# Improving postpartum diet quality

## experiences and needs for women empowerment

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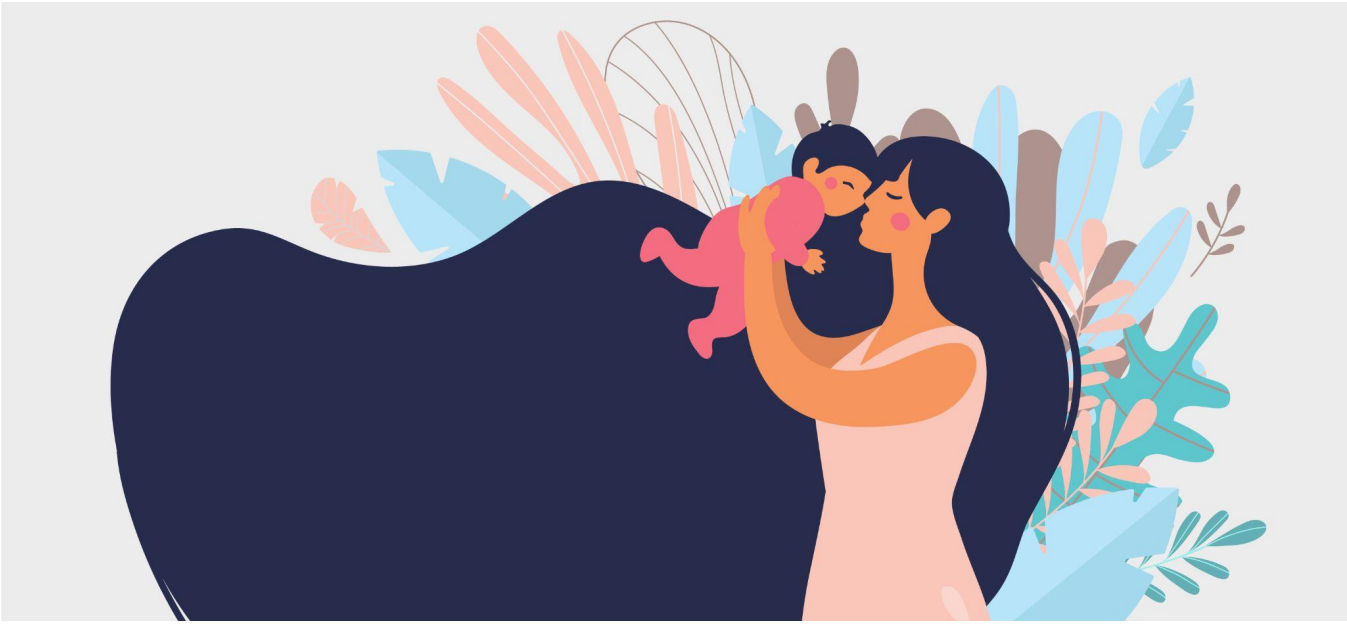

Master Thesis HSO
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Wageningen University & Research
01-04-2022

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## experiences and needs for women empowerment

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# Abstract

**Introduction**: The postpartum period is a significant time in the lives of both mother and infant, and improving nutritional intake can have positive and lasting effects on their health and well-being. However, several barriers may prohibit women from consuming a healthy diet. There is a lack of literature on the current experiences and needs of (dutch) women with regards to nutrition and nutritional support during the postpartum period. The aim of this study was to discover opportunities to empower postpartum women to improve their diet by understanding their current experiences and needs with regards to nutrition and nutritional support during this time.

**Theoretical framework:** To map the factors that influence dietary intake in postpartum women, the COM-B model by West & Michie (2020) was used. In order to explore empowerment, the definition of Porela & Santarelli (2003) was used.

**Methods:** This study had a qualitative, explorative approach. In total, 15 participants were interviewed through in-depth interviews. Interviews included the use of mindmaps, empowering women to participate in the problem definition and solutions. Data analysis was carried out through inductive thematic analysis using Atlas.ti.

**Results:** Women experienced several positive and negative factors in the postpartum period. Positive factors include a quick recovery and experiencing a bond with the baby. Negative factors include recovery from birth, new and different priorities, and breastfeeding difficulties. Barriers and facilitators towards the consumption of a healthy postpartum diet were identified. Barriers women mentioned were having different priorities, the cost of healthy food, cravings, family preferences, and a lack of knowledge. Facilitators were improving body image and health, passing on the right nutrients through the breastmilk, being a role model for their child later in life, conscious eating, and experimenting with cooking. Women who received nutritional support from their social environment and/or health care professionals found this valuable and important, and a need for more nutritional support was articulated. Finally, it was found that women were positive towards the development of a nutritional app in the postpartum period.

**Conclusions:** The postpartum period is complex and challenging for new mothers. Several facilitators and barriers that influence diet quality during the postpartum period influence their diet have been identified and placed within the components of the COM-B model. Empowerment was found as an important factor that can emerge through support and eHealth. Empowering women through support and eHealth can influence all components of the COM-B model. Further research should investigate the role of social support in the postpartum period, and on experiences and needs for empowerment of low SES postpartum women. Interventions designed to improve the postpartum diet should include key actors in the social environment of postpartum women. Additionally, maternity nurse guidelines should include informing postpartum women on nutrition and its benefits.

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# 1. Introduction

In an effort to improve dietary intake among pregnant women and to improve maternal and neonatal health outcomes, the project “Early start - maternal and child nutrition” was set up. This project is part of the Regio Deal Foodvalley part 2: “Nutrition and Health, from early start to the old day”. Within the project, an empowerment intervention to improve the diet quality of pregnant women is developed, implemented and evaluated. This strategy will be implemented and evaluated together with relevant stakeholders, such as midwives, dieticians, pregnant women and their partners. Additionally, the strategy will be further developed and expanded towards ‘bridging antenatal and postnatal care regarding dietary support’ (Wageningen University & Research, n.d.). This study is a starting point to understanding how the proposed strategy could be developed and implemented for postpartum women by unravelling the current experiences and needs for empowerment of postpartum women.

## 1.1 The postpartum period

The postpartum (or postnatal) period is often defined as the first six weeks following childbirth (WHO, n.d.; KNOV, 2018). However, it has become more evident that the postpartum period and complications associated with this stage in life persist considerably longer (Spelke & Werner, 2018; Gjerdingen, Froberg, Chaloner & McGovern, 1993; Garcia & Yim, 2017). An early study by Gjerdingen et al. (1993) showed that by six months postpartum, a significant amount of women still reported not feeling physically recovered from childbirth and indicated having problems with fatigue, lack of sleep, difficulty losing weight, increased responsibilities, and emotional lability. Moreover, Garcia & Yim (2017) state that significant physiological and psychological changes to a woman can last up to one year after childbirth, including changes in their social status and decision-making power. During this time, women encounter significant challenges as they adapt to hormonal and physical changes, recover from pregnancy and delivery, undergo shifting family responsibilities and experience sleep deprivation, while simultaneously caring for and nourishing a newborn (WHO, n.d.; Romano, Cacciatore, Giordano & La Rosa, 2010; Spelke & Wener, 2018). Additionally, maternal mortality and morbidity has shifted in recent years from maternal haemorrhage and infection (typically occurring directly after delivery) towards death and morbidity due to cardiovascular disease within 1 year after childbirth (Spelke & Werner, 2018).

Because of the continuing challenges in the year after birth, some studies define the postpartum period as one year after child birth (Spelke & Werner, 2018; Garcia & Yim, 2017). In order to take all aspects of the postpartum period and challenges women face during this time into account, the postpartum period in this study will likewise be defined as one year following childbirth.

## 1.2 Nutrition during the postpartum period

One of the key components to adequate postnatal care for both mother and infant is the promotion of a healthy lifestyle with good nutrition (WHO, n.d.). This is due to several reasons: 1) it promotes the health of the mother and child by ensuring good quality breast milk and preventing the depletion of maternal nutritional stores, 2) it helps prevent and combat postpartum weight retention in the mother,

and 3) it may work as a protective factor against postpartum depression.

*Promoting quality of milk and maternal nutritional stores*

If a woman is breastfeeding her infant, her nutritional needs are raised (Segura, Ansótegui, Díaz-Gómez, 2015; Aubuchon-Endsley, Kennedy, Gilchrist, Thomas & Grant, 2014). The advice is for breastfeeding women to receive an additional 330 to 400 kilocalories per day compared with the amount they consumed before pregnancy and to consume a mixed diet (Seguraet al., 2015; CDC, 2021a). When the mother does not consume the necessary nutrients, this can negatively impact her milk supply or her nutrient reserves. For some nutrients (e.g. vitamin A, B-12, B-6, D, iodine), the secretion into the breast milk is reduced which can negatively affect the health and development of the infant. For other nutrients (e.g. folate, calcium, iron, zinc), the nutrients are extracted from her nutrient reserves, which can lead to a poor nutritional status in the mother and put her health and well-being at risk (Allen, 2012; Segura et al., 2015; Aubuchon-Endsley et al., 2014).

*Preventing and combating postpartum weight retention*

Additionally, good nutrition in the postpartum period can help optimise weight and combat weight retention (Murray-Davis et al., 2019). Postpartum weight retention after excess gestational weight gain is associated with an increased risk of long-term overweight and obesity in mothers, which can lead to high blood pressure, type 2 diabetes, heart disease, and overall low quality of life (CDC, 2021b). Therefore, the transitional postpartum period could be a critical time for weight management and weight loss interventions for women's health and the health of future pregnancies (Murray-Davis et al., 2019).

*Protection against postpartum depression*

Finally, some evidence has been found that a healthy nutritional diet in the postpartum period is linked to a reduction of postpartum depression symptoms (Sparling, Henschke, Nesbitt & Gabrysch, 2017; Opie, Uldrich & Ball, 2020). Although further longitudinal and intervention research is necessary to further investigate and confirm the link between a healthy diet and postpartum depression (symptoms), current evidence suggests that it may work as a protective factor. The beneficial effects of these diets are likely due to the antioxidant and anti-inflammatory properties that come from fruit, vegetables and nuts. Additionally, long chain omega-3 fatty acids on the brain and the presence of legumes and grain foods, which are rich in vitamin B and crucial for proper neuronal function (Opie et al., 2020).

## 1.3 Opportunities and challenges

It is important to realise the potential the postpartum period has when it comes to developing healthy eating habits. Several studies have shown that the postpartum period can be an opportune time to provide resources and motivation for dietary changes because women are connected to health and nutrition services at that time (Falciglia, Piazza, Ritcher, Reinerman & Lee, 2014). Additionally, it can be an ideal moment for new mothers to adopt healthy behaviours that will later pose as healthy role modelling for their child (Falciglia et al., 2014). Because of this, the Academy of Nutrition and Dietetics has recommended that women of reproductive age receive counselling and support on the

importance of healthy eating patterns, including the postpartum period. However, it is also important to note that the opportunities to motivate women to eat healthy are usually weakened by the new and unique challenges of the postpartum period which include the demands of a new infant, stress, lack of sleep and time, breastfeeding concerns and the pressure to go back to work (Falciglia et al., 2014).

*Low SES*

Further challenges that may form as a barrier when it comes to consuming a healthy postpartum diet may arise in the case of women with a low socioeconomic status (SES). SES is positively associated with diet quality. Particularly, a lower SES is linked to a relatively lower intake of whole grains, lean meats, fish, low-fat dairy products, and fresh vegetables and fruit with a greater intake of refined grains and added fats (Aubuchon-Endsley et al., 2014). The positive association between low SES and diet quality also extends to pregnant women and women in the postpartum period (Aubuchon-Endsley et al., 2014). People with a low SES can face a range of challenges that can hinder efforts to adopt and/or maintain a healthy diet (Super & Wagemakers, 2021;). These challenges can include a lack of money, knowledge, and skills (Super & Wagemakers, 2021; Taylor, Poston, Jones & Kraft, 2006; Pearce, Blakely, Witten & Bartie, 2007). People living in poor, deprived areas also have more environmental barriers to overcome when making healthy food choices, such as a lower accessibility and availability of healthy foods (Taylor et al., 2006; Pearce et al., 2007; Bessems, Linssen, Lomme & Assema, 2020). Additionally, individuals with a low SES can be less motivated to take on a healthy lifestyle in comparison to individuals with a higher SES, as they are hindered by more urgent day-to-day struggles, such as relationship problems, emotional stress and financial concerns.

## 1.4 Current interventions and guidelines

The importance of nutrition whilst breastfeeding is recognized and mentioned on the Voedingscentrum website (a nutrition website from the Dutch government that provides scientific and independent information about healthy, safe and more sustainable food choices) (Voedingscentrum, n.d.). However, despite its importance, informing pregnant or postpartum women on postpartum nutrition and its benefits is currently not included in the guidelines for postpartum care by the Royal Dutch Organization of Midwives (KNOV) (KNOV, 2018). Moreover, there are no current interventions in the Netherlands that have been approved and widely implemented by the Dutch government that focus on improving maternal nutrition in the postpartum period (loketgezondleven, n.d.). Nevertheless, several interventions that target postpartum women and diet behaviour have been developed and investigated, such as nutrition education and eHealth applications.

*Nutrition education*

When looking at nutrition education during the postpartum period, findings and conclusions vary. A study by Falciglia et al. (2014) found that implementing health and nutrition education during the postpartum period can influence vegetable intake, and that women are receptive to nutrition education at this time. However, a large intervention study conducted by Taveras et al. (2011) investigated the effects of a program of brief focused negotiation by paediatricians, individual

coaching by health educators, and group parenting workshops. The study of Taveras et al. (2011) showed positive effects on infant feeding, sleep and media exposure, but no effects on the mothers' own health-related behaviours. Vincze et al. (2019) conducted a large systematic review that looked at several interventions including a nutrition component. Here it was found that the pregnancy and postpartum period can be a unique opportunity to engage women in interventions and help optimise lifestyle behaviours for weight management, but that the optimal approach remains unclear.

*eHealth technologies*

The emergence and use of eHealth technologies has increased over the last years in a variety of health interventions in different fields (Sherifali et al., 2017). Such technologies may have advantages that can empower women and encourage behaviours during the postpartum period, such as their widespread availability (Sherifali et al., 2017). A systematic review by Lim, Tan, Madden & Hill (2019) investigated the perspectives of postpartum women towards digital health interventions regarding lifestyle management. Lim et al. (2019) found that digital health interventions are highly acceptable among postpartum women, especially towards behaviour change strategies that are delivered through goal-setting and self-monitoring. However, personal barriers were such as lack of motivation or childcare priorities (Lim et al., 2019). Several systematic reviews and pilot studies show promising results such as reduction in BMI and frequent use of the apps. However, these results are non-significant, leading to inconclusive results (Sherifali et al., 2017; Radzi, Jenatabadi & Samsudin, 2020).

## 1.5 Objective and research question

All in all, the postpartum period is a significant time in the lives of both mother and infant, and improving nutritional intake can have positive and lasting effects on their health and well-being (WHO, n.d.; Spelke & Werner, 2018). Research shows that the postpartum period can pose as a unique opportunity to engage in behaviour change, however, several challenges that are unique to the postpartum period can form as barriers to achieving a healthy dietary intake (Falciglia et al., 2014). Moreover, postpartum women with a low SES can face more challenges that are unique to their situation (Wagemakers & Super, 2021; Taylor et al., 2006; Pearce et al., 2007).

Despite its importance, guidelines on postpartum nutrition are not included in the current guidelines for postpartum care in the Netherlands, nor are there any current interventions that are implemented that target this group (KNOV, 2018; loketgezondleven, n.d.). Several studies that target postpartum women have shown that nutrition interventions such as nutrition education and the use of eHealth can be promising during the postpartum period, but that there is a lack of information on the optimal approach (Vincze et al., 2019; Sherifali et al., 2017; Radzi et al., 2020). Additionally, there is a lack of literature on the current experiences and needs of women with regards to nutrition and nutritional support during the postpartum period. Thus, the aim of the current study is to discover opportunities to empower postpartum women to improve their diet by understanding their current experiences and needs with regards to nutrition and nutritional support during this time. In order to study this, the following research question is defined: *"What are the experiences and needs for empowerment of postpartum women to improve their diet quality?"*.

The outcomes of this study are of social relevance, as empowering postpartum women to improve their diet quality can have a significant and lasting impact on their health and the health of their children. Besides, this study is of scientific relevance, as it will lead to an evidence based understanding of the current experiences and needs of women with regards to nutrition and nutritional support during the postpartum period. This can be used to further develop and implement nutrition interventions aimed at this group, and it will form a crucial starting point on which practical and future recommendations can be made for future research and professionals in the field.

# 2. Theoretical framework

In this section, the theory of empowerment and the COM-B model will be provided and elaborated on, and it will be explained why and how these concepts will be used to form the base of the current research; investigating the experiences and needs of postpartum women with regards to improving diet quality.

## 2.1 Empowerment

The aim of the current study is to understand how postpartum women can be empowered to improve their diet quality. Supporting women's empowerment in the postpartum period can be an opportunity to create long-lasting benefits for the mother and her infant (Garcia & Yim, 2017). Additionally, creating a better understanding of situations where greater empowerment is linked to improved health outcomes can assist policymakers in planning and prioritising their investments (Prata, Tavrow & Upadhyay, 2017).

Empowerment has been defined in many different ways. This study follows the definition by Porela & Santarelli (2003), who aimed to contribute to the empowerment of women, families and communities to improve maternal and newborn health. Here, empowerment is defined as "*an ongoing process of enabling individuals and groups to improve capacities, to critically analyse situations and to take actions to improve those situations"*. Empowerment is a multi-level construct, consisting of individual, community and organisational domains (Koelen & Lindström, 2005; Cyril, Smith & Renzaho, 2016; Prata, Tavrow & Upadhyay, 2017). In order to achieve health program outcomes, taking all three domains of empowerment into account is crucial (Cyril et al., 2016). At an individual level, this entails that efforts should be made to not only increase resources such as knowledge, but also increase factors that enable the use of resources such as cognitive capacities, health competencies and the capacity and confidence to make healthy lifestyle choices (Porela & Santarelli, 2003). At a community level, it entails that efforts should be aimed at applying skills and resources collectively in order to meet the collective needs. This includes structural changes to the environment to improve access to social, economic and political resources (Porela & Santarelli, 2003).

At the core of empowerment is the idea that health professionals use a bottom-up approach, meaning that the perspectives of the women that are defined by themselves form as a starting point for health professionals to help and support the women, and to guide them towards empowerment (Super & Wagemakers, 2021). Here, it is crucial to involve the research population in defining the problem or issue, as well as actively involving them in finding solutions to these problems and discussing opportunities to tackle them. This study thus aims to obtain insights into experiences that are defined by the women themselves, as this is a crucial first step in empowering women to improve their postpartum diet.

## 2.2 COM-B model

The COM-B model is a widely used model that was developed by combining the knowledge and ideas from 19 different behaviour-change frameworks, making it an evidence-based approach (Michie et al., 2011). The COM-B model takes into account which conditions need to be in place for a specified behaviour to be achieved. By taking internal (individual) conditions, as well their social and physical environment into account, the model addresses all aspects of empowerment (Michie et al., 2011). Additionally, the model was developed to be inclusive and suitable for a wide variety of behaviours.

The COM-B model identifies three factors that need to be present in order for behaviour change to occur: capability, opportunity, and motivation (Michie et al., 2011; West & Michie, 2020). Over time, these factors interact and form a dynamic system in which positive and negative feedback loops are created, ultimately leading to or hindering favourable behaviour. By implementing this model, it is possible to analyse which (combination of) components should be addressed in order to promote the desired behaviour change. In the current study, it will be used to investigate which components (or combination of components) should be addressed in order to empower postpartum women to improve their diet. The full COM-B model, adapted from West & Michie (2020) is shown in figure 1.

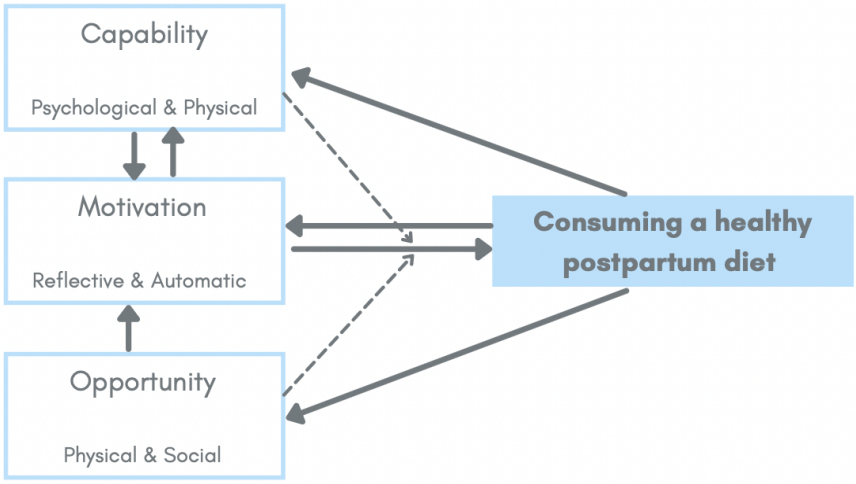


*Figure 1. The COM-B model, adapted from West & Michie (2020)*

Motivation consists of both reflective motivation (e.g. evaluations and plans) and automatic motivation (e.g. emotional reactions and impulses that arise from associative learning and innate dispositions) (Michie et al., 2011). In the case of consuming a healthy diet during the postpartum period, women may feel more motivated to improve their health, lift their mood, and "get their body back" (Vincze et al., 2017; Ayyala et al., 2020). On the other hand, women may also experience difficulties in terms of automatic motivation, such as putting the needs of their family first (Vincze et al., 2017).

The second component is capability, which consists of both physical and psychological capability (Michie et al., 2011). Physical capability is defined as the capacity to engage in essential physical processes through the mastery of physical skills and strengths (Michie et al., 2011). Psychological capability means being able to interact in essential thought processes, and is associated with knowledge and psychological skills to enter into the necessary mental processes (Michie et al., 2011). For example, in the case of dietary behaviours of postpartum women, having the skills to plan, shop for, prepare or cook healthy foods to cook a healthy meal, or the importance of a healthy diet during the postpartum period are crucial in order to consume a healthy diet (Vinsze et al., 2017). At the same time, fatigue from a lack of sleep during the postpartum period has been mentioned as a barrier to dietary changes, as there was a lack of energy to cook a healthy meal (Ayyala et al., 2020).

Finally, the component opportunity consists of both physical and social opportunity. Physical opportunity is the opportunity given by the physical or organisational environment, making engaging in the desired behaviour possible. Examples of physical opportunity are money, time, and the physical environment (Michie et al., 2011). Social opportunity is defined as the cultural environment and can influence the way an individual thinks about certain things (e.g. social cues and norms).

*Interaction of the components*

Motivation is at the core of this model, and directly influences the desired behaviour (Michie et al., 2011). Simultaneously, engaging in the desired behaviour can create motivation to enact it again (positive feedback loop). Capability and opportunity both directly influence one's motivation, but do not directly influence behaviour. With this, The COM-B model by West & Michie (2020) differs from the COM-B model described by Michie et al. (2011). This study makes use of the new, revised version of the COM-B model. In the COM-B model, capability and opportunity form as ‘logic gates’ and influence the relationship between motivation and behaviour. This means that both of the ‘gates’ (capability and opportunity) need to be present and open for motivation to generate the intended behaviour (West & Michie, 2020). For example, a postpartum woman may feel motivated to become healthier, but she will need money (opportunity) and knowledge (capability) in order for her motivation to generate healthy eating behaviours.

*Combining empowerment and the COM-B model*

In order to understand the needs of postpartum women to improve their dietary quality, the COM-B model will be used. This model takes the different domains of empowerment - individual, community, and organisational - into account, as these domains fit into the different concepts of the COM-B model; capability, opportunity, and motivation.

# 3. Methods

The study conducted is part of the "Early start - maternal and child nutrition" project, and its aim is to improve diet quality of (low SES) postpartum women. To achieve this goal, it should first be understood what the current experiences of postpartum women are regarding nutrition and nutritional support in the postpartum period and how they can be empowered to make healthy diet choices. Thus, this study aimed to answer the question: *"What are the experiences and needs for empowerment of postpartum women to improve their diet quality?"*. The study aimed to gain insights into the experiences of women by using interview techniques, such as in-depth interviewing and mind mapping, that placed the perspectives and stories of the women at the centre.

## 3.1 Study design

The study had a qualitative design which helped the researcher gain insights into the current experiences and needs for empowerment of postpartum women, by making use of their own stories, knowledge, and perspectives on different topics asked. As the experiences and needs for empowerment of postpartum women are not a well researched topic, an explorative approach was taken in order to create a broad understanding of the subject and acquire new insights into the experiences and needs of postpartum women.

## 3.2 Participants and procedure

The sample included in this study consisted of 15 women in the postpartum period (up to one year after child birth). The participants were aged 25-38 years and the mean age was 31 years. A complete overview of the participant characteristics can be found in table 1. In order to reach postpartum women, the personal network and social media channels of the researcher were used. A flyer that included an explanation of the research and contact details of the researcher was posted on Facebook and LinkedIn.

Table 1. Characteristics of participants

| Participant # | # children | Months after delivery | Education* | Occupation | Age | Location | Partner | SES** |
|---|---|---|---|---|---|---|---|---|
| Participant 1 | 2 | 12 | HBO | Family therapist | 34 | Arnhem | Yes | High |
| Participant 2 | 1 | 9 | HBO | Nursing teacher | 27 | Arnhem | Yes | High |
| Participant 3 | 1 | 12 | HBO | Education-consultant hair brand | 36 | Arnhem | Yes | High |
| Participant 4 | 1 | 8 | HBO | Case and complaint handler health insurances | 29 | Meppel | Yes | High |
| Participant 5 | 1 | 1 | MBO 2 | Cleaner | 26 | Schijndel | Yes | Low |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Participant 6 | 2 | 7 | MBO 4 | Airbnb owner/owner nail studio | 35 | Doesburg | Yes | High |
| Participant 7 | 3 | 5 | WO | Self-employed project leader social projects | 38 | Arnhem | Yes | High |
| Participant 8 | 1 | 3 | HBO | Primary school teacher | 31 | Velp | Yes | High |
| Participant 9 | 2 | 3 | HBO | Accountant IT company | 29 | Dordrecht | Yes | High |
| Participant 10 | 1 | 7 | HBO | Legal secretary | 32 | Mierlo | Yes | High |
| Participant 11 | 2 | 5 | MBO 4 | Stewardess | 33 | Heerhugowaard | Yes | Mid |
| Participant 12 | 3 | 3 | HBO | Primary school teacher | 29 | Arnhem | Yes | High |
| Participant 13 | 1 | 12 | WO | Teacher Social Work Hogeschool Utrecht | 33 | Arnhem | Yes | High |
| Participant 14 | 2 | 4 | MBO 4 | Currently unemployed (choice) | 30 | Arnhem | Yes | High |
| Participant 15 | 1 | 7 | MBO | Reception employee agricultural park | 25 | Groningen | Yes | Mid |

*MBO 2 = basic vocational training, MBO 4 = middle management and specialist training, HBO = higher vocational education, WO = university level education.

** SES = socioeconomic status, determined by occupation and highest attained education (CBS, n.d.; APA, 2007).

It was aimed to include women of all SES groups to provide a broader perspective of experiences and needs for empowerment which could increase the external validity and generalisability of the results (Teuscher et al., 2018). As women with a low SES are especially vulnerable and of importance when it comes to empowerment during the postpartum period, significant efforts were made to recruit a substantial proportion of low SES postpartum women. However, adults with a low SES are considered a "hard to reach" population, with response rates in scientific studies often lower than response rates from those with a higher SES (Stuber, Middel, Mackenbach, Beulens & Lakerveld, 2020). This can be due to several barriers, such as psychological barriers (mistrust or scepticism), practical barriers (low literacy or having other priorities), and reasons to decline participation (lack of interest or motivation) (Stuber, Middel, Mackenbach, Beulens & Lakerveld, 2020). A multi-layered recruitment strategy was thus used in

order to increase the chances of sufficient response rate, as different individuals will respond to different strategies (Stuber et al., 2020).

First, a wide variety of networks that already successfully reach the target group were used such as facebook groups and community centres. Using existing networks and visitation of these locations has been seen as a highly important step in recruiting low SES participants (Stuber et al., 2020). Flyers were designed (see appendix 1) and were placed in these locations. Additionally, it was aimed to tackle the barrier of low literacy by physically visiting consultation bureaus in areas with low SES residents and personally approaching possible participants. Two consultation bureaus were approached and both agreed to hang up a flyer. Approximately twenty people were personally approached and handed the flyer. Second, it was aimed to remove practical barriers by making it easier for people to participate. The interviews took place at a location and time of the participants' choice. Third, in order to increase motivation, incentives were offered (Stuber et al., 2020). In this study, incentives were given by offering a baby book of approximately 13 EUR when participating in the interviews. Finally, the researcher made use of the snowballing method; participants were asked after the interview if they knew any other women who may want to participate in the study. See figure 2 for an overview of the recruitment of participants. The recruitment and the interviews took place between October and January 2022.

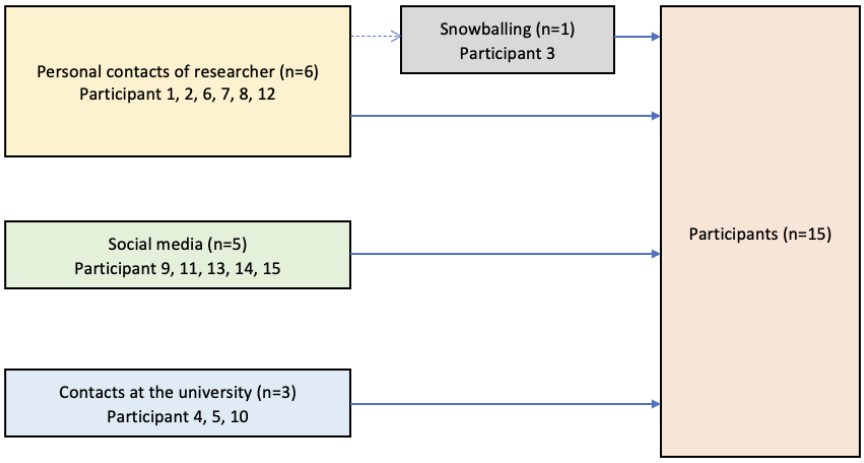


*Figure 2: recruitment of participants*

SES was determined by assessing multiple data at hand: highest attained education and occupation (CBS, n.d.; APA, 2015). Household/individual income was not included in the assessment of SES, as this is often reluctantly provided by participants (Cerutti, n.d.). Someone with an education of primary level, vmbo (preparatory secondary vocational education) or mbo-1 (assistant training) are considered to have a low SES (CBS, n.d.). Someone with upper secondary education (HAVO/VWO), basic vocational training (MBO-2), vocation training (MBO-3) and middle management and specialist training (MBO-4) is considered to have a middle SES. People with higher vocational education (HBO) and university level education (WO) are considered to have a high SES (CBS, n.d.). Lower SES occupations may be monotonous and/or hazardous. Thus, when determining the SES of a participant, occupation was also taken into account and could alter the assessment of the SES of a participant.

## 3.3 Data collection

Prior to the interview, signed or recorded verbal consent to participate in the research was asked of the participant. The verbal consent form can be found in appendix 2. The interviews had an average duration of 49 minutes. 9 of the interviews were conducted face-to-face at the home of the participant and 6 interviews were conducted online through Microsoft Teams.

The interviews were enriched with a visual method. Implementing visuals is a growing and unique way to add depth and enrich traditional methods that are more generally used (Balmer, Griffiths & Dunn, 2015). While using visuals, participants are seen as experts in their own lives, leading to empowerment and collaboration with the interviews (Balmer et al., 2015). This way, the bottom-up approach is applied, as the interview is centred around the perspectives and views of the participants. Additionally, using visuals can enable communication, represent the data, enhance data and validity, and facilitate the researcher - participant relationship (Glegg, 2018).

The visual method that was used was *mind-mapping*. Participants were asked to mention things that they associate with "eating during the postpartum period". Mind maps specifically focus on participant-generated representations of experience, allowing for a unique role of the participant in research (Wheeldon, 2011). Mind maps can be used to enter 'the backstage of participants' experiences and perceptions and were shown to lead to more in-depth contributions through longer responses, the suggestion of connections between several concepts, and more concrete examples of their own experience (Wheeldon, 2011).

Following the mindmap, several predetermined, semi-structured questions were asked in order to create space for follow-up, in-depth questions. The goal of these questions was to create a comprehensive understanding of the complexity of the postpartum period, the experiences women have with nutrition during the postpartum period and their needs when it comes to empowering them to improve their dietary intake. Questions thus focussed on how the participants experience their postpartum period, factors they experience with regards to consuming a healthy diet, the support they have received and would like to receive and what their perspectives are on the use of an eHealth app. In order to tackle question order bias, the questions are ordered from "open" questions to more "targeted" questions.

The interview guide is adapted from the research of Super & Wagemakers (2021), which took an empowering approach to interview pregnant women regarding nutritional support, and the research by Murray-Davis et al. (2019) which interviewed women on their experiences with nutrition and exercise during the postpartum period. The interview of Super & Wagemakers (2021) was used as a guideline and was adapted to fit the current research about women in their postpartum period. Additionally, relevant questions designed by Murray-Davis et al. (2019) were added into the current interview guide. This ultimately created a comprehensive interview guide

The interview is divided into three distinct sections, being 'background information', 'context of the postpartum period', 'food during the postpartum period', and 'information, support and needs for healthy eating during the postpartum period'. Example questions per section can be found in table 2. The complete interview guide can be found in appendix 3.

*Research positionality*

The researcher conducting the current study is a master's degree student of Health and Society at the Wageningen University who has two young children and was in the postpartum period throughout the different stages of the research herself. Having this lived experience, knowledge and inside understanding of the issues being studied enhanced the richness and nuance of the interviews (Burns & Schubotz, 2009). Additionally, participants have been found to respond more honestly and openly to a researcher who has similar experiences regarding the topic that is being discussed, leading to higher quality data with more depth and nuance (Beresford, 2007). By having certain experiences in common, the risks of misunderstanding between researcher and participant were reduced.

## 3.4 Data analysis

The interview questions were transcribed through intellectual verbatim transcription (leaving out filler words). First, the audio recordings were automatically transcribed by Amberscript.com. The researcher then listened to the tape and perfected the transcription.

An inductive coding technique was applied through the use of Atlas.ti, following the coding technique described by Boeije (2014). Here, the first stage was open coding, where every transcribed document was read carefully in order to familiarise the researcher with the content and form conceptual names inductively. The next step was axial coding, where the open codes were reassembled and grouped together with concepts that have a common meaning, forming categories. Finally, the codes that have been grouped together will be reviewed to identify common themes, ultimately creating core categories (Boeije, 2014). At two moments during the coding process, codes were discussed, adjusted, and/or merged if needed in coordination with two additional researchers.

Themes that emerged from the analysis were: circumstances of the postpartum period, nutrition during the postpartum period, breastfeeding, nutritional support in the postpartum period, and eHealth in the postpartum period. These will be further elaborated on in the results section.

## 3.5 Ethical considerations and trade-offs

There are certain ethical concerns that were carefully considered when conducting, analysing and reporting the interviews.

First, the interviews aim to unravel experiences and needs women have with regards to an eventful and possibly challenging period in their lives. Though this information is extremely valuable to make a first step when aiming to improve current nutrition support for these women, it was important to realise that these experiences could be linked to emotions or trauma, and that the participant may not want to discuss certain things. In order to take this particular ethical concern into consideration and in order for the interviewee to feel safe, participants were informed that they always have the right to not answer a question, and that they could stop the interview at any time. In addition, the mindmaps and semi-structured build up of the questions will give the participant the space to talk about what they feel comfortable with.

Another ethical consideration regarding this research was the fact that participants may feel stigmatised or judged when being asked about their socioeconomic context (level of education). Self-reported socioeconomic information may be influenced by social desirability bias, stigma, or self-interest (Moscrop, Ziebland, Roberts & Papanikitas, 2019). However, the benefits of information on socioeconomic background of participants outweigh the potential downsides, as it can lead to rich data and improvements in population health research, policies, and healthcare outcomes (Moscrop et al., 2019).

This research has been approved by the Social Sciences Ethics Committee of Wageningen UR.

# 4. Results

Through 15 semi-structured interviews in which women in the postpartum period shared their experiences and insights, it is aimed to answer the main research question: *"What are the experiences and needs for empowerment of postpartum women to improve their diet quality?"*. Thematic coding analysis was conducted in order to recognize important themes participants discussed. Within the results section, the most important themes that emerged from the interviews will be presented: circumstances of the postpartum period, nutrition during the postpartum period, breastfeeding, support during the postpartum period, and eHealth. The complete coding tree that resulted from the thematic analysis can be found in appendix 4.

## 4.1 Circumstances of the postpartum period

Within all interviews, different themes were recognized in which the participants described the circumstances of their postpartum period. These circumstances can be divided into negative and positive circumstances.

**Negative circumstances of the postpartum period**

Health issues were identified as a factor that could negatively impact the postpartum period. These health issues include negative physical/mental health outcomes from pregnancy or delivery and health conditions already present in the participant. The following quote shows one example of a participant who experienced negative physical and mental health outcomes after delivery:

*" [...]physically I had to come from very far and I found that difficult. [...] because [partner] had to go back to work after four weeks and then I really noticed for myself that physical limitation: I can't get up with [child], I had to pump full-time because she didn't want to latch on, [...], so I felt very limited physically in that sense, that I just couldn't do much and well, that eventually gets to you mentally of course, but it started physically." - Participant 4*

An example of a participant who was diagnosed with multiple sclerosis mentioned her disease negatively influenced her postpartum period:

*"It really hit me after birth. I breastfed for two weeks and then, of course, you sleep very badly, and I just couldn't get my rest. And if I can't get my rest, I get symptoms" - Participant 3*

Besides health, changes in the daily lives of the participants were found to negatively influence the postpartum period. These changes include new and different priorities, the fact that the participant is faced with a lot of tasks during this time, and the time distribution between other children and other tasks. One participant described how distributing time between the baby, her older child and other tasks was difficult:

*"How are you going to do it? Because, of course, you have a four-year-old child who no longer sleeps during the day, but this one does. And she has to go to school and this one doesn't. [...] I had to see how it all went: will he come along taking her to school? Or will [husband] wait until*

*I'm back? All sorts of things, also with groceries, those kinds of little things, that you have to get used to how it goes". - Participant 5*

Another aspect that was burdening for some participants during the postpartum period was breastfeeding. For example, learning how to breastfeed was perceived as difficult and it was mentioned that the amount of times the baby had to drink was perceived as high. Additionally, breastfeeding issues such as the baby not latching on properly and breast engorgement negatively impact the postpartum period. Finally, the decision to discontinue breastfeeding was mentioned to be emotionally burdening.

*"I really didn't know that a baby had to drink so many times in a day. [...] When he was born and every time he would try to latch on, and then it wouldn't work, so you had to pump to stimulate it, [...] but well, then she [the maternity nurse] would say "we'll wake you up in three hours", and then I thought, "three hours?" I hadn't said anything at the time, but I honestly didn't know that this had to be done every three hours. [...] I really think that that was the hardest thing.". - Participant 2*

*"Certainly in the beginning I did have things, that I had to start up breastfeeding, also the choice to stop breastfeeding was actually quite difficult in hindsight. Even though it was my own decision, I thought it was quite difficult. Especially when I got breast engorgement, I thought: why am I stopping?" - Participant 6*

Additionally, certain emotions such as feeling alone, feeling overwhelmed, and the feeling of hormones can negatively impact the postpartum period. For example:

*"I was really thinking, Jesus, I'm such an emotional wreck, what is this, because that's not me at all, but I was just really crying the whole time, the first two weeks, that's really intense man [...] " - Participant 3*

*"Now that I think about it, I think, oh, I've had a really hard time. Because yeah, then I sometimes felt a bit alone." - Participant 2*

Furthermore, being fatigued during the postpartum period can be a negative factor in the beginning of the postpartum period as well as later in the postpartum period:

*"After delivery, well, of course you want to continuously give your child energy, but I was exhausted myself" - Participant 3*

*"At the beginning I had, you hear a lot that the fatigue is so extreme, I hadn't experienced that at all in the first two months. I was really like "I'm fine", and at some point, [baby] is now 6 months and he still doesn't sleep all the way through, and now that's starting to weigh on me more, so to speak". - Participant 15*

Finally, being a first time mother was identified to pose as an extra challenge in getting used to all of the new tasks and changes:

*"The first year was just really tough for me. It was our first, so that is of course a big change in your life" - Participant 13*

**Positive circumstances of the postpartum period**

Women described several aspects in their postpartum period that have been identified to have a positive influence on this time.

Firstly, recovering mentally and/or physically quickly from delivery can be a positive factor. For example, one participant stated:

*"Actually things are going pretty well. It's gone pretty smoothly since birth, I must say, compared to the first. [...]. Physically I was also on my feet faster, and partly at the beginning of this year I started paying more attention to my diet, working on sports, I am already on my target weight after a year so actually quite satisfied" - Participant 1*

Secondly, experience can positively influence the participants' postpartum period, either by having previous children, or by learning overtime with their baby how to deal with certain situations. For example, one participant stated:

*"The older [baby] gets, the easier it becomes of course and when he was very young I would put him in a baby carrier and then you just started cooking. So yeah, you learn, you learn a little how it goes" - Participant 6*

Furthermore, having support can positively impact the postpartum period. Support included having a social environment that helped with babysitting the baby or older children, other tasks such as bottle feeding the baby, or mental support. Additionally, health care professionals who offered mental support or the necessary support for physical issues were mentioned as supportive in the postpartum period:

*"My mother is very caring and she really helped with the household tasks and when [partner] went back to work I didn't really have that on track yet, and friends, if I need help, they are always there. So I'm really very lucky with that". - Participant 3*

Finally, a positive factor of the postpartum period is the connection the participants' felt with their baby. For example, one participant stated:

*"I just think it's so special what you can feel when he's there, actually right away, even though it is very hard and I sometimes thought what did we get ourselves into? Because I really had those big tears that I thought: can we really do this? But then still, when you look at him you just feel,*

*you just really literally feel it in your chest, I don't know, you just really feel it in your heart like, this is it." - Participant 2*

## 4.2 Nutrition during the postpartum period

Several themes regarding nutrition during the postpartum period were identified. These themes have been divided into factors that were interpreted to facilitate the consumption of a healthy diet and factors that were interpreted to pose a barrier towards consuming a healthy diet.

**Barriers for a healthy diet**

Having a lack of time in the postpartum period posed a barrier to consuming a healthy diet. For example, it was stated:

*"Now with breastfeeding, I notice, per day I spend an hour in between breastfeeding or pumping on the way. You lose extra time, where normally I might take that time to have lunch or to sit down with a cup of tea with something" - Participant 7*

*"A sandwich is more quickly made and you can eat it while walking the dog, compared to a bowl of tomato and cottage cheese and nuts and fruit, it's more time and you have to sit, and you're eating more consciously, so it fills more, so I get it, I can think of it all, but I just don't have time for that." - Participant 8*

The second barrier towards consuming a healthy diet in the postpartum period is the fact that women have different priorities during this time. Women stated that they would put themselves second, would forget to eat, and found it difficult to combine their needs with the needs of a young child, making a lot of other tasks take priority over their own nutrition. One participant stated:

*"I do remember that you had to remind me that I had to eat too, because you get so absorbed in the naps, in the milk, in the feeding moments, in how to latch on, that you think, oh yeah, I need to eat something myself. So I had to be reminded to eat every few hours. I would notice while breastfeeding, oh, I'm completely collapsing, I have to feed myself." - Participant 1*

Thirdly, price was found as a constraint towards healthy food choices. For example, one participant stated:

*"Well, I think if you look at the financial picture, when I walk through the supermarket and I want to make healthy choices, then your groceries are a lot more expensive. So sometimes it's just that you think: what do I do, do I make sure that we are still comfortable with the budget this month and that we can go out for dinner again, or do we have all the healthy groceries?" - Participant 4*

Fourthly, cravings was identified as a barrier to consuming a healthy diet, for example due to emotional eating. Additionally, having unhealthy foods in the house was a reason for unhealthy dietary behaviours.

*"Especially in the evenings I sometimes have the urge to eat sweets or chocolate, if that's in the house. If it's not in the house, we don't miss it. But if it's there, we finish it". - Participant 7*

Furthermore, family preferences were mentioned to be a difficulty when it comes to healthy dietary choices during the postpartum period. Women stated that their older children were picky when it came to healthy food. For example:

*"It is difficult to put a healthy dinner on the table. [...] For example, I really like green beans, but it's not appreciated if I bring that out. It is fished out and not eaten. If I throw in frozen spinach, they can't pick it out, but yeah, putting spinach in everything is not yummy either. So that is difficult" - Participant 12*

Knowledge on what is a healthy diet was not specifically mentioned by any participants as something that formed as a barrier to consuming a healthy diet. However, 1 participant mentioned not eating many vegetables because she did not know many kinds of vegetables. Therefore, knowledge is identified as a barrier for this specific person:

*"I've tried things. I like more now, but nothing else in terms of fruit. Vegetables, very little. I like peas and carrots, but I prefer to leave them in the cupboard. Red cabbage, [I like] of course! I like lettuce, but not all those other vegetables. I can't even name them, because I don't even know what exists." - Participant 5*

Finally, a factor that influenced participants' dietary behaviour is that they don't want to be too strict when it comes to nutrition during the postpartum period. Although the interviewees ate less healthy because of this, it was not perceived as a negative factor. Participants mentioned that they found it important not to be too strict during this time, as they had been through a lot and already had a lot going on:

*"Don't be too hard on yourself. If you feel like a thick slice of sugar bread with a huge amount of butter, go for it. [...] I delivered a top performance [the delivery], so if I feel like something now, I will take it." - Participant 15*

*"Now I do think more quickly, this [unhealthy foods] should be okay, I allow myself a little more in that sense. [...] I am kinder to myself with that" - Participant 4*

**Facilitators for a healthy diet**

Body image was found to motivate participants to consume a healthy diet. For example, the following quotes show the responses of two participants when asked which factors make it easier to eat healthy:

*"That you see the difference in the mirror. When I look at a photo of me from a few years ago, I think, help, really bad, now it's so much better. [...]. That is really the motivation to continue, or to continue to maintain, really." - Participant 1*

*"I found it [healthy food] was very important, but that's because I was very concerned with my weight. I wanted to get back to my old weight very quickly, so I did a lot to get back to the same weight right away." - Participant 10*

Additionally, participants wanted to improve their health. For example to gain more energy:

*"To get energy yourself, also to be able to add enough in that period after those first two weeks to be able to continue. And certainly now with three children, then you do need the energy yourself. And you really get that from eating and sleeping, [...] but with a young baby you don't have much influence on that [sleep]. With food, you do have some influence" - Participant 7*

*"Definitely that fatigue. I find that quite annoying and I think that food contributes a lot to that if you eat enough, that is of course the energy source, so I think that is very important." - Participant 15*

Additionally, achieving better mental health and recovery from birth were factors that make eating a healthy diet important. For example:

*"[...]so really with a lot of warming herbs: a lot of ginger, pepper, to power up and nourish your body. You have been completely open with a birth, and that warming also ensures that you can pass that on again and that you also close again and nourish your own body well." - Participant 7.*

Furthermore, wanting to make sure the right nutrients were passed on to the baby through the breast milk was a facilitator towards eating a healthy diet:

*"I really enjoyed good food, and also really knowing and feeling how important it is to eat well, [...] also because you pass it on to your child." - Participant 7*

Additionally, wanting to be a good role model for their (older) child(ren) was a factor to eat healthy. For example, one participant stated:

*"I think it's important that my children learn that you shouldn't eat a snack here and there all day, but that you eat at set times. I hope they don't get the same yo-yo effect that I've been dealing with for a long time." - Participant 12*

Furthermore, conscious eating helped participants consume a healthy diet. Participants mentioned that taking an extra moment to think and be aware of the food they are eating helped them make healthier

choices. For example, one participant explained why eating in the postpartum period was something positive for her:

*"It has to do with the fact that I have to be conscious about it [eating], because if I don't do that, I will eat unhealthy" - Participant 12*

Finally, experimenting with cooking motivated participants to eat healthy food:

*"She [the dietitian] forwarded a lot of recipes and that makes it [healthy eating] fun too, because then I also experimented a bit in the kitchen" - Participant 2*

## 4.3 Breastfeeding

Breastfeeding was identified as an important factor regarding nutrition in the postpartum period. Of the 15 participants, 11 participants breastfed their baby at some stage or were still breastfeeding their baby at the time of the interview. All 11 women mentioned breastfeeding as an important factor to them during this time. This was due to an increased appetite during breastfeeding, questions or insecurities regarding which nutrition is best during breastfeeding due to changed nutritional needs, and the need for sufficient water in this time.

**Increase in appetite**

Breastfeeding increased the appetite of participants and, in many cases, did not subside when the participant discontinued breastfeeding. This had an impact on the nutritional behaviour of participants and caused them to gain or retain weight.

*"I think I almost could, I didn't, but I could eat a whole loaf of bread, so to speak, just a whole loaf. [...] Everyone says: you really lose weight when you breastfeed, well, not me, because I was just really hungry. I was really, very hungry. Maybe I was getting there after the delivery, but afterwards, during breastfeeding, I could really eat everything, and I still have that, so I think that kind of stuck." - Participant 6*

*"I was very hungry all the time with that breastfeeding, so I really ate a lot and then that eating pattern basically stayed the same, you know, if you're used to that. So when I stopped breastfeeding I had gained a lot of weight. I weighed almost the same as at the end of the pregnancy." - Participant 3*

**Nutritional needs**

Participants mentioned the fact that breastfeeding changed their nutritional needs. Both for their own body as nutrition for the quality of the breast milk was mentioned. Certain questions and insecurities about which nutrition is best for themselves as well as which nutrition was best to increase the quality of the breast milk were present:

*"During the breastfeeding period, I was also insecure about, well not insecure, but I was very busy with: is what I eat good for [baby]? Am I getting enough nutrients? So then I also took extra vitamin tablets and such." - Participant 2*

*"[...]because you just consume a lot, you have to eat for two. Beschuit met muisjes [rusk with candied anise seeds, a typical dutch snack following birth] is nice and tasty, but at a certain point you feel hungry, like, what can I eat so that I don't gain a lot myself again? So to speak". - Participant 9*

**Sufficient water**

Finally, drinking sufficient water was important to the participants. Women noticed that they were more thirsty than usual, knew they needed more water or heard from their maternity nurse that it was important to drink enough water.

*"And for the rest I was very busy with: did I drink enough to keep the production going? And that became more and more difficult." - Participant 2*

*"Certainly when I had to start that [breastfeeding], then she [the maternity nurse] said: you have to keep drinking really well, because that ensures that you get really good production. So yes, she really helped me with that, I can be a very bad drinker sometimes." - Participant 6*

## 4.4 Nutritional support in the postpartum period

Nutritional support was identified as a theme throughout all of the interviews. This theme exists of received nutritional support, nutritional support the participants actively searched for, the need for nutritional support, and apps in the postpartum period.

**Received nutritional support**

*Social environment*

Participants received nutritional support from their social environment, including the participants' partner, family members, and friends. Nutritional support from this group included preparing food and providing the participant with nutritional information:

*"I was just really lucky with [husband] making it all because I think if I didn't have that, I wouldn't have been taken care of so well, I think." - Participant 1*

*"My sister can cook very tasty and healthy. [...] And my other sister too. So I can look at that and think, ah okay, and then they bring out a sweet potato or pumpkin soup. Well, I had never thought of that. So then I think, let me write it down on my phone, just a bit of inspiration, because I like the variety in food." - Participant 4*

*Health care professionals*

Nutritional support was also received from health care professionals in the postpartum period. In all cases, this was received by the maternity nurse. Additional health care professionals that were mentioned to provide nutritional support were the consultation bureau and the lactation expert. Mostly, the maternity nurse would prepare food for the participants. Women who also received nutritional information on healthy foods perceived this as very useful and important:

*"She gave extra kiwis because that gets the stool going again, she explained that, and she explained in terms of drinking, this is something you really have to do to keep breastfeeding as good as possible, and you should continue to do that, because you also lose a lot of fluids through breastfeeding." - Participant 6*

*"I think it [reading about healthy food] was really initiated by the maternity nurse in the first weeks. She had quite a few articles back then, and she showed me writers, [...] then I also came into contact with the anthroposophical consultation bureau, who pay quite a lot of attention to nutrition, and shared many books and literature about it." - Participant 7*

**Searched for nutritional support**

Nutritional support was specifically sought through a dietitian:

*"I went to a dietitian. [...] So much changes in your body and I just wasn't happy with how I looked. I just didn't feel like myself in my own body anymore. I went to the dietitian and now it is actually better." - Participant 2*

*"The schedule she [the dietitian] made for me, because they're all things you can think of yourself, but I hadn't thought of it, because otherwise I would have done that, and also just, I especially liked that she just listened, just, like, what do you want to achieve?" - Participant 2*

**Needs for nutritional support**

14 of the 15 participants indicated the need for nutritional support in the postpartum period. Participants specifically stated needing information on nutrition during this time:

*"I also think it would be nice if you just get help with that [nutrition], like, the first two months this is very important, or think of these things, try to eat this once a week [...]. What does such a body actually need?" Participant 8*

Participants were especially in need of (more) information on nutrition during breastfeeding, and nutrition to gain more energy in this time:

*"I've breastfed for almost four and a half months. But I actually didn't know what would be helpful, so I would also like to know more about that, in hindsight. So not only that maternity*

*week, because I did get that from warm foods, well-filling things, but during the breastfeeding period, I didn't know anything about that, no." - Participant 15*

*"[...] because I was breastfeeding, I think, I don't know if you should call it a diet, but more, the best healthy choice that is good for both your own body an for the milk you produce, that you just have little more guidance in that" - Participant 14*

*"Yes, maybe it's nice to have something like, this is useful to get back on your feet faster or so, that you feel full of energy again" - Participant 1*

An overview of how participants want to receive (more) nutritional support is provided in table 2.

*Table 2: Preferred way of receiving nutritional support in postpartum period*

| **Preferred way of nutritional support** | **Quote** |
|---|---|
| Maternity nurse | *"I think it's nice if, for example, the maternity nurse already has a bit of extra knowledge. [...] for example, some information on food would be good if that could be added" - Participant 2* |
| Midwife | *"I think from the midwife, that's easiest. You're there every few weeks anyway." - Participant 1* |
| Dietitian | *"Maybe like a dietitian-like person you could go to, [...] maybe a person like that could come by once or twice or three times, or maybe once a week in [...] three months, four and a half months, something like that. That might be very nice." - Participant 8* |
| Reading material | *"I am someone who, I think it's nice and relaxing to occasionally read informative things. So, for example, if there is an e-mail every week with healthy nutrition tips and then also varied [...], I think that makes it easier already." - Participant 12* |
| Courses | *"If you're pregnant, you have pregnancy gym and breastfeeding courses. Perhaps they could also organise courses for women who have just given birth on 'what is healthy food and what does it look like' instead of just 'eat healthy'." - Participant 12* |

**eHealth**

Some participants indicated that they have used an app regarding nutrition in the past. When asked whether an app during the postpartum period would be useful to them, participants responded positively. Participants who had used an app in the past were asked to mention several positive and negative factors

about the app, and it was discussed what would be useful in an app designed for the postpartum period.

*Positive factors*

Participants found it useful that the information they received was quick. This was often mentioned with the use of the ZwangerHap app, as it would tell them which foods were allowed and which foods were not allowed.

*"It is very easy to see what is allowed and what is not. You have the information very quickly at hand." - Interview 12*

Participants stated that having information that focuses on what is allowed and what is good for your body as opposed to focussing on what is not good during this time would be helpful. For example:

*"As long as it is accessible and not too strict. Not this is not allowed, and that is not allowed, but more focus on the things that would be helpful." - Participant 15*

Having nutritional information on foods was helpful in the apps participants used. For example, how many calories or salt a certain food contains or how the nutritional balance of the food is.

*"Then you see like, I'm under [with calorie intake] or oh, I can't eat anything anymore. [...] Some days I had calories left, so to speak, and then I had already eaten and I wasn't hungry. I though oh, great! I can go to bed and still have calories left" - Participant 1*

Additionally, having a schedule within the app that helped participants stay healthy and on their goal weight was helpful:

*"What I especially like is that I just have a week schedule, then you can eat this in the morning, or then this or that, that I have some guidance in: what is okay? What helps to stay at your weight and what is healthy, so that you also get good nutrients." - Participant 1*

*Negative factors*

Negative factors that were mentioned were aimed at the ZwangerHap app and, more specifically, information that was provided on nutrition during pregnancy, such as confusing information, the focus on things that are not allowed, and information being too strict:

*"It also says, it's allowed, it's not allowed and maybe it's not allowed. Then I think: maybe it's allowed or maybe it's not allowed? I found that difficult." - Participant 6*

*"But what I did find difficult is that the traditional salami is not allowed, but if it is in a package in a supermarket, the chance is so very small that there is something bad in it. I found that difficult at times. There is only such a small chance that there is something bad, that they immediately say: this is not allowed." - Participant 15*

A negative factor about a nutrition app during the postpartum period was that having to put in continuous effort was a burden:

*"I have to continue to fill it [what was eaten] in, otherwise it doesn't count anymore, so to speak." - Participant 1*

Finally, it was stated that an app would not be useful in the postpartum period as you shouldn't be too strict for yourself during this time.

*"Because I really also think that you should just do what you want, especially during your pregnancy and afterwards. You also comfort food and so if you're using an app-, if you feel like it, and if you don't, also good." - Participant 6*

# 5. Discussion

This study explored the experiences and needs for empowerment of postpartum women to improve their diet quality. The aim was to discover ways in which women can be empowered to consume a healthy postpartum diet. The results of this study show that the postpartum period is complex and turbulent for new mothers, with several factors making it difficult for women to navigate their way through this life stage. Women in the postpartum period are aware that their nutritional needs have changed and are motivated to improve their dietary behaviour during the postpartum period. However, several positive and negative factors are found that pose as facilitators and barriers towards consuming a healthy diet, and are placed within the COM-B model (see figure 3). This provides a clear overview of which factors influence the consumption of a healthy postpartum diet. Additionally, it shows how certain concepts interact with each other and with the desired health behaviour: consuming a healthy postpartum diet. Empowerment was found to emerge in different ways through support and eHealth, tackling certain barriers while promoting facilitators towards consuming a healthy diet. With that, there is a clear need for more nutritional support during the postpartum period. More specifically, there is a need for more information regarding nutrition during breastfeeding and nutrition for womens' postpartum bodies (e.g. to gain more energy and recover from delivery).

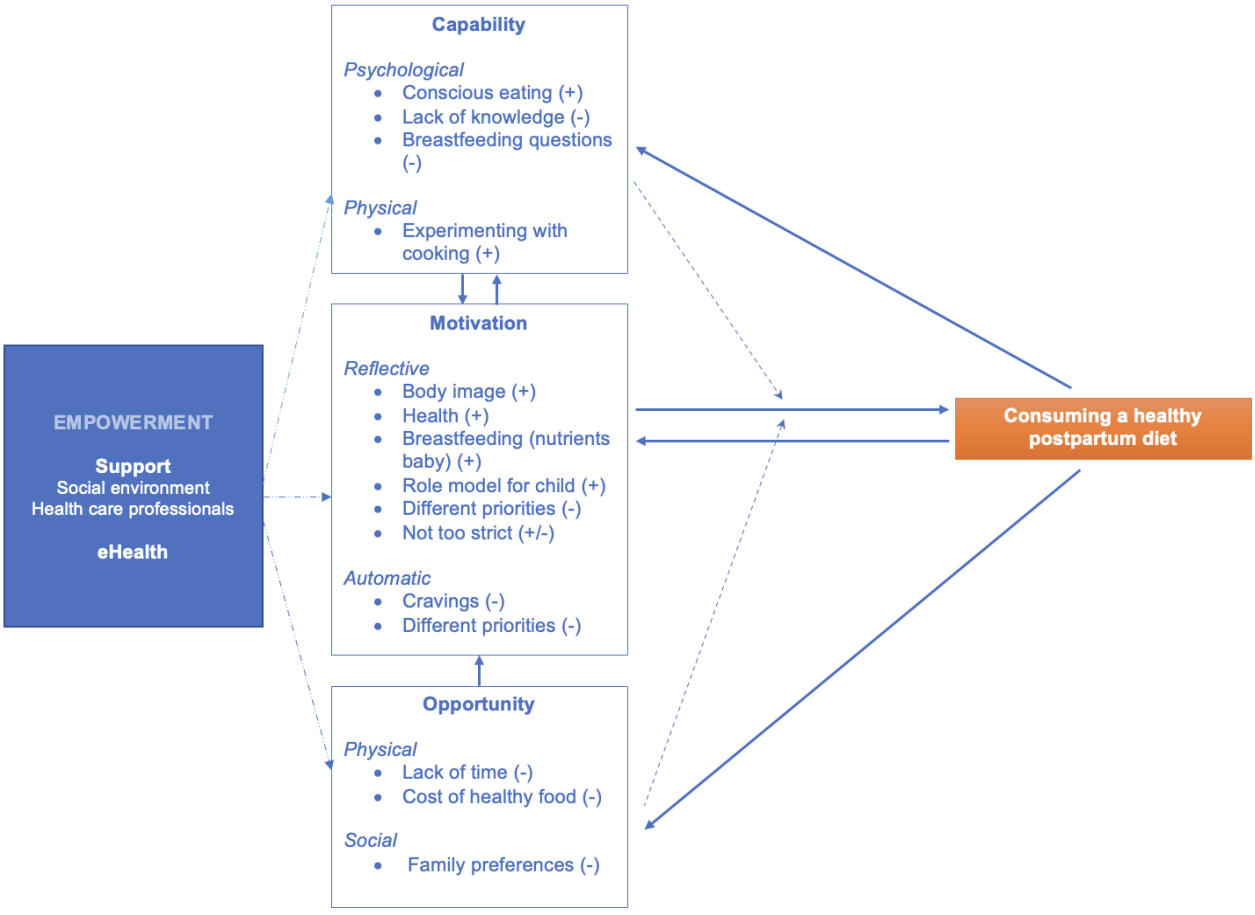


*Figure 3: Identified factors that influence diet quality in the postpartum period*

## 5.1 Complexity of the postpartum period

This study shows the complexity of the postpartum period. Many factors at play can positively or negatively affect womens' experiences during this time. When it comes to negative factors, women face recovery from birth (mental and physical), manage new and different priorities in their daily life, and tackle breastfeeding difficulties while being fatigued and feeling negative emotions. Besides, (mental) illnesses that women already had prior to delivery can worsen during this time, also negatively impacting the postpartum period.

At the same time, several positive factors can also be at play, such as a quick recovery from birth and experiencing a connection with the baby. Additionally, having previous children can play a large role for women, having both a positive effect (previous experience can give confidence) as a negative effect (challenge to divide time and attention between the older child(ren) and baby). These findings correspond to previous findings that the postpartum period is a challenging time, in which women face physical and hormonal changes, recover from pregnancy and delivery, face changing responsibilities within the family and deal with a lack of sleep while at the same time caring for and nourishing a newborn (Romano et al., 2010; Spelke & Werner, 2018).

However, the finding that having previous children and pre-existing (mental) health issues show that there are additional factors at play that don't directly arise from the pregnancy or delivery. Additionally, women experienced receiving support from their social environment as well as from health care professionals as helpful in dealing with negative factors, such as physical/mental recovery, emotions, and the amount of tasks a woman faced. This shows that the experiences of women can be very individual. This corresponds to findings by Fahey & Shenassa (2013), where it is stated that in order to ensure a healthy postpartum period, not only physical recovery should be included, but also the ability to meet individual needs and successfully transition into motherhood. For health care providers, this requires an understanding by the provider that the health needs of postpartum women extend beyond physical recovery, and that taking an individual approach in promoting her own ability to ensure her health is crucial (Fahey & Shenassa, 2013).

## 5.2 Factors of a healthy postpartum diet

When it comes to nutrition, several facilitators and barriers that influence the diet of postpartum women were identified and placed within the different components of the COM-B model: motivation, opportunity, and capability (see figure 3).

*Motivators*

Postpartum women encounter several reflective motivators towards eating a healthy postpartum diet. Positive motivators for postpartum women include improving their body image and health, passing on good nutrients to their baby through the breastmilk, and being a good role model for their baby later in life. Several reflective and automatic motivators also form as barriers. For example, having different priorities can be a reflective motivator to eat unhealthy as babies' needs are more important to attend to. Different priorities can however also be automatic, as women forget to take care of themselves while attending to babies' needs. This confirms previous findings by Vinsze et al. (2017),

stating that women put the needs of their family before their own needs. Furthermore, this study shows that it is also important to take into account that women find it important to not be too strict to themselves during the postpartum period. Having gone through a hefty experience (delivery), women allow themselves to have unhealthy snacks sometimes, and don't want to focus on consuming a healthy diet all the time. The fact that women find it important to not be too strict during this time could work as both a negative and a positive factor towards consuming a healthy diet: women may make unhealthy diet choices because of this, but it may also help them to eat healthier at other times. This finding shows that motivation towards consuming a healthy diet during the postpartum period may be less straightforward than previously thought. It is recommended when designing and implementing interventions to keep in mind that women may have a preference to allow unhealthy foods sometimes and don't want to focus solely on consuming healthy foods. Taking this into account may increase the success of the intervention.

*Opportunities*

Several opportunities women experience can influence the motivation towards eating a healthy diet. When it comes to physical opportunities, women experience barriers such as a lack of time and the fact that healthy food is expensive. An interesting finding is that the cost of healthy foods posed a barrier towards consuming a healthy diet in the postpartum period. This finding confirms the findings of Vinsze et al. (2017), where it was found that having the ability to purchase inexpensive healthy foods had a high influence on eating healthily, and that healthy foods are often perceived as expensive. A recent report by CBS (2021) concluded that the price of healthy foods in the Netherlands have increased by an average of 21% in ten years, while the price increase of unhealthy products was 15%. A literature research by RIVM (2021) on how to further reduce excess weight concluded that measures that should be taken include making unhealthy products more expensive and healthy products cheaper. For example, taxes on sugar beverages and abolishing VAT on healthier products. It is thus recommended to tackle the barrier of the cost of healthy foods for postpartum women from a higher, political level: policy makers in the field should aim to reduce the price of healthy foods and increase the price of unhealthy foods.

*Capabilities*

Women experienced facilitators on a capability level such as learning how to consciously be aware of what they are eating (psychological) and experiment with cooking (physical). However, a lack of knowledge can pose a barrier to consuming a healthy diet, as women may not know what a healthy diet consists of. Additionally, some women were aware of what a healthy diet in general consists of, but had many questions and insecurities about their raised nutritional needs during breastfeeding. This is due to an increased appetite during breastfeeding that did not always subside when women discontinued breastfeeding, and questions and insecurities about which nutrition is best for the baby (to ensure good quality breastmilk) and their own body needs in this time. It is interesting that knowledge of what a healthy diet consists of was identified in the interview of the low SES participant. This is in line with previous research that women with a low SES may experience certain additional barriers to consume a healthy diet such as knowledge (Super & Wagemakers, 2021; Taylor et al., 2006; Pearce et al., 2007). However, this study also found that a lack of knowledge in the postpartum also extends

to women with a high SES, as there are many questions and insecurities about raised nutritional needs in the postpartum period and during breastfeeding.

## 5.3 Opportunities for empowerment: support

The findings of this study show that there is a clear need for more nutritional support during the postpartum period. Empowerment can emerge in different ways through support, by tackling barriers that disempower women, while at the same time promoting facilitators that can empower women to consume a healthy postpartum diet. For example, providing information on breastfeeding questions regarding nutrition can help overcome psychological capabilities. Furthermore, helping women by babysitting their infant and/or older children can help overcome the barrier of a lack of time. Additionally, by reminding women to eat and preparing food, the barrier of forgetting to eat due to having different priorities at that time can be overcome. As the COM-B model takes internal (individual) conditions, as well their social and physical environment into account, the model addresses all aspects of empowerment (Michie et al., 2011). With this, support can be placed in the COM-B model, influencing all components that affect the consumption of a healthy diet (see figure 3). This finding is not in line with recent literature, where it is often placed under social opportunity (Masheder, Fjorback & Parsons, 2020; Habersaat & Jackson, 2019). This study indicates that support should be seen as a factor that can influence all components of the COM-B model, and not merely a factor of social opportunity. Support can be provided by the social environment of the woman, or through health care professionals. Both forms of found support are discussed below.

*Social support*

Nutritional support received by the social environment can be seen as a helpful factor as certain barriers can be overcome. For example, family members, husbands, or friends who helped prepare food could help overcome barriers such as a lack of time to prepare a healthy meal or having different priorities. Additionally, women are supported through the provision of nutritional advice and helping with cooked meals. Heaney & Israel (2008) state that social support can be divided into four subtypes: emotional support (expressions of empathy, love, trust, and caring), instrumental support (help, aid, or assistance with tangible needs and services), appraisal (information that is useful for self-evaluation, help in decision making, and giving appropriate feedback), and informational support (advice, suggestions, and information in the service of particular needs) (Berkman et al., 2000; Heaney & Israel, 2008). In light of this research, women in this study received mostly instrumental support (e.g. providing cooked meals) and informational support (e.g. nutritional advice). Further research into the role of social support in the postpartum period is necessary to create a full understanding of how it can empower women to consume a healthy postpartum diet. Besides, interventions designed to improve the postpartum diet should include key actors in the social environment of postpartum women, such as partners, friends, or family members.

*Support from health care professionals*

This study found that nutritional support received by health care professionals, such as the maternity nurse, is perceived as valuable and necessary. However, (adequate) support by health care

professionals is often not received. Although postpartum women are motivated to consume a healthy diet, there is a lack of information provided.

Previous research showed that the postpartum period can be an opportune time to provide resources and motivation for dietary changes as women are already connected to health and nutrition services (Falciglia et al., 2014). Additionally, the importance of nutrition whilst breastfeeding is recognized and mentioned on the Voedingscentrum website (Voedingscentrum, n.d.). Women are indeed linked to health care professionals at this time and are often aware of their nutritional needs. However, not many women receive (sufficient) support from health care professionals regarding nutrition. Guidelines for postpartum care should include informing pregnant or postpartum women on postpartum nutrition and its benefits. This can be achieved through maternity nurses or midwives, the implementation of a dietitian in the postpartum period, offering reading material (e.g. from health insurances, the consultation bureau or the midwife) about a healthy diet in the postpartum period and its benefits, or through courses offered to pregnant and/or postpartum women.

## 5.4 Opportunities for empowerment: eHealth

This study found that women were positive towards the development and use of an app to support them in consuming a healthier postpartum diet. These findings are in line with the previous research by Lim et al. (2019), which found that digital health interventions regarding behaviour change strategies are highly acceptable among postpartum women. However, Lim et al. (2019) concluded that certain barriers exist that may prevent the successful use of nutrition apps, such as a lack of motivation or child care priorities. The current research shows that women are motivated to consume a healthy diet and that they believe that an app could assist in achieving this. Furthermore, women in this study mentioned that an app could especially assist in consuming a healthy diet while having additional child care priorities, for example by offering quick and healthy meal options for the entire family, and by making the information quickly available and understandable. Furthermore, offering information on questions that postpartum women struggle with such as questions regarding breastfeeding and nutrition for the body was perceived as helpful. Developing eHealth tools that can assist postpartum women while at the same time taking possible barriers into account could empower them to consume a healthy diet. Thus, the development of nutritional apps for the postpartum period is recommended. With the development of such an app, barriers and facilitators towards the consumption of a healthy diet should be taken into account.

## 5.5 Strengths and limitations

A first strength of this study is that it is, to the researchers' knowledge, the first study that has investigated the experiences and needs of dutch women with regards to the postpartum diet. By using qualitative, in-depth interviews, this research was able to obtain rich, contextualised data, capturing the complexity of the postpartum period through the eyes of postpartum women themselves. Additionally, by using visual methods, the subjects that participants wanted to talk about were placed central, forming the starting point for conversation and empowering them to be actively involved in defining the issue at hand and determining strategies on how to tackle the issue.

Second, by using the COM-B model as an underlying theory, an overview of which conditions play a role in facilitating or forming a barrier in consuming a healthy postpartum diet and how these conditions interact and lead to or hinder favourable behaviour was created (Michie et al., 2011). As the COM-B model takes internal (individual) conditions as well their social and physical environment into account, all aspects of empowerment were addressed (Michie et al., 2011). Ultimately, this led to a clear overview of conditions that should be addressed when it comes to empowering postpartum women in improving their nutritional intake.

This study also has potential limitations. First, despite significant efforts in the recruitment of low SES participants, only one low SES participant was recruited and interviewed. Incorporating women with different SES backgrounds is essential in order to create a comprehensive view on all experiences and needs of postpartum women, as women with a low SES are often disempowered, experiencing additional barriers with regards to consuming a healthy postpartum diet (Wagemakers & Super, 2021; Tayloret al., 2006; Pearce et al., 2007). However, the low outcome of recruited participants has shed light on the extent to which low SES participants are "hard-to-reach", showing the necessity of taking additional steps and explicitly reaching out to this specific group. Future research should focus on creating an understanding of experiences and needs of postpartum women with a low SES. This can for example be achieved by specifically asking for a certain educational level and aiming for a collaboration with consultation bureaus or midwife practices who are already linked to women with a low SES.

Second, as the researcher was in the postpartum period herself, interview questions may have been affected by certain ideas and experiences of the researcher. For example, no questions were asked about why a participant chose to discontinue breastfeeding because the researcher preferred not to receive that question herself. This may have influenced certain outcomes of the study. However, having this lived experience did allow for a better understanding of the issues that were discussed. Additionally, it has been found that participants respond more honestly and openly, in turn leading to higher quality data with more depth and nuance (Beresford, 2007; Burns & Schubotz, 2009).

Finally, as dutch women were interviewed who are in the unique position to receive a maternity nurse after birth, researchers and professionals in the field should be cautious in generalising the outcomes to postpartum women outside of the Netherlands. This is due to the fact that women who do not receive health care from a maternity nurse may have different experiences and/or needs regarding nutritional support.

# 6. Conclusion

The postpartum period is a significant time in the lives of both mother and infant, and improving nutritional intake can have positive and lasting effects on their health and well-being. The postpartum period is complex and challenging for new mothers. Several facilitators and barriers that influence diet quality during the postpartum period influence their diet have been identified and placed within the components of the COM-B model (motivators, opportunities, and capabilities). The COM-B model takes individual, social and environmental conditions into account; crucial aspects to achieve empowerment as it improves not only resources such as knowledge, but also the abilities to use resources. Empowerment was found as an important factor that can emerge through support and eHealth. Empowering women through support and eHealth can influence all components of the COM-B model. Ultimately, this can better enable postpartum women to consume a healthy diet. However, not many women receive (adequate) nutritional support.

Further research should investigate the role of social support in the postpartum period, and interventions designed to improve the postpartum diet should include key actors in the social environment of postpartum women. Additionally, maternity nurse guidelines should include informing postpartum women on nutrition and its benefits, and additional health care strategies should be designed and implemented to better support postpartum women with regards to nutrition. To create a comprehensive understanding of all SES groups, further research should focus on experiences and needs for empowerment of low SES postpartum women.

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Appendix 1: Recruitment flyer

# Appendix 2: Informed consent form

Beste deelnemer,

Bedankt dat u de tijd neemt voor mijn onderzoek. Mijn naam is Olivia Baggen en ik doe voor mijn masterscriptie onderzoek naar gezonde voeding tijdens de postpartumperiode. Met name kijk ik naar hoe vrouwen beter ondersteund kunnen worden hierin. Tijdens deze interview vraag ik u uw ervaringen te delen rondom voeding en voedings steun in de postpartumperiode. Op basis van uw ervaringen kunnen we inzicht krijgen over wat vrouwen nodig hebben om beter gesteund te worden in het consumeren van een gezondere dieet.

Het interview zal ongeveer 45-60 minuten duren, maar kan op elk gewenst moment gestopt worden. Hier hoeft u dan ook geen reden voor te geven. Het interview zal opgenomen worden met een geluidsrecorder zodat ik het later terug kan luisteren bij het verder uitwerken van deze interview. De opnames zullen alleen toegankelijk zijn voor de onderzoekers van het project (ikzelf en mijn begeleiders) en na het beëindigen van het project zullen deze vernietigd worden. Uw gegevens zullen anoniem verwerkt worden: uw antwoorden zullen vertrouwelijk behandeld worden en uw naam zal niet genoemd worden in de teksten die worden geschreven op basis van de interviews. Terugtrekken uit deze onderzoek kan ten alle tijden, ook na afloop van deze interview. De opnames zullen dan onmiddellijk verwijderd worden.

Met het ondertekenen van dit formulier geeft u aan dat:

- U toestemt om mee te doen aan een interview;
- U weet waar het onderzoek over gaat en dat u vragen hebt mogen stellen;
- U begrijpt dat het interview wordt opgenomen en dat deze alleen teruggeluisterd kan worden door de onderzoekers van het project
- U begrijpt dat de antwoorden vertrouwelijk behandeld worden en dat uw naam niet genoemd wordt in de teksten die we schrijven op basis van de interviews;
- U begrijpt dat u zich altijd terug mag trekken uit het onderzoek.

*Naam:* _____

*Handtekening:* _____

*Datum:* _____

**Contactgegevens**
Onderzoeker: **Olivia Baggen** (olivia.baggen@wur.nl of 06 55515446)

# Appendix 3: Interview guide

### Nodige spullen:

- Interview guide
- Informed consent formulier
- Opname apparaat
- Stiften & brainstorm papier
- Cadeautje
- Notitieblok
- Pen

### Introductie

| Doel | Vragen |
|---|---|
| **Introductie en voorstellen** | • Mijn naam is Olivia Baggen, ik ben 28 jaar en ik woon in Arnhem. Ik heb zelf twee kinderen waarvan de jongste 8 maanden oud is. Ik doe op dit moment mijn masterscriptie aan de Wageningen Universiteit. Heel fijn en leuk dat je tijd hebt gemaakt om deel te nemen aan dit interview!<br><br>• Kan je jezelf even voorstellen? |
| **Uitleg scriptie en doel interview** | • Ik zal even wat over mijn scriptie vertellen. Het gaat over de ervaringen en behoeftes van vrouwen in de postpartumperiode met betrekking tot voedsel en voedsel ondersteuning. Met deze studie wil ik onderzoeken hoe postpartum vrouwen ondersteund kunnen worden om zo gezond mogelijk te eten.<br><br>• Ik ben heel erg benieuwd naar jouw ervaringen over voeding tijdens deze periode na de bevalling. |

| | |
|---|---|
| **Informed consent**<br><br>• **Licht informed consent toe**<br><br>• **Vraag of alles duidelijk is/of er nog vragen zijn en of participant akkoord gaat**<br><br>• **Vraag of participant wil ondertekenen**<br><br>• **Controleer of de informed consent volledig ingevuld is**<br><br>• **Start opname apparaat** | Ik heb hier een formulier, zou je deze willen doorlezen en ondertekenen? In dit formulier staat dat ik je heb uitgelegd wat we in dit onderzoek gaan doen en wat het doel is, dat het gesprek wordt opgenomen, en dat jouw gegevens en alles wat je zegt anoniem verwerkt zal worden (dat we jouw naam niet zullen gebruiken). Ook kan je op elk moment (tijdens of na) het onderzoek zich terugtrekken. Lees het formulier rustig door, en laat het me weten als je nog vragen heeft. Als je akkoord gaat kan je hier jouw naam en handtekening zetten (wijs plek aan). |

## Onderdeel 1: Achtergrondinformatie

| Doel | Vragen |
|---|---|
| **Achtergrondinformatie verzamelen** | Ik heb eerst wat basis vragen voor je, om wat meer over je te weten. Daarna zou ik graag wat vragen over jouw postpartum periode tot nu toe en hoe dat gaat.<br>• Leeftijd<br>• Leeftijd baby (hoe ver in de postpartumperiode)<br>• Eerdere zwangerschappen<br>• Gezinssituatie<br>• Opleidingsniveau<br>• Werksituatie |

## Onderdeel 2: Context postpartumperiode

| | | |
|---|---|---|
| | | **Thema’s** |

| | | |
|---|---|---|
| **Context postpartumperiode**<br><br>**Sociale ondersteuning**<br><br>**Ervaring zorgprofessionals** | ● Hoe gaat het sinds de bevalling tot nu toe? Kun je daar iets over vertellen?<br>● Hoe gaat het met je kindje? Doet hij/zij het goed?<br>● Wat zijn dingen die goed gaan?<br><br>● Wat is het mooiste moment tot nu toe met je kindje?<br>● Wat zijn dingen die je als zwaar ervaart in de postpartumperiode?<br><br>● Zijn er verschillen te merken tussen nu en jouw vorige postpartumperiode(s)?<br><br>● Heb je fysieke of mentale klachten ervaren tijdens je postpartum periode? (Vragen hoe dit bij vorige kinderen ging)<br><br>● Zijn er mensen in jouw sociale omgeving die jou ondersteunen? Zo ja, wie zijn dit en wat doen zij om je te helpen?<br><br>● Heb je na de bevalling nog contact gehad met gezondheidsprofessionals?<br>○ Zo ja: wat waren belangrijke thema's die hier aan bod kwamen?<br>○ Zo nee: waar zou je nog behoefte aan hebben (gehad)? | ● Gevoelens en ervaringen van postpartum periode<br>● Sociale ondersteuning<br>● Ervaring met zorgprofessionals<br>● Link met eerdere postpartumperiodes |

| | | |
|---|---|---|
| | ● Heb je tijdens jouw postpartumperiode een diëtiste gesproken?<br>○ Zo ja: Wat waren belangrijke thema's die hier aan bod kwamen?<br>○ Zo nee: zou je hier wat aan hebben gehad?<br>○ Wat zou je hier uit willen halen? | |

## Onderdeel 3: Voeding tijdens de postpartumperiode

| Doel | Vragen | Thema's |
|---|---|---|
| **Brainstormen 'gezond eten tijdens de postpartumperiode'**<br><br>● **Uitleggen bedoeling van mindmap/brainstorm sessie**<br>● **Opgeschreven thema's nalopen** | ● Ik wil graag met je brainstormen over het onderwerp 'eten na de bevalling. Ik heb hier een vel papier met in het midden de thema. Hier heb ik wat stiften. De bedoeling is dat je alles opschrijft wat in je opkomt wanneer jij nadenkt over 'gezond eten in de postpartumperiode'.<br><br>● Ik wil dat je weet dat hierin alles kan en mag, niks is fout en niks is raar.<br><br>● *Onderwerpen die zijn opgeschreven nalopen:*<br>○ Waarom heb je dit opgeschreven?<br>○ Wat betekent dit voor jou/jouw situatie?<br>○ Heb je een voorbeeld?<br><br>● Als we kijken naar de mind-map; is eten voor jou tijdens deze | Eigen inzichten en ervaringen in beeld krijgen |

| | | |
|---|---|---|
| | periode iets positiefs of iets negatiefs? Waarom? | |
| **Belang voeding**<br><br>**Eigen voeding**<br><br>**Veranderingen m.b.t. voeding tijdens postpartumperiode (gelinkt aan zwangerschap)** | ● Hoe belangrijk vind jij voeding tijdens de postpartumperiode(cijfer 1-10)? Waarom?<br>● Welk cijfer zou je jouw voeding tijdens de postpartumperiode geven (cijfer 1-10)?<br><br>● Wat zijn de dingen die ervoor zorgen dat je dit cijfer bereikt?<br>○ Wat zorgt ervoor dat je dit kan bereiken><br><br>● Wat zijn enkele uitdagingen om op dit punt in je leven van gezond eten te genieten?<br><br>● *Bij negatief/moeilijk te eten;* Wat zou een stap zijn om een hoger cijfer te geven aan je huidige voeding?<br>○ Hoe zou je dit kunnen bereiken?<br>● Is jouw dieet veranderd in de loop van de periode na de bevalling<br>○ Welke factoren droegen hieraan bij? (e.g. werk, borstvoeden)<br><br>● Als we het vergelijken met jouw dieet tijdens de zwangerschap:<br>○ Hoe voel jij je over voeding nu je je kindje hebt gehad? Is dat anders dan tijdens je zwangerschap?<br>○ Is jouw voeding veranderd toen je zwanger werd? | Belang voeding<br><br>Eigen voeding<br><br>Veranderingen m.b.t. voeding tijdens postpartum (t.o.v. zwangerschap)<br><br>Toekomstige postpartum periodes |

| | | |
|---|---|---|
| | ○ Is jouw voeding veranderd toen je jouw kindje kreeg?<br>○ Hoe is dit veranderd? Kan je me hier iets over vertellen?<br>○ Was het makkelijk of moeilijk bepaalde dingen door te voeren in je dieet?<br><br>● Zou je in een toekomstige postpartumperiode anders omgaan met eten? Zo ja, hoe?<br>● Zijn er belangrijke lessen die je hebt geleerd over jezelf en gezond eten tijdens deze postpartumperiode? Zo ja: welke? | |

### Onderdeel 4: Informatie, steun en benodigdheden gezond eten tijdens postpartumperiode

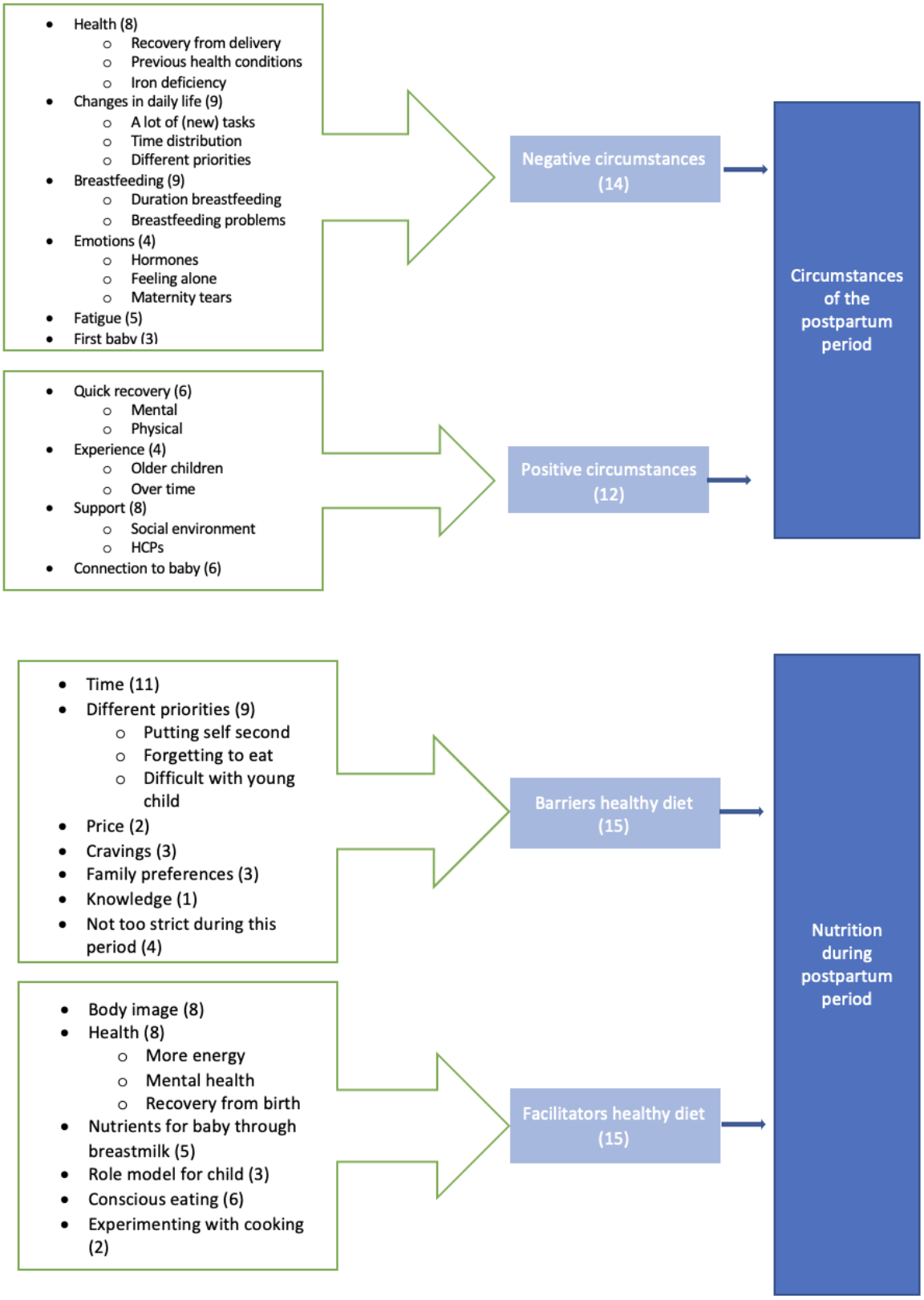
| **Doel** | **Vragen** | **Thema's** |
|---|---|---|

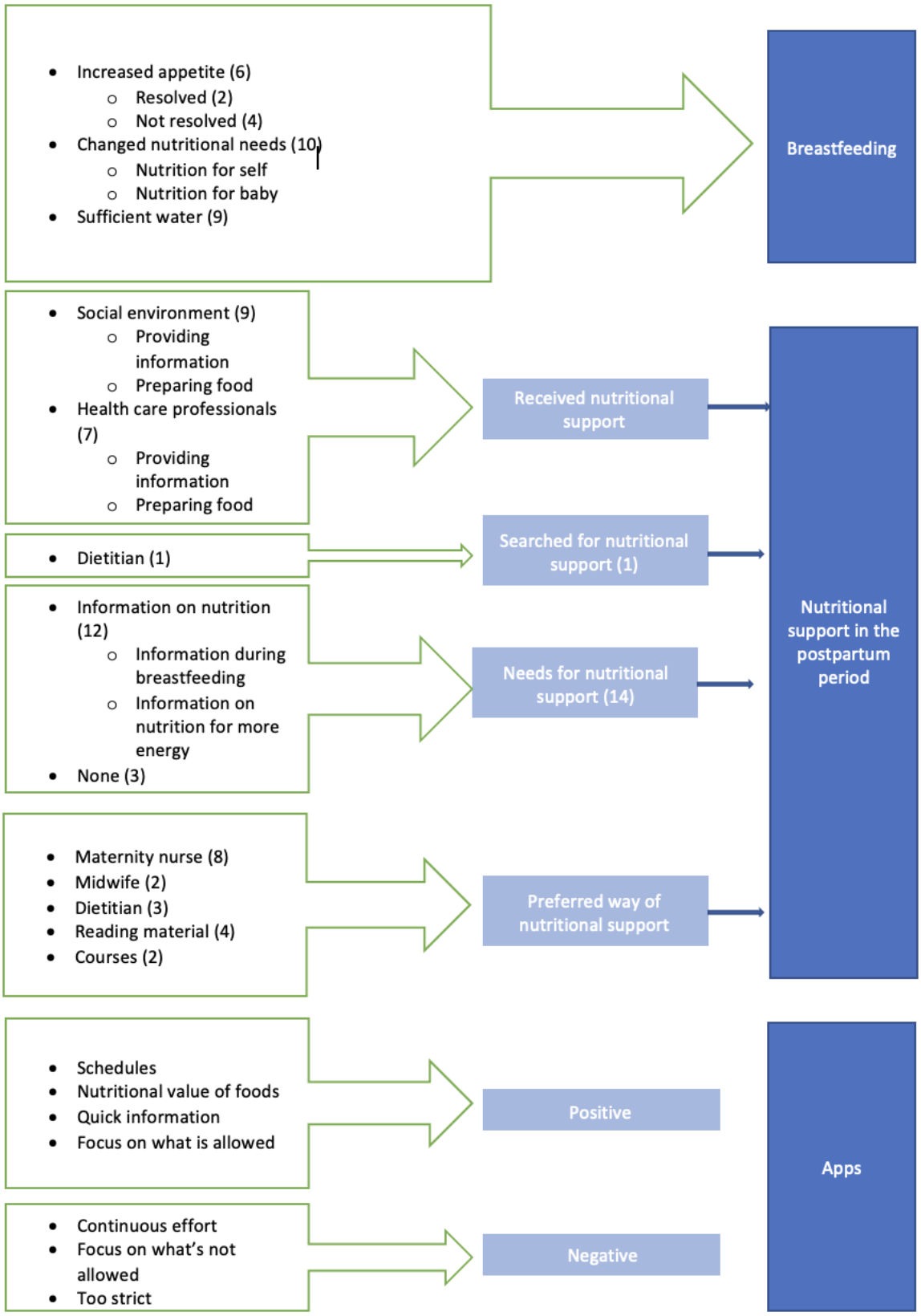
| | | |
|---|---|---|
| **Informatie, steun en benodigdheden gezond eten tijdens postpartumperiode** | • Zijn er manieren waarop je aan informatie over gezond eten komt tijdens de postpartum periode?<br>• Zijn er mensen die je informatie geven of hebben gegeven over gezond eten tijdens de postpartumperiode?<br>• Wie of wat heeft hier allemaal een rol in gespeeld? (verloskundige/kraamverzorgster/vrienden/familie/internet)<br>  ○ Wat is hier fijn aan/niet fijn aan?<br><br>• Wat geeft op dit moment jou de kracht om gezonde dingen te eten?<br>• In jouw beleving, wat zou nodig zijn kwa steun om jou de kracht te geven gezonder te eten?<br>  ○ Van wie?<br>  ○ Van waar?<br>(bv. Collega's, familie, partner, gezondheidsprofessionals, internet)<br>• Ben je tevreden over de hulp die je hebt gekregen vanuit de zorgprofessionals na de bevalling wat betreft voeding?<br><br>• Wat zou er nog meer gedaan kunnen worden vanuit de zorg professionals na de bevalling om jou te helpen met gezond eten?<br><br>• Zou je meer informatie gekregen willen hebben over gezond eten tijdens de postpartum periode?<br>  ○ Op welk moment?<br>  ○ Van wie?<br><br>• Heb je wel eens websites bezocht of apps gebruikt om informatie op te zoeken over gezond eten tijdens de postpartumperiode?<br>  ○ Zo ja: was dit fijn of niet fijn? Waarom?<br>  ○ Zo nee: zou je dit willen gebruiken?<br>  ○ Wat zou je fijne aspecten vinden aan een website of app? / Wat zou een app moeten hebben waardoor jij het zou gebruiken/blijven gebruiken? | |

**Afsluiten**

| **Doel** | **Vragen** |
| --- | --- |
| Afsluiten<br><br>● Bedanken<br><br>● Cadeautje geven<br><br>● Foto maken van de mindmap<br><br>● Vragen mogelijke participanten (snowball)<br><br>● Opname apparaat uitzetten | ● Dit was het einde van de interview.<br><br>● Zijn er nog dingen bij jou opgekomen die ik gemist heb met mijn vragen?<br><br>● Wat vond je van de interview?<br><br>● Ik wil je ontzettend bedanken voor het interview en het delen van jouw inzichten, je hebt veel verteld en dat gaat mij veel helpen.<br><br>● Ik geef je graag een bedankje (cadeau)<br><br>● Ik neem de mind map mee<br><br>● Ken je nog andere vrouwen met een kind jonger dan 1 jaar die wellicht mee zouden willen doen met een interview?<br><br>● Ik zet het opname apparaat uit. |

# Appendix 4: Code tree




Increased appetite (6)
Resolved (2)
Not resolved (4)
Changed nutritional needs (10)
Nutrition for self
Nutrition for baby
Sufficient water (9)
Breastfeeding
Social environment (9)
Providing information
Preparing food
Health care professionals (7)
Providing information
Preparing food
Received nutritional support
Dietitian (1)
Searched for nutritional support (1)
Information on nutrition (12)
Information during breastfeeding
Information on nutrition for more energy
None (3)
Needs for nutritional support (14)
Nutritional support in the postpartum period
Maternity nurse (8)
Midwife (2)
Dietitian (3)
Reading material (4)
Courses (2)
Preferred way of nutritional support
Schedules
Nutritional value of foods
Quick information
Focus on what is allowed
Positive
Apps
Continuous effort
Focus on what's not allowed
Too strict
Negative