39: 65-665.
- Contento IR, Balch GI, Bronner YL et al. The effectiveness of nutrition education and implications for nutrition education policy, programs and research: a review of research. *J Nutr Educ* 1995; 27: 279-419.

References

- Contento IR, Randell JS, Basch CE. Review and analysis of evaluation measures used in nutrition education intervention research. *J Nutr Educ Behav* 2002; 34: 2-25.
- Coffey A, Atkinson P. *Making sense of qualitative data: complementary research strategies*. London: Sage Publications, 1996.
- Croghan E. Supporting pregnant women through behaviour change. *Nurs Stand* 2005; 19: 48-50
- Cucó G, Fernández-Ballart J, Sala J et al. Dietary patterns and associated lifestyles in preconception, pregnancy and postpartum. *Eur J Clin Nutr* 2006; 60: 364-371.
- Dalhgren LO, Fallsberg M. Phenomenography as a qualitative approach in social pharmacy research, *J Soc Adm Pharm* 1991; 8: 150-156.
- David D, Miclea M, Opre A. The information-processing approach to the human mind: Basic and beyond. *J Clin Psyc* 2004; 4: 353-369.
- De Almeida MDV, Graca P, Lappalainen R et al. Sources used and trusted by nationally-representative adults in the European Union for information on healthy eating. *Eur J Clin Nutr* 1997; 54: S16-S22.
- Deci EL, Ryan RM. *Intrinsic motivation and self-determination in human behaviour*. New York: Plenum, 1985.
- Den Broeder L, Wagemakers A, van Woerkum C. *Towards a communication policy of the Royal Dutch Organisation of Midwives* (in Dutch). Wageningen: Wageningen University, 1999.
- Denzin NK, Lincoln YS. *Handbook of qualitative research*. London: Sage Publications, 1994.
- Deutsch FM, Ruble DN, Fleming A, Brooks-Gunn J, Stangor C. Information-seeking and maternal self-definition during the transition to motherhood. *J Pers Soc Psychol* 1988; 55: 420-431.
- Devine CM, Bove CF, Olson CM. Continuity and change in women's weight orientations and lifestyle practices through pregnancy and the postpartum period: the influence of life course trajectories and transitional events. *Soc Sci Med* 2000; 50: 567-582.

- Devine CM, Olson CM. Women's dietary prevention motives: life stage influences. *J Nutr Educ* 1991; 23: 269-274.
- De Oliveira LD, Giugliani ER, do Espirito Santo LC et al. Effect of intervention to improve breastfeeding technique on the frequency of exclusive breastfeeding and lactation-related problems. *J Hum Lact* 2006; 22: 315-321.
- DeVito JA. *The interpersonal communication book* (9th edition). New York: Longman, 2001.
- De Vries NK. *Het hart, de ruggengraat en de hersenpan. Perspectieven op gezondheidsgedrag. Inaugurale rede gezondheidsvoorlichting en –bevordering*. Maastricht: Universiteit Maastricht, 2000.
- Dutch Dairy Association. *Healthy pregnancy* (Brochure in Dutch). Zoetermeer: Dutch Dairy Association, 2002.
- Ekstrom A, Nissen E. A mother's feelings for her infant are strengthened by excellent breastfeeding counselling and continuity of care. *Pediatrics* 2006; 118: 309-314.
- Elder GH Jr. The life course and human development. In: R.M. Lerner (Ed.). *Theoretical Models of Human Development. Handbook of Child Psychology* (5th ed.), Vol 1; 939-991. New York: John Wiley & Sons, 1998.
- Emans BJM. *Interviewing, theory, techniques and training*. Groningen: Stenfert Kroese, 2004.
- Esch T & Stefano GB. The neurobiology of pleasure, reward processes, addiction and their health implications. *Neuro Endocrinol Lett* 2004; 25: 235-251.
- Eysenck MW, Keane MT. *Cognitive psychology: A student's handbook* (4th ed.). Philadelphia: Psychology Press/Taylor and Francis, 2000.
- Festinger A. A theory of social comparison processes. *Hum Rel* 1954; 7: 117-140.
- Fishbein M, Ajzen I. *Belief, attitude, intention and behaviour: an introduction to theory and research*. Reading MA: Addison-Wesley, 1975.
- Flick U. *An introduction to qualitative research* (2nd ed.). London: Sage Publications, 2002.
- Freda MC. Issues in patient education. *J Midwifery Womens Health* 2004; 49: 203-209

References

- French MR, Barr SI, Levy-Milne R. Folate intakes and awareness of folate to prevent neural tube defects: a survey of women living in Vancouver, Canada. *J Am Diet Assoc* 2003; 103: 181-185.
- Fairburn CG, Welsh SL. The impact of pregnancy on eating habits and attitudes to shape and weight. *Int J Eat Disord* 1990; 9: 153-160.
- Fairburn CG, Stein A, Jones R. Eating habits and eating disorders during pregnancy. *Psychol Med* 1992; 54: 665-672.
- Franko D, Walton B. Pregnancy and eating disorders: A review and clinical implications. *Int J Eat Disord* 1993; 13: 41-45.
- George GC, Milani TJ, Hanss-Nuss H, Freeland-Graves JH. Compliance with dietary guidelines and relationship to psychosocial factors in low-income women in late postpartum. *J Am Diet Assoc* 2005; 105: 916-926.
- Gjerdingen DK, Froberg D. Predictors of health in new mothers. *Soc Sci Med* 1991; 33: 369-387.
- Glaser B, Strauss A. *The Discovery of Grounded Theory*. Chicago: Aldine, 1967.
- Glanz K, Brug J, van Assema P. Are awareness of dietary fat intake and actual fat consumption associated? A Dutch American Comparison. *Eur J Clin Nutr* 1997; 51: 542-547.
- Garbarino J. Cornell child abuse expert says it's time to recognize smoking as child abuse. Ithaca, NY: Cornell University, 1997. Found on the Internet on July 14th 2007: http://www.news.cornell.edu/releases/Sept97/smoking.abuse_ssl.html
- Garbarino J. *Raising Children in a Socially Toxic Environment*. San Francisco, CA: Jossey-Bass Publishers, 1995.
- GfK. *InterActPanel* (in Dutch). Dongen, The Netherlands: GfK, 1999.
- Givaudan M, Pcik S, de Venguer TT, Xolocotzin U 2002 Bridging the communication gap: provider to patient written communication across language and cultural barriers. University of Southern California: California.
- Goldberg G. Maternal nutrition in pregnancy and the first postnatal year--2. After the birth. *J Fam Health Care* 2005; 15: 137-138.

- Goldy CG, Hanss-Nuss H, Milani TJ, Freeland-Graves JH. Food choices of low-income women during pregnancy and postpartum. *J Am Diet Assoc* 2005; 150: 899-907.
- Green LW, Ottoson JM. From efficacy to effectiveness to community and back: Evidence-based practice vs. practice-based evidence. In: Proceedings from conference: From Clinical Trials to Community: The Science of Translating Diabetes and Obesity Research, 2004.
- Green LW. From research to "best practices" in other settings and populations. *Am J Health Behav* 2001; 25: 165-178.
- Harris HE, Ellison GTH, Lucassen E. The impact of pregnancy on the long-term weight gain of primiparous women in England. *Int J Obes* 1997; 21: 747-755.
- Harvey HD, Fleming P. The readability and audience acceptance of printed health promotion materials used by environmental health departments. *J Environ Health* 2003; 65: 22-28.
- Hiddink GJ, Hautvast JGAJ, Van Woerkum CMJ, Fieren CJ, Van't Hof MA. Nutrition guidance by primary-care physicians: perceived barriers and low involvement. *Eur J Clin Nutr* 1995; 49: 842-851.
- Hofberg K, Ward MR. Fear of pregnancy and childbirth. *Postgrad Med J* 2003; 79: 505-510.
- Hoffmann T, McKenna K. Analysis of stroke patients' and carers' reading ability and the content and design of written materials: recommendations for improving written stroke information. *Patient Educ Couns* 2006; 60: 286-293.
- Herman CP, Polivy J. Restrained eating. In: A.J. Stunkard (ed.). *Obesity*. London: WB Saunders, 1980.
- Ingram J, Rosser J, Jackson D. Breastfeeding peer supporters and a community support group: evaluating their effectiveness. *Matern Child Nutr* 2005; 1: 111-118.
- Jackson AA, Robinson SM. Dietary guidelines for pregnancy: a review of current evidence. *Public Health Nutr* 2001; 4: 625-630.
- Jamison JR. Prescribing wellness: a case study exploring the use of health information brochures. *J Manipulative physiol Ther* 2004; 27:262-266

References

- Johnson A. Do parents value and use written health information? *Neonat Pediatr Child Health Nurs* 1999; 2: 3-7
- Janz N, Becker MH. The health belief model: A decade later. *Health Educ Quart* 1984; 11: 1-47.
- Johnson A, Sandford J. Written and verbal information versus verbal information only for patients being discharged from acute hospital settings to home: systematic review. *Health Educ Res* 2005; 20: 423-429
- Kieffer EC, Willis SK, Arellano N, Guzman R. Perspectives of pregnant and postpartum Latino women on diabetes, physical activity, and health. *Health Educ Behav* 2002; 29: 542-556.
- Klusmann A, Heinrich B, Stopler H, Garnter J, Mayatepek E, Von Kries R. A decreasing rate of neural tube defects following the recommendations for periconceptional folic acid supplementation. *Acta Paediatr* 2005; 94: 1538-1542.
- Killen J, Taylor C, Haydel et al. Weight concerns influence the development of eating disorders: A 4 year prospective study. *J Cons Clin Psychol* 1996; 64: 936-946.
- Koelen MA, van den Ban AW. *Health education and health promotion*. Wageningen: Wageningen Academic Publishers, 2004.
- Kramish Campbell M, Reynolds KD, Havas S et al. Stages of change for increasing fruit and vegetable consumption among adults and young adults participating in the national 5-a-day for better health community studies. *Health Educ Behav* 1999; 26: 513-534.
- Kumar P, Clark M. *Clinical Medicine*. (5th Ed.) London: WB Saunders, 2002: 410-414, 1244.
- LaBerge D. Attention, awareness, and the triangular circuit. *Conscious Cogn* 1997; 6: 149-181.
- Larsen JK, van Strien T, Eisinga R, Herman CP, Engels RCME. Dietary restraint: Intention versus behavior to restrict food intake. *Appetite* 2007; 49: 100-108.
- Lazarus RS, Smith CA. Knowledge and appraisal in the cognition emotion. *Cogn Emot* 1988; 2: 281-300.

- Lelong N, Kaminski M, Saurel-Cubizolles MJ, Bouvier-Colle MH. Postpartum return to smoking among usual smokers who quit during pregnancy. *Eur J Public Health* 2001; 11: 334-339.
- Lincoln YS, Guba EG. *Naturalistic inquiry*. Sage Publications, Beverly Hills, 1985.
- Matthews F, Yudkin P, Smith RF, Neil A. Nutrient intakes during pregnancy: the influence of smoking and age. *J Epidemiol Community Health*, 2000; 54: 17-23.
- Mays N, Pope C. Assessing quality in qualitative research. *Brit Med J* 2000; 320: 50-52
- McBride CM, Curry SJ, Lando HA. Prevention of relapse in women who quit smoking during pregnancy. *Am J Public Health* 1999; 89: 706-711.
- McQuail D. *McQuail's mass Communication Theory*, 4th edition. Sage Publications: London, 2000.
- Methven R. Recording an obstetric history or relating to a pregnant woman? A study of the antenatal booking interview. In: Robinson S, Thomson AM (eds.). *Midwives research and childbirth*. London: Chapman and Hall, 1989; 1: 42-71.
- Mens en Lijf*. RTL7, 2005, episode September 11th.
- Miles M, Huberman A. *Qualitative data-analysis. An expanded source-book of new methods* (2nd ed.). Beverly Hills: Sage Publications, 1994.
- Miller WR, Rollnick S. *Motivational interviewing: Preparing people to change addictive behaviour*. New York: Guilford, 1991.
- Morrison-Beedy D, Cote-Arsenault D, Feinstein NF. Maximizing results with focus groups: moderator and analysis issues. *Appl Nurs Res* 2001; 14: 48-53.
- Mullen PD, Richardson MA, Quinn VP, Ershoff DH. Postpartum return to smoking: who is at risk and when. *Am J Health Promot* 1997; 11: 323-330.
- Mulliner CM, Spiby H, Fraser RB. A study exploring midwives' education in, knowledge of and attitudes to nutrition in pregnancy. *Midwifery* 1995; 11: 37-41.
- Oenema A, Brug J. Exploring the occurrence and nature of comparison of one's own perceived dietary fat intake to that of self-selected others. *Appetite* 2003; 41: 259-264.

References

- Öhlin A, Rössner S. Trends in eating patterns, physical activity and sociodemographic factors in relation to postpartum body weight development. *Br J Nutr* 1994; 71: 457-582.
- Olson CM. Tracking of food choices across the transition to motherhood. *J Nutr Educ Behav* 2005; 37: 129-136.
- Ortega RM. Food, pregnancy and lactation: Dietary guidelines for pregnant women. *Public Health Nutr* 2001;4: 1343-1346.
- Osler M, The LCP: a challenge for public health research and prevention, *Eur J Public Health* 2006; 16: 230.
- Patton M. *Qualitative evaluation and research methods*. Newbury Park: Sage, 1990.
- Petty RE, Cacioppo JT. *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer Verlag, 1986.
- Piasecki TM. Relapse to smoking. *Clin Psychol Rev* 2006; 26: 196-215.
- Pick ME, Edwards M, Moreau E, Ryan EA. Assessment of diet quality in pregnant women using the healthy eating index. *J Am Diet Assoc* 2005; 105: 240-246.
- Pletsch PK, Kratz AT. Why do women stop smoking during pregnancy? Cigarettes taste and smell bad. *Health Care Women Int* 2004; 25: 671-679.
- Povey R, Conner M, Sparks P, James R, Shepherd R. A critical examination of the application of the Transtheoretical Model's stages of change to dietary behaviours. *Health Educ Res* 1999; 14: 641-651.
- Prochaska JO, DiClemente CC, Norcross JC. In search of how people change: Applications to addictive behavior. *Am Psychol* 1992; 27: 1102-1114.
- Rajasundaram R, Phillips S, Clay NR. Information leaflet used in out-patient clinics: a survey of attitude and understanding of the user. *Int J Health Care Qual Assur Inco Leaders Health Serv* 2006; 19: 575-579
- Reron A, Zareba-Szczudlik J, Was K, Huras H. Nutrition habits in pregnant women. *Przegl Pol*, 2003; 60: 8-11.
- Rimer BK, Glanz K, Rasband G. Searching for evidence about health education and health behaviour interventions. *Health Educ Behav* 2001; 28: 231-248.

- Rowe SY, Olewe MA, Kleinbaum DG et al. The influence of observation and setting on community health workers' practices. *Epub* 2006; 18: 299-305
- Ryan RM, Deci EL. Intrinsic and extrinsic motivations: classic definitions and new directions. *Contemp Educ Psychol* 2000a; 25: 54-67.
- Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol* 2000b; 55: 68-78.
- Ryan RM, Deci EL. Self-regulation and the problem of human autonomy: does psychology need choice, self-determination, and will? *J Pers* 2006; 74: 1557-1586.
- Sanoma Uitgevers Vrouwen. *100% woman: a study on women in The Netherlands*. Hoofddorp, The Netherlands: Sanoma Uitgevers Vrouwen, 2005.
- Sarason IG & Sarason RR. *Social Support: Theory, Research and Applications*. Dordrecht: Nijhoff, 1985.
- Savas S, Evcik D. Do undereducated patients read and understand written education materials? Scandinavian. *J Rheumatol* 2001; 30: 99-102.
- Schippers GM, de Jonge J. Motiverende gespreksvoering. *Maandbl Geest Volksgez* 2002; 57: 250-265.
- Schneider Z. An Australian study of women's experiences of their first pregnancy. *Midwifery* 2002; 18: 238-249.
- Segador J, Gil-Guillen VF, Orozco D, Quirce F, Carratala MC, Fernandez-Parker A, Merino J. The effect of written information on adherence to antibiotic treatment in acute sore throat. *Int J Antimicrobents Ag* 2005; 26: 56-61.
- Siega-Riz AM, Bodnar LM, Savitz DA. What are pregnant women eating? Nutrient and food group differences by race. *Am J Obstet Gynecol* 2002; 186: 480-486.
- Silverman J. *Interpreting qualitative data. Methods for analyzing talk text and interaction*. London: Sage Publications, 2001.
- Smith ER, Mackie DM. *Social psychology* (2nd ed.). Philadelphia: Psychology Press, 2000.
- Smith LF, Whitfield MJ. Women's knowledge of taking oral contraceptive pills correctly and of emergency contraception: effect of providing information leaflets in general practice. *Br J Gen Pract* 1995; 45: 409-414.

References

- Stables GJ, Subar AF, Patterson BH et al. Changes in vegetable and fruit consumption and awareness among US adults: Results of the 1991 and 1997 5 A Day for Better Health Program surveys. *J Am Dietet Assoc* 2002; 102: 809-817.
- Stewart DW, Shamdasani PN. *Focus groups: theory and practice*. Newbury Park: Sage, 1990.
- Stowe NZ, Nemeroff CB. Women at risk for postpartum-onset major depression. *Am J Obstet Gynecol* 1995; 173: 639-645.
- Strauss A, Corbin J. *Basics of qualitative research: grounded theory procedures and techniques*. London: Sage, 1990.
- Suh KS. Impact of communication medium on task performance and satisfaction: an examination of media-richness theory. *Inf Manage* 1999; 35: 295-312.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition-related information-seeking behaviours before and throughout the course of pregnancy: consequences for nutrition communication. *Eur J Clin Nutr* 2005; 59: S57-S65.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CM. Nutrition awareness and pregnancy: Implications for the life course perspective. *Eur J Obstet, Gynecol Reprod Biol*. Accepted 2006; Dec 16.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Written nutrition communication in midwifery practice: what purpose does it serve? Submitted for publication, 2007a.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition awareness before and throughout pregnancy: a survey. Submitted for publication, 2007b.
- Takimoto H, Yshiike N, Katagiri A, Ishida H, Abe S. Nutritional status of pregnant and lactating women in Japan: A comparison with non-pregnant/non-lactating controls in the National Nutrition Survey. *J Obstet Gynaecol Res* 2003; 29: 96-103.
- Thogersen-Ntoumani C, Ntoumanis N. The role of self-determined motivation in the understanding of exercise-related behaviours, cognitions and physical self-evaluations. *J Sports Sci* 2006; 24: 393-404.

- Trevino LK, Lengel RK, Daft RL. Media Symbolism, Media Richness and media Choice in Organizations. *Communic Res* 1987; 14: 553-574.
- Troy NW. Is the significance of postpartum fatigue being over looked in the lives of women? *MCN. Am J Matern Child Nurs* 2003; 28: 252-257.
- Van Dillen SME, Hiddink GJ, Koelen MA, de Graaf C, van Woerkum CMJ. Understanding nutrition communication between health professionals and consumers: Development of a model for nutrition awareness based on qualitative consumer research. *Am J Clin Nutr* 2003; 77: 1065S-1072S.
- Van Dillen ME, Hiddink GJ, Koelen MA, De Graaf , van Woerkum CMJ. Perceived relevance and information needs regarding food topics and preferred information sources among Dutch adults: results of a quantitative consumer study. *Eur J Clin Nutr* 2004; 58: 1306-1313.
- Van Dillen SME, Hiddink GJ, Koelen MA, De Graaf K, van Woerkum CMJ. Exploration of possible correlated of nutrition awareness and the relationship with nutrition behavior: results of a quantitative consumer study. Submitted for publication, 2005.
- Vansteenkiste M, Sheldon KM. There's nothing more practical than a good theory: integrating motivational interviewing and self-determination theory. *Br J Clin Psychol* 2006; 45: 63–82.
- Vansteenkiste M, Simons J, Lens W, Sheldon KM, Deci EL. Motivating learning, performance, and persistence: the synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *J Pers Soc Psychol* 2004; 87: 246-260.
- Vansteenkiste M, Simons J, Lens W, Soenens B, Matos L. Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style on early adolescents' academic achievement. *Child Dev* 2005; 76; 483-501.
- Van Teijlingen E, Wilson B, Barry N. et al. *Effectiveness of interventions to promote healthy eating in pregnant women and women of childbearing age: a review.* (Review no. 11) London, UK: Health Education Authority, 1998.
- Van Woerkum CMJ. *Mass media education: a working plan.* (in Dutch) Amsterdam: Boom Meppel, 1984.

References

- Van Woerkum CMJ. Nutrition guidance by primary care physicians: models and circumstances. *Eur J Clin Nutr* 1998; 53: S19-S21.
- Van Woerkum CMJ, Van Meegeren P. *Basisboek communicatie en verandering*. Amsterdam: Boom, 1999.
- Verbeke W, De Bourdeaudhuij L. Dietary behaviour of pregnant versus non-pregnant women. *Appetite* 2007; 48: 78-86.
- Walker LO. Weight gain after childbirth: A woman's health concern? *J Behav Med* 1995; 17: 132-141.
- Walker LO. Weight and weight-related distress after childbirth. *J Holist Nurs* 1997; 15: 389-405.
- Walker LO. Weight-related distress in the early months after childbirth. *West J Nurs Res* 1998; 20: 30-44.
- Walker R, Turnball D, Pratt N, Wilkinson C. The development and process evaluation of an information-based intervention for pregnant women aimed at addressing rates of caesarean section. *Int J Obstet Gynaecol* 2005; 112: 1605-1614.
- Weinstein ND. The precaution adoption process. *Health Psychol* 1988; 7: 355-386.
- Wethington E. An overview of the life course perspective: Implications for health and nutrition. *J Nutr Educ Behav* 2005; 37: 115-120.
- Weyts K. *Communication planning from theory to practice* (in Dutch). Brussel: Drukkerij Lannoo, 2003.
- Williams GC, Cox EM, Kouides R, Deci EL. Presenting the facts about smoking to adolescents. Effects of an autonomy-supportive style. *Arch Pediatr Adolesc Med* 1999; 153: 959-964.
- Williams GC, McGregor HA, Sharp D, et al. Testing a self-determination theory intervention for motivating tobacco cessation: supporting autonomy and competence in a clinical trial. *Health Psychol* 2006; 25: 91-101.
- Willemsen MC, Wagena EJ, van Schayck CP. De effectiviteit van stoppen-met-rokenmethoden die in Nederland beschikbaar zijn: een systematische review op basis van Cochrane-gegevens. (The efficacy of smoking cessation methods

available in the Netherlands: a systematic review based on Cochrane data.) *Ned Tijds Geneesk* 2003; 147: 922-927.

Williams GC, Freedman AR, Deco EL. Supporting autonomy to motivate patients with diabetes for glucose control. *Diabetes Care* 1998; 21: 1644–1651.

Williams GC, Cox EM, Kouides R, Deci EL. Presenting the facts about smoking to adolescents. Effects of an autonomy-supportive style. *Arch Pediatr Adolesc Med* 1999; 153: 959-964.

SUMMARY

In literature it has been suggested that there are certain special and critical transitions in life that may have a long-term impact on health and health behaviours in later periods of the life course. This is also known as the Life Course Perspective (LCP). The main objective of the studies presented in this thesis is to contribute to the rationale of healthy nutrition promotion activities aimed at women and their health behaviour in and around pregnancy, as such a special and critical transition in life.

In chapter 2, the idea behind the LCP is portrayed, studies on pregnancy and lifestyle transformations are shortly described and discussed. More specifically, we made a first effort to explore and redefine the concept of nutrition awareness. We found that the LCP is a new and hardly or insufficiently explored domain in nutrition promotion and pregnancy. Mostly, awareness is defined as a matter of knowing about something. The result of this conceptualisation is that the link with behaviour becomes a problematic one. Therefore, we have chosen for a more 'active' interpretation. Based on this, a framework is provided to study the LCP with the aim of advancing our understanding of this phenomenon in relation to the period in and around the pregnancy. With this framework in mind, we started our empirical studies.

Chapter 3 describes a qualitative study on the synergy between verbal and written nutrition communication in the Dutch midwifery practice, as a more specific setting for healthy nutrition promotion directed at all pregnant women. Data were collected by recording initial ante-natal consultations, followed by two semi-structured qualitative interviews with the women of whom the initial ante-natal consult was recorded. The results showed that the pleasant ambiance and the interactive character of the consultation offered many opportunities for nutrition communication. Midwives tried to create a good relation with their clients by being friendly, reassuring, complementary, confirmative and supportive. However, verbal and written information about nutrition provided by midwives was very general. Specifically, personally relevant nutrition-related questions and motivations were rarely addressed. Furthermore, written nutrition communication was offered in an

information pack, but midwives did not actively make use of it or refer to it during verbal nutrition communication. In addition, nutrition communication in the midwifery practice took place at a point when women were more interested in 'hearing the baby's heart beat' than discussing general nutrition. Nonetheless, pregnant women did appreciate being able to discuss nutrition with the midwife, once they were confirmed that everything was all right, because of her expertise on pregnancy and her paramedical role. The chapter ended with some recommendations to reach optimal synergy between the two forms of communication.

Chapter 4 and 5 showed the results of cross-sectional, in-depth, face-to-face interviews among the following five groups of women: women wishing to conceive a child, women in the first, second, and third trimesters of their first pregnancy, and women in the first trimester of their second pregnancy.

Chapter 4 was focussed on nutrition awareness and associated motivations. In relation to the manifestation of nutrition awareness, three groups of women could be distinguished: 1) women who are going all the way; these women are intensively aware of their nutrition, 2) women who are taking a more flexible way; they are aware of their nutrition, but are not as strict in following nutritional guidelines as the first group, and 3) women who continue the same way as they did before they were pregnant; these women have a no-nonsense mentality and do not experience essential shifts in their nutrition awareness. The extent and fluctuations in nutrition awareness throughout preconception and pregnancy were based on different kind of motivations. These motivations are fed by the interest of the child, the mother and the social environment. Generally, the interest of the mother is the most autonomous type of motivation in favour for the LCP. However, throughout preconception and pregnancy, shifts in the extent of nutrition awareness and types of motivations took place. Women started to realise that good nutrition was in their own interest too, and for woman pregnant for the second time it had become a habit; this also favours the LCP.

Chapter 5 was aimed at exploring nutrition-related information behaviours and underlying motivations. Data revealed that women wanting to conceive,

Summary

generally sought little nutrition information because they were not pregnant yet. Information sources were the Internet, mainly because of its anonymous character, and the social environment for practical information, experiences, social support and modelling. In relation to the manifestation of nutrition-related information-seeking behaviours during first-time pregnancies, three groups of women could be distinguished: (1) women who feel like a mother from the moment they know that they are pregnant, (2) women who feel like a mother later in pregnancy and (3) women who do not feel like a mother yet. Each group had its own specific information-seeking behaviour. Important information sources of the first group were the Internet (anonymous and up to date), books (extended) and midwives (expert) during the first trimester; the 9-month calendar (fun and tips), friends (experienced) in the second trimester; and friends (information on breastfeeding) in the third trimester. Information sources of the second group of women were mainly brochures provided by the midwife and the midwife herself. The third group of women mainly relied on their own common sense. Second-time pregnant women mainly relied on their experience, the midwife and books for specific questions. As we found, nutrition-related information-seeking behaviours mainly were specifically oriented to pregnancy, rather than to general nutrition information.

The combined studies described in chapter 4 and 5 both showed that nutrition was found important because it was one of the few things that women can influence in their daily lives to protect the health of the fetus.

Chapter 6 was aimed to establish a more active measure of nutrition awareness and to examine the nutrition awareness of women before and during pregnancy quantitatively. Nutrition awareness is measured as in: 1) saliency of nutrition, 2) pre-occupation with nutrition, and 3) deliberate control of nutrition behaviour. Data were collected in a cross-sectional study with the aid of face-to-face questionnaires. The sample consisted of five groups of about 100 Dutch nulliparous women each: women not trying to conceive, women trying to conceive, and women in their first, second or third trimester of pregnancy. Our operationalisation of nutrition awareness resulted in a Cronbach's Alpha of .84. The study provided indications in favour of the LCP; pregnant women were

significantly more aware of their nutrition than women who are not trying to conceive. The scores on nutrition awareness do not differ significantly between the three trimester groups of pregnant women. Women who are trying to conceive are not significantly more aware of their nutrition than to women who are not.

In chapter 7, the results of cross-sectional, in-depth, face-to-face interviews with women from 2 till 4 months postpartum and women from 10 till 14 months postpartum were discussed. This study aimed to explore postpartum nutrition awareness and associated motivations for nutrition awareness. In relation to the manifestation of nutrition awareness, four groups of women could be distinguished, women for whom: 1) the increased nutrition awareness acquired during pregnancy becomes a new habit or routine, 2) nutrition is hot or even hotter than during pregnancy, 3) nutrition awareness reverts back to as it was before preconception and pregnancy, and 4) nutrition awareness did not really change as a result of preconception, pregnancy or motherhood. Differences in nutrition awareness are based on different types of motivations, like feelings of responsibilities accompanying pregnancy and motherhood, feelings of a lack of energy, and the wish to regain back weight and shape. Generally, women who are more nutritionally aware as a result of pregnancy or who see motherhood as a new beginning for healthy life practices (in order to set an example for the child) are more highly autonomously motivated than women who are more aware of their nutrition because of breastfeeding practices or those wanting to lose maternal weight.

In chapter 8 we conclude that the LCP-concept provides interesting opportunities for a healthy nutrition promotion directed at women who are starting a family. Moreover, our conceptualisation of awareness in this thesis is fruitful in obtaining a better understanding of behavioural changes in health. In addition, nutrition awareness, nutrition-related information-seeking behaviours and associated motivations are a good basis for distinguishing groups of women in the period around their pregnancy. Finally, the promotion of healthy nutrition behaviour in midwifery practices could be improved by taking into account the concerns with regards to these motivations.

Summary

The chapter ended with some recommendations further research. These include doing a longitudinal study on nutrition awareness, information-seeking behaviours and associated motivations. Awareness on other lifestyle factors, such as physical exercise and stress, and other special or critical transition in life, such as adolescence and moving out of the parents' home, could be included in this longitudinal study as well.

Samenvatting

SAMENVATTING

In de literatuur wordt verondersteld dat er speciale of kritische perioden in het leven zijn die een lange termijn invloed kunnen hebben op de gezondheid en het gezondheidsgedrag in latere perioden van het leven. Dit fenomeen staat ook wel bekend als de 'Life Course Perspective' (LCP). De doelstelling van dit promotieonderzoek is om een bijdrage te leveren aan de ideeën achter de promotie van gezonde voeding gericht op vrouwen in de periode rondom hun zwangerschap, als een dergelijk speciaal en kritisch moment in het leven.

In hoofdstuk 2 wordt het idee achter het LCP uiteengezet. Het hoofdstuk beschrijft de studies over zwangerschap en levensstijltransformaties met betrekking tot het LCP. Hiertoe hebben we het concept voedingsbewustzijn verder uitgediept. Ook hebben we een eerste poging ondernomen dit te herdefiniëren in meer actieve termen. We concludeerden dat het LCP in relatie tot zwangerschap en voedingsgedrag een vrij nieuw domein is. Bewustzijn is meestal gedefinieerd als kennis van iets. Het bezwaar hiervan is dat de link met gedrag problematisch wordt; het hebben van kennis betekent niet dat dit wordt omgezet in gedrag. Om deze reden hebben wij voor een actievere conceptualisatie van bewustzijn gekozen. Het hoofdstuk mondt uit in een theoretisch kader om een beter begrip te krijgen van de LCP in relatie tot voedingsbewustzijn en onderliggende motivaties in de periode rondom de zwangerschap. Met dit kader in gedachte, zijn we met onze empirische studies van start gegaan.

Hoofdstuk 3 beschrijft een kwalitatieve studie naar de synergie tussen mondelinge en schriftelijke communicatie in de Nederlandse verloskundigenpraktijk, als een meer specifieke setting voor gezondheidspromotie gericht op zwangere vrouwen. Hiervoor zijn intake consulten in de verloskundigen praktijk opgenomen, gevolgd door twee semigestructureerde interviews met de vrouwen van wie het intake consult is opgenomen. We zagen dat het intake consult erg plezierig en interactief is. Zo waren de verloskundigen vriendelijk, geruststellend, complimenteus, bevestigend en aanmoedigend. Mede hierdoor bood het consult veel mogelijkheden voor voedingscommunicatie. De verbale en schriftelijke voedingscommunicatie in de verloskundigenpraktijk was echter erg

algemeen. Specifieke, persoonlijk relevante voedingsgerelateerde vragen en motivaties werden nauwelijks aangesneden. Verder werd de schriftelijke voedingscommunicatie aangeboden in een informatiepakket zonder dat dit benut werd of dat er naar gerefereerd werd in de mondelinge voedingscommunicatie. Daarnaast vond de voedingscommunicatie in de verloskundigenpraktijk plaats op een moment dat vrouwen meer geïnteresseerd waren in het horen van de hartslag van hun kindje dan in voedingsinformatie. Zwangere vrouwen vonden het vanwege hun expertise en paramedische rol echter wel prettig om met de verloskundige over voeding te praten. Het hoofdstuk eindigt met een aantal aanbevelingen om optimale synergie tussen beiden vormen van communicatie te bevorderen.

Hoofdstuk 4 en 5 tonen de resultaten van cros-sectionele studie met diepte-interviews onder de volgende vijf groepen vrouwen: vrouwen met een kinderwens, vrouwen in hun eerste, tweede en derde trimester van hun eerste zwangerschap en vrouwen in hun eerste trimester van hun tweede zwangerschap.

Hoofdstuk 4 was gericht op het exploreren van voedingsbewustzijn en onderliggende motivaties. In relatie tot de manifestatie van voedingsbewustzijn, konden er drie groepen vrouwen worden onderscheiden: 1) vrouwen die er helemaal voor gaan; deze vrouwen zijn zeer voedingsbewust, 2) vrouwen die meer flexibel zijn; ze zijn zich bewust van hun voeding, maar zijn minder strikt in het volgen van voedingsrichtlijnen dan de eerste groep, en 3) vrouwen die doorgaan op dezelfde manier als ze deden vóór hun zwangerschap; deze vrouwen hebben een no-nonsense mentaliteit en ervaren geen essentiële veranderingen in hun voedingsbewustzijn. De mate van en fluctuaties in voedingsbewustzijn tijdens de kinderwensperiode en de zwangerschap waren gebaseerd op verschillende motivaties. Hierbij werd rekening gehouden met het belang van het kind, het belang van de moeder en dat van de sociale omgeving. Over het algemeen is het belang van de moeder de meest autonome motivatie en sprekend voor the LCP. Echter, gaandeweg de preconceptie en de zwangerschap, vinden er verschuivingen plaats in de mate van voedingsbewustzijn en de typen motivaties. Vrouwen begonnen zich te realiseren dat goede voeding ook in hun eigen belang

Samenvatting

was, en voor vrouwen die voor de tweede keer zwanger waren, was het een gewoonte geworden; dit spreekt ook voor de LCP.

Hoofdstuk 5 bestaat uit een exploratie van voedingsgerelateerd informatiezoekgedrag en motivaties voor informatiezoekgedrag. De data lieten zien dat vrouwen met een serieuze kinderwens over het algemeen weinig voedingsinformatie zochten omdat ze nog niet zwanger waren. Informatiebronnen waren het Internet (anonimiteit) en de sociale omgeving (rolmodellen). In relatie tot de manifestatie van voedingsgerelateerd informatiezoekgedrag tijdens de eerste zwangerschap, konden er drie groepen vrouwen worden onderscheiden: 1) vrouwen die zich meteen al een moeder voelen vanaf het moment dat ze een kinderwens hebben of weten dat ze zwanger zijn, 2) vrouwen die zich pas later in de zwangerschap als een moeder voelen, en 3) vrouwen die zich nog geen moeder voelen. Elke groep heeft zijn eigen specifieke voedingsgerelateerde zoekgedrag. Belangrijke informatiebronnen van de eerste groep waren het Internet (anoniem en actueel), boeken (uitgebreid) en verloskundigen (expert) tijdens het eerste trimester; de 9 maanden kalender (leuk en tips), vrienden (ervaren) in het tweede trimester; en vrienden (informatie voor na de zwangerschap) in het derde trimester. De tweede groep vrouwen maakte voornamelijk gebruik van brochures van de verloskundige en de verloskundige zelf. De derde groep vrouwen ging voornamelijk af op hun eigen gezonde verstand. Vrouwen die voor de tweede keer zwanger waren steunden op hun eigen ervaring, op de verloskundige en op boeken voor specifieke vragen. Over het algemeen was het voedingsgerelateerde informatiezoekgedrag voornamelijk zwangerschapsspecifiek van aard en minder gericht op meer globale voedingsrichtlijnen.

De gecombineerde studies beschreven in hoofdstuk 4 en 5, lieten zien dat voeding belangrijk werd bevonden omdat het een van de weinige aspecten in het dagelijkse leven is waar vrouwen daadwerkelijk zelf invloed op kunnen uitoefenen.

Hoofdstuk 6 had ten doel een meer actieve maatstaf voor voedingsbewustzijn vast te stellen en het voedingsbewustzijn van vrouwen voor en tijdens hun zwangerschap kwantitatief vast te leggen. Voedingsbewustzijn is gemeten in: 1) het belang van voeding, 2) het denken aan voeding, en 3) het letten

op voeding. De data werden verzameld in een cros-sectionele studie. Met behulp van face-to-face enquêtes werden vijf groepen van 100 vrouwen ondervraagd: vrouwen zonder directe kinderwens, vrouwen die zwanger probeerden te raken en vrouwen in hun eerste, tweede of derde trimester van hun zwangerschap. De operationalisatie van voedingsbewustzijn resulteerde in een Cronbach's Alpha van .84. De studie verschafte indicaties in het voordeel van de LCP; zwangere vrouwen waren significant bewuster van hun voeding dan vrouwen die niet zwanger probeerden te raken. De scores op voedingsbewustzijn tussen de trimestergroepen waren niet significant verschillend van elkaar. Ook waren vrouwen die zwanger probeerden te raken niet significant bewuster van hun voeding dan vrouwen die niet probeerden zwanger te raken.

In hoofdstuk 7 werden de resultaten van een cros-sectionele studie met diepte interviews onder vrouwen van 2 tot 4 maanden en van 10 tot 14 maanden na de bevalling besproken. Het doel van deze studie was om het voedingsbewustzijn en onderliggende motivaties na de bevalling te exploreren. In relatie tot de manifestatie van voedingsbewustzijn, waren er vier groepen vrouwen te onderscheiden, vrouwen van wie het voedingsbewustzijn: 1) dat verhoogd is tijdens de zwangerschap heeft geleid tot een nieuwe routine of gewoonte, 2) 'hot' blijft of zelfs nog 'hotter' is geworden, 3) terugvalt naar het niveau van voor de zwangerschap, en 4) niet wezenlijk is veranderd gedurende de zwangerschap of het moederschap. De mate van en fluctuaties in voedingsbewustzijn na de bevalling waren gebaseerd op verschillende motivaties, bijvoorbeeld: het verantwoordelijkheidsgevoel dat gepaard gaat met de zwangerschap en het moederschap, het gevoel van een tekort aan energie, en de wens om het oude gewicht en lichaamscontouren terug te krijgen. Over het algemeen zijn vrouwen voedingsbewuster door de zwangerschap en vrouwen die het moederschap als een nieuw begin zien (om een voorbeeld te zijn voor het kind) autonomer gemotiveerd dan vrouwen die voedingsbewuster zijn vanwege borstvoedingspraktijken of die zwangerschapsgewicht willen kwijtraken.

In hoofdstuk 8 concludeerden we dat het LCP interessante mogelijkheden biedt voor het promoten van gezonde voeding gericht op vrouwen die een gezin

Samenvatting

aan het starten zijn. Verder, concludeerden wij dat de conceptualisatie van bewustzijn in dit proefschrift vruchtbaar is om een beter begrip te krijgen van gezondheidsgerelateerde gedragsveranderingen. Daarnaast vormen voedingsbewustzijn, voedingsgerelateerd informatiezoekgedrag en onderliggende motivaties een goede basis voor het onderscheiden van groepen vrouwen in de periode in en rondom hun zwangerschap. Tot slot concludeerden wij dat gezondheidsbevorderende promotieactiviteiten in de verloskundigenpraktijk verbeterd kan worden door rekening te houden met deze onderliggende motivaties.

Het hoofdstuk eindigde met een aantal aanbevelingen voor vervolgonderzoek, zoals een longitudinale vervolgstudie naar voedingsbewustzijn, voedingsgerelateerd informatiezoekgedrag en onderliggende motivaties in de periode rondom de zwangerschap en eventuele andere speciale of kritische momenten in het leven, bijvoorbeeld tijdens de adolescentie, bij het verlaten van het ouderlijke huis of bij het samenwonen. In dit kader, zou het ook interessant zijn onderzoek te doen naar andere levensstijlfactoren, zoals fysieke beweging of stress.

Dankwoord

Al vrij snel tijdens mijn studie wist ik dat ik beslist een promotieonderzoek wilde doen. Het leek me een heel bijzondere en leerzame ervaring. Achteraf kan ik oprecht zeggen dat mijn promotieplek aan Wageningen Universiteit, dat ook zeker is geweest. Mede door en tijdens mijn promotieonderzoek heb ik heel wat van die speciale en kritische 'levenstransities' meegemaakt: het verlaten van het ouderlijke huis, verhuizen naar Wageningen, samen wonen....'Life Course Perspective' alom! Ik ben dan ook dankbaar dat ik het mocht doen, zeker in zo'n mooie omgeving en bij zo'n fijne club met mensen.

Gert Jan, luisterende naar je verhalen was je altijd wel met honderd dingen tegelijk bezig. Ondanks dat, was je er altijd als er iets geregeld moest worden. Inhoudelijk verplaatste jij je in de ogen van de reviewer. Nuttig en praktisch! Cees, je enthousiasme, optimisme en manier van vragen stellen werkte altijd erg inspirerend en verhelderend. Je bent zeker een voorbeeld voor me. Maria, ik keek altijd uit naar onze gesprekken. Deze waren heel structureel, grondig en plezierig. Ik heb veel van je geleerd, en vind het fijn dat je me betrok bij de 'Communication and Health Promotion-colleges'. Loes & Hilde, jammer dat jullie niet eerder bij het onderzoek betrokken waren. Het was een plezier om met jullie samen te werken. Loes, ik ben je erg dankbaar voor al die uurtjes die je vol enthousiasme samen met mij achter de computer hebt doorgebracht.

Nederlandse Zuivelorganisatie, ontzettend bedankt voor jullie financiële support, "fingerspitzengefühl" en tal van interessante workshops en researchdagen GFK/Lianne, ik weet wat voor een opgave het is al die respondenten bij elkaar te krijgen. Bedankt voor jullie inzet. Also, Catherine & Rhiannon, thanks for your editing work!

Naast een goed onderzoeksteam en financiering, zijn ook de respondenten belangrijk. De mensen waar het allemaal om draait. Ik heb enorm genoten van de interviews; de contacten met het veld: "de kinderswangers", "de zwangeren", de moeders en de verloskundigen, zwangerschapsclubjes en consultatiebureaus. Zonder jullie was dit onderzoek echt niet mogelijk geweest.

Ook wil ik mijn collega's bedanken. Ik voelde me altijd erg op mijn plek bij COM. In mijn beleving heerste er een bijzonder prettige sfeer. Hierbij denk ik

Dankwoord

bijvoorbeeld terug aan de 'poezen-, moeder- en granny-verhalen & foto's 😊', de evaluaties van politici en 'zekere sociaal-wetenschappelijk verantwoorde televisieprogramma's', en mijn gesprekken met kamergenoten (Sonja, Liesje, Karen & Joyce) & mede-promovendi.

Lieve vrienden, thanks voor al onze etentjes, wandel & skeelertochten, fitnessavonturen en gesprekken, ook over die van onze onderzoeken of die van de dochters 😊. Wageningen UR...Lang leve de Bongerd!

Pap, mam, Ing, Ruud, Jannie, Sjoerd elke keer als ik thuis kwam, vroegen jullie "en wanneer ben je klaar?". Nou, hier is het dan, het boekje. Een heerlijk gevoel. Bedankt voor jullie liefde en support. André, we hebben heel wat afgewandeld in en rondom Wageningen; heftig kletsend/zwijgend en genietend van de natuur. Veel waardevolle ideeën zijn hier ontstaan. Ik vind het mooi dat jij de omslag van dit boekje hebt ontworpen. Na al die jaren dat we samen zijn, wonen we nu dan toch maar mooi met onze "tjiggers" in een echt huis met een trap (wel twee!) en een tuin enzo ;-)!

Ellen Szwajcer, Enschede, april 2007

LIST OF PUBLICATIONS

International peer-reviewed articles

- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition-related information-seeking behaviours before and throughout the pregnancy: implications for practice. *Eur J Clin Nutr* 2005; 59: S57-65
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition Awareness and Pregnancy: Implications for the Life Course Perspective. *Eur J Obstet, Gynecol Reprod Biol*. Accepted 2006; Dec 16.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Written nutrition communication in Midwifery practice: what purpose does it serve? (*Submitted*)
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Pregnancy and nutrition: the life course perspective in relation to the promotion of healthy nutrition. Submitted for publication.
- Szwajcer EM, Hiddink GJ, Koelen MA, Maas L, Tobi H, van Woerkum CMJ. Nutrition awareness before and throughout pregnancy: a survey. Submitted for publication.
- Szwajcer EM, Hiddink GJ, Koelen MA, Maas L, Tobi H, van Woerkum CMJ. Nutrition-related information-seeking behaviours before and throughout pregnancy: evidence for the life course perspective. Submitted for publication.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Postpartum nutrition awareness: the importance of the life course perspective for the promotion of healthy nutrition. (*Submitted*)
- Van Dillen SME, Szwajcer EM, Van Binsbergen JJ, Hiddink GJ, van Woerkum CMJ. Experts and non-experts in health care settings: an area of tension? (*Submitted*)

Professional Journal

- Blom J, Szwajcer E. Zwangere vrouwen op zoek Naar voedingsinformatie. *VoedingsMagazine* 2005; 5:19.

List of publications

Abstracts & presentations

- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Exploring nutrition awareness of Dutch primiparous mothers: Results of an in-depth qualitative study. *Masterclass Nutrition Communication: Opportunities and Challenges*, Wageningen, The Netherlands, October 3-5, 2005.
- Szwajcer EM, Hiddink GJ, Koelen MA, de Graaf K, van Woerkum CMJ. Nutrition awareness and nutrition-related information-seeking behaviours before and during pregnancy: an in-depth qualitative study. *Conference British Feeding and Drinking Group/Werkgroep Voedingsgewoonten (BFDG/WEVO)*, April, 2005.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition awareness and nutrition-related information-seeking behaviours before and throughout pregnancy. *Fourth Heelsum International Workshop 'Empowering family doctors and patients in nutrition communication'*, Heelsum, The Netherlands, December 13-15, 2004,12.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition communication in Dutch midwifery practices. *International Conference on Communication in Health Care (EACH)*, Brugge, Belgium, September 14-17, 2004, P10.18.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Midwives as intermediaries for nutrition communication with Dutch first time pregnant women and the practical implications for health organisations. *Mansholt PhD day*, Wageningen. Juni 6, 2004.
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CMJ. Nutrition-related information-seeking behaviours before and throughout pregnancy. *Etmaal van de Communicatiewetenschap, The Netherlands School of Communications Research (NESCOR)*, Enschede, The Netherlands, November 18-19, 2004, 62.

CURRICULUM VITAE

Ellen Miriam Szwajcer was born in Enschede, on February 7th, 1979. In 1998, she started her study Applied Communication Science at the University of Twente. She followed various courses (health communication, marketing communication, new media, education journalism and public relations), and specialized in health communication at the Medical Spectrum Twente.

After her graduation (2002), Ellen started her PhD-study called *Pregnancy: time for a new beginning!* at the Communication Science Section at Wageningen University. She joined the education program of the Mansholt Graduate School of Social Sciences, attended advanced courses of the Graduate School for Food Technology, Agrobiotechnology, Nutrition and Health Sciences (VLAG) and The Netherlands school of Communications Research (NESCOR) and presented her work at several international conferences. In 2004, she participated in the European Training Consortium about Public Health and Health Promotion (ETC-PHHP) in Gagliari, Italy. Furthermore, she participated in the Fourth Heelsum International workshop. During her PhD, Ellen had an appointment in the PR-committee of the Communication Science Department at Wageningen University and was actively involved in the MSC-course Health Communication and Promotion of the same Department.

COMPLETED TRAINING AND SUPERVISION PLAN

Name of course/ presentations	Department/ Institute	Year	Credits ²
Research methodology; designing and conducting a Ph.D. research project	MSG	2002	2
Written English	CENTA	2003	1
Career orientation	MSG	2005	1,5
Mansholt introduction course	MSG	2002	1
Mansholt multidisciplinary seminar	MSG	2004	1
Presentation European Association for Communication in Health Care (EACH)	EACH (Belgium)	2004	1
Presentation Etmaal van de Communicatiewetenschap	NESCoR	2004	1
Summer course health promotion	ETC-PHHP ³ (Italy)	2003	4
Course discourse analysis constructionist approaches: theoretical background	Aalborg University (Denmark)	2004	1
Course communication strategies in everyday life	COM WUR	2003	2
Presentation course food perception and food preference	VLAG	2003	0.7
Article Workshop (expert & non expert)	COM WUR	2004	2
Where science meet society			
Content analysis	NESCoR	2004	2
Presentation International workshop	WUR	2004	2
Presentation Masterclass nutrition communication: challenges and opportunities Wageningen	VLAG	2005	0.7
SPSS-Training ⁴	SPSS BV	2006	2
TOTAL AMOUNT OF CREDITS			24 ,9
Teaching responsibilities			
CIS 30306 Communication and Health Promotion		2002 till 2006	
CIS 35306 Communication Planning and Research		2003	
CIS 50303 Capita Selecta, Voedings- en Gezondheidscommunicatie		2004 till 2006	
Supervision Thesis of three students		2004 till 2006	
Other Activities			
Appointment in PR commission Communication Science, Wageningen University		2004 till 2005	

² 1 credit point stands for 40 hours

³ ETC-PHHP stands for European Training Consortium in Public Health and Health Promotion.

⁴ Attended courses: Opstartdag Statistiek, Analytische Mogelijkheden, Vervolg Analytische Mogelijkheden, Variantie-Analyse met SPSS, Cluster-, Factor- en Discriminant Analyse, Regressie-Analyse.

This research was carried out at the Communication Management Group of Wageningen University and financially supported by the Dutch Dairy Association (NZO), Zoetermeer, The Netherlands.

Cover design: André Oosterkamp

Photo on cover: Luca Magnani (photo of Leoni Bouwmans, pregnant of Nilu Magnani) & André Oosterkamp (photo of sunrise at sea)

Printed by: Gildeprint drukkerijen, Enschede