

MASTER THESIS

Public health nutrition

2020

**Experience with Advice about Diet and Self-monitoring of Blood Glucose of
Women with Gestational Diabetes Mellitus: Qualitative Study**

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Acknowledgements

This study was a continuation of the Pregnant + study at OsloMet. I would like to thank Lisa Garnweidner- Holme and Mirjam Lukasse for allowing me to be a part of this study. I would also like to thank all of the midwives and diabetes nurses at the diabetes outpatient clinic at Ullevål hospital for being so kind and helpful in recruiting women. A special thanks to my supervisor Lisa Garnweidner-Holme and co- supervisor Monica Sørensen from the Norwegian Directorate of Health, for all the support, encouragement and guidance throughout the project and during writing of my master thesis.

I would also like to thank my family and friends for being so supportive during this year and for giving me the support and strength to finish this thesis. Benny, thank you for your understanding and for being by my side this year. Oliver, thank you for being the most amazing and patient son, I am looking forward to spending more time with you from now on.

I would also like to express my gratitude towards all the women participating in this study. Thank you for sharing all your experiences and thoughts.

Summary

Background: Gestational Diabetes Mellitus (GDM), defined as hyperglycemia detected at any time during pregnancy, is increasing worldwide. In 2017, new guidelines for the care of women with GDM were implemented in Norway. Prior to the implementation of these guidelines, women with GDM were followed-up in secondary health care. One of the main aims of these guidelines was that more women with GDM shall be followed-up in primary health care. First-line management of GDM involves dietary advice based on women's regularly measured blood glucose levels. 70-85% of women diagnosed with GDM may manage the disease with lifestyle changes, such as healthy eating and physical activity. However, lifestyle changes presuppose knowledge, motivation, and follow-up by health care professionals. Little is known about how women receive this follow-up. The aim of this thesis was to explore how women with GDM experience advice about diet and self-management of blood glucose received in primary health care and secondary health care, with specific focus on how women perceived the collaboration between health care professionals.

Methods: Women in the study were purposely recruited. Semi-structured interviews were conducted with 12 women in area of Oslo, Norway in the period September 2019-February 2020. The interviews were tape-recorded and transcribed verbatim. The data were analysed with thematic analysis.

Results: Women described being diagnosed with GDM with a feeling of shock and felt an immediate need for information about the consequences and management of GDM. Most of the women experienced that their general practitioner had too little knowledge about GDM to answer their questions. Especially women of immigrant background felt that midwives in the primary health care provided them with sufficient dietary advice related to GDM, whereas ethnic Norwegian women often asked for more individually tailored dietary advice, as perceived to receive in secondary health care. Self-monitoring of blood glucose influenced women's daily lives, however, they perceived the training in primary -and secondary health care as sufficient. Women experienced poor collaboration between health care professionals in primary and secondary health care, which implied that they sometimes had to initiate follow-up steps in their GDM care by themselves.

Conclusions: Women diagnosed with GDM should meet health care professionals with sufficient knowledge about GDM immediately after being diagnosed. The collaboration between health care professionals involved in the care of women with GDM should be improved to avoid that the women themselves feel the need to coordinate their care.

Sammendrag

Bakgrunn: Svangerskapsdiabetes, definert som hyperglykemi oppdaget når som helst under svangerskapet, øker på verdensbasis. I 2017 ble nye retningslinjer for oppfølging av kvinner med svangerskapsdiabetes i Norge implementert. Før implementering av retningslinjene ble kvinner med svangerskapsdiabetes fulgt opp i sekundærhelsetjenesten. En av de viktigste målene med retningslinjene er at flere kvinner med svangerskapsdiabetes skal bli fulgt opp i primærhelsetjenesten. Hovedfokuset med håndtering av svangerskapsdiabetes innebærer kostholdsråd basert på kvinnenes jevnlige blodglukosemålinger. 70-85% av kvinner diagnostisert med svangerskapsdiabetes kan håndtere tilstanden med livsstilsforandringer slik som fysisk aktivitet og et sunt kosthold. Midlertidig forutsetter livsstilsforandringer kunnskap, motivasjon og oppfølging fra helsepersonell. Lite er kjent med hvordan kvinner opplever denne oppfølgingen. Målet med denne oppgaven var å utforske hvordan kvinner med svangerskapsdiabetes opplever erfaringer med råd om kosthold og håndtering av blodsukker i primær- og sekundærhelsetjenesten med spesifikt fokus på hvordan kvinner opplevde samarbeidet mellom de forskjellige helsepersonellene.

Metode: Kvinnene i denne studien ble strategisk utvalgt. Semi-strukturerte intervjuer ble utført blant 12 kvinner i Oslo, Norge i perioden September 2019-Februar 2020. Intervjuene ble tatt opp ved hjelp av en lydopptaker og analysert ved hjelp av tematisk analyse.

Resultater: Kvinnene beskrev å bli diagnostisert med svangerskapsdiabetes som sjokkerende og uttrykte et øyeblikkelig behov for informasjon om konsekvensene og håndtering av svangerskapsdiabetes. De fleste kvinnene opplevde at fastlegen hadde for lite kunnskap om svangerskapsdiabetes til å besvare deres spørsmål. Spesielt kvinner av immigrant bakgrunn følte at jordmødrene i primærhelsetjenesten ga tilstrekkelig informasjon om kosthold relatert til svangerskapsdiabetes, mens etniske norske kvinner ofte spurte om mer individtilpasset informasjon om kosthold, som de opplevde å få i sekundærhelsetjenesten. Selvom overvåking av blodglukose påvirket kvinnenes daglige liv, likevel opplevde kvinnene å få opptrening i blodglukose i primær- og sekundærhelsetjenesten som tilstrekkelig. Kvinnene opplevde dårlig samarbeid mellom helsepersonell i primær- og sekundærhelsetjenesten, noe som innebar at de noen ganger selv måtte ta ansvar for den oppfølgingen de skulle ha.

Konklusjon: Kvinner diagnostisert med svangerskapsdiabetes bør få oppfølging fra helsepersonell med tilstrekkelig kunnskap om svangerskapsdiabetes rett etter diagnostisering. Samarbeidet mellom helsepersonell involverte i oppfølging av kvinner med svangerskapsdiabetes bør forbedres for å unngå at kvinnene selv føler et ansvar for å koordinere deres oppfølging.

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List of abbreviations:

BGL: Blood glucose level

BMI: Body mass index

GDM: Gestational diabetes mellitus

GI: Glycemic index

GP: General Practitioner

MCHC: Mother and Child Health Center

NSD: Norwegian Centre for Research Data

OGTT: Oral Glucose Tolerance Test

PHC: Primary health care

SHC: Secondary health care

T1DM: Type 1 Diabetes Mellitus

T2DM: Type 2 Diabetes Mellitus

1.0 Organization of the thesis

This thesis is written in an article format. In the first part, the theoretical and methodological background of the study will be presented. Followed by a short summary of the main findings and a detailed methodological discussion. The results and the discussion of the results will be presented in the article.

The article is written in accordance with the guidelines of the scientific journal of *Scandinavian Journal of Primary Health Care*.

2.0 Introduction

Gestational diabetes mellitus (GDM) is defined as hyperglycemia detected at any time during pregnancy (World Health Organization, 2013). The prevalence of GDM is increasing worldwide and varies from 1,8% to 31,5% (Zhu & Zhang, 2016). This variation is due to different diagnostic criteria, screening procedures and population characteristics, e.g., socioeconomic status, maternal age, body composition and ethnicity and/or genetics (Schneider et al., 2011; Zhu & Zhang, 2016).

The prevalence of GDM among women giving birth in Norway has also increased in recent years (Medical Birth Registry Norway, 2018). According to the Norwegian Birth Register, the prevalence has increased from 1.3% in 2008 to 5% in 2018 (Medical Birth Registry Norway, 2018). A cohort study in a district in Oslo identified GDM in 13% of all pregnant women, 11% in ethnic Norwegians, and 12% to 17% in groups of non-European origin (Jenum et al., 2011). However, the diagnostic criteria for GDM have changed since the study from Jenum et al. (2011) was conducted, which implies that results from Jenum et al. (2011) might be underestimates (Den norske legeförening, 2017; Helsedirektoratet, 2020).

Most women diagnosed with GDM have to make dietary changes to manage their blood glucose levels (BGL) (Farrar, 2016; Helsedirektoratet, 2020). Following dietary advice to manage BGL requires appropriate follow-up by health care professionals (Carolan, Gill Gurjeet, & Steele, 2012). In 2017, new guidelines for the care of women with GDM were implemented in Norway (Helsedirektoratet, 2020). The development of the new guidelines was motivated by recent studies showing adverse pregnancy outcomes at lower BGLs than previously assumed (Coustan, Lowe, Metzger, & Dyer, 2010; Jenum et al., 2011). Thus, lower diagnosis criteria for GDM were implemented in the new guidelines. Prior to the

implementation of new guidelines, women diagnosed with GDM were preliminary followed-up in the secondary health care (SHC). The new guidelines imply that women with mild GDM are followed-up in primary health care (PHC) (Helsedirektoratet, 2020).

Several previous studies have investigated women's experiences with GDM care (Carolan, Steele, & Margetts, 2010; Dahm, Flodgren, Straumann, Dalsbø, & Vist, 2019; Dayyani, Maindal, Rowlands, & Lou, 2019). A systematic review by Dahm et al. (2019) about the effect and experience of care for women with GDM shows that knowledge of GDM can have an effect on how women follow health and treatment recommendations by health care professionals. Further, a qualitative study by Carolan et al. (2010) found that women with low socio-economic and immigrant backgrounds had difficulties to understand training in self-monitoring of blood glucose measurements (Carolan et al., 2010). Women of ethnic minority were also shown struggling with adhering to recommended behavioral changes in a Danish qualitative study about experiences among ethnic minority women with GDM (Dayyani et al., 2019). In this study, poor language skills and women's ability to seek and assess knowledge about their diagnosis were found to be important factors that influences whether the women considered GDM as challenging (Dayyani et al., 2019).

In Norway, there are no published studies on how pregnant women with GDM experience advice about diet and self-monitoring of blood glucose after the implementation of the new guidelines for GDM care.

3.0 Aim of the study

The purpose of this study was to explore how women with GDM experience advice about diet and self-monitoring of blood glucose management in both PCH and SCH, with a specific focus on how women with GDM perceive the collaboration between health care professionals in PCH and SCH.

The specific research questions were:

1. How do women with GDM experience to get dietary advice from health care professionals in PHC and/or SHC?
2. How do women with GDM experience to receive training in self-monitoring of blood glucose measurement from health care professionals in PHC and SHC?
3. How do women experience the collaboration between health professionals in PHC and SHC?

4.0 Background

4.1 Gestational Diabetes Mellitus

Gestational diabetes mellitus (GDM) also defined as hyperglycemia detected at any time during pregnancy (World Health Organization, 2013), is increasing globally (Zhu & Zhang, 2016). GDM is one of the most common complication during pregnancy, often due to a combination between several factors like insulin resistance and lack of insulin production (Catalano, Kirwan, & King, 2003). The global prevalence of GDM varies between 1.8 % to 31.5 % depending on population characteristics and screening criteria (Rani & Begum, 2016; Zhu & Zhang, 2016).

Risk factors for GDM include advanced maternal age, obesity, adherence to certain ethnic groups, GDM in previous pregnancy and a family history of diabetes (Schneider et al., 2011). For instance, women's age >35 has shown to be a risk factor for developing GDM during pregnancy (Kahveci, Melekoglu, Evruke, & Cetin, 2018). This is explained by a reduction in glucose tolerance and increased insulin resistance as women get older (Fulop, Larbi, & Douziech, 2003). In addition, women from South Asian and African origin tend to develop GDM at lower age and body mass index (BMI) than white Europeans (Makgoba, Savvidou, & Steer, 2012).

GDM increases the risk of several short- and long- term complications for both mother and child (Galtier, 2010; Kim, 2010). Women with GDM have an increased risk of complications during birth (Hartling et al., 2014) and developing cardiovascular disease and type 2 diabetes mellitus (T2DM) later in life (Bellamy, Casas, Hingorani, & Williams, 2009; Shah, Retnakaran, & Booth, 2008). A child born to a mother with GDM has an increased risk of high birthweight (>4,000 grams) (Hartling et al., 2014), T2DM and obesity in adult life (Catalano et al., 2003).

According to the Norwegian Birth Register, more women in Norway were either obese or overweight (BMI >25) when entering a pregnancy in 2018 (35,4%) than in 2008 (34,5%) (Medical Birth Registry Norway, 2018). Findings from a case-control study among pregnant women from Texas, USA, indicate that obesity in combination with GDM can increase the risk of complications during pregnancy and childbirth than GDM alone (Langer, 2016). Based on this, the recommended weight gain is calculated according to pre-pregnancy BMI (see

table 1). The recommended weight gain during pregnancy applies to all pregnant women and not only women with GDM.

Table 1: Recommended weight gain for pregnant women based on their pre-pregnancy BMI (Helsedirektoratet, 2020).

BMI range	BMI Category	Recommended weight gain (kg)
< 18.15	Underweight	12.5 – 15
18.5-24.9	Normal weight	11.5 - 16
25 – 29.9	Overweight	7-11.5
> 30	Obesity	5-9

4.1.1 The importance of a healthy diet and self-monitoring of blood glucose for women with GDM

Management of GDM includes dietary changes depending on regularly blood glucose measurements (Helsedirektoratet, 2020). Successful management of GDM has been shown to reduce or prevent adverse health outcomes for both the mother and child (Landon et al., 2009). However, managing GDM can be challenging, especially if the woman has no prior experience with GDM or has experienced inappropriate follow-up (Hui, Sevenhuysen, Harvey, & Salamon, 2014).

In a systematic review of RCTs about dietary interventions for women with GDM, they looked at whether different diets could prevent some of the negative outcomes related to GDM (Viana, Gross, & Azevedo, 2014). The diets consisted of a low carbohydrate diet, energy restriction and a diet which consists of low glycemic index (GI) foods (Viana et al., 2014). They found that a diet which consist of foods with low GI was the only diet that gave positive results (Viana et al., 2014). Women consuming foods with lower GI rate compared to women consuming foods with higher GI rate used less insulin and gave birth to babies with a lower birthweight (Viana et al., 2014). In a systematic review of RCTs by Filardi, Panimolle, Crescioli, Lenzi, and Morano (2019) it is also shown that a diet which consists of low GI foods may reduce insulin requirement for women with GDM. Further, studies (Filardi et al., 2019; Louie et al., 2011; Viana et al., 2014) emphasizes that low GI diet should be promoted as low GI foods are likely to result in a lower blood glucose rise after food intake and

therefore to prevent increased insulin secretion (Filardi et al., 2019; Louie et al., 2011; Viana et al., 2014). Low GI foods are classified as oats, legumes and lentils, which contains carbohydrates that are broken down and absorbed slowly and therefore may contribute to glycemic control than high GI foods (Ojo, Ojo, Adebawale, & Wang, 2018). Foods with low GI are also food types that are recommended by the Norwegian Directorate of Health for pregnant women with GDM (Helsedirektoratet, 2020). However, making women eat as recommended can be challenging, especially among women with immigrant backgrounds (Garnweidner-Holme et al., 2019). Findings from a cross-sectional study in Norway where pregnant women had to fill out information regarding their dietary habits before pregnancy, indicated that few participants had little adherence to the recommendations of whole grains, vegetables, fruits and berries (Garnweidner-Holme et al., 2019). At the same time, few participants appeared to be aware of the recommendations on intake of fish, red/processed meat, and fast food (Garnweidner-Holme et al., 2019). It also showed that women of immigrant background adhered less to the recommendations than ethnic Norwegians (Garnweidner-Holme et al., 2019). Furthermore, effective strategies in antenatal care may be needed in order to promote a healthy diet among women with GDM (Garnweidner-Holme et al., 2019).

Women measuring their own BGL in combination with dietary management can reduce the risk for the need of medical treatment (Brown et al., 2017; Carolan et al., 2012). Self-monitoring blood glucose includes women measuring and managing their own blood glucose level with the aim of stabilizing BGL (Hashimoto & Koga, 2015; Helsedirektoratet, 2020). It is estimated that 70-85% of women diagnosed with GDM can achieve their desired BGL with lifestyle changes (American Diabetes Association, 2017). However, measuring and managing own BGL can be challenging for some women (Hui et al., 2014). Findings from a cross-sectional study conducted among a multi-ethnic group of pregnant women with GDM in Australia, show that women with immigrant background, lower educational level and lower grade of health literacy seem to strive more in understanding the importance of managing GDM (Carolan et al., 2010). Findings from other studies (Borgen et al., 2019; Carolan et al., 2010; Hui et al., 2014) further suggests that individually adapting information toward the women's needs may be important in order to enhance the quality of treatment.

In a qualitative study from Norway, aiming to explore women with GDMs experiences with controlling their blood glucose values and receiving health and nutrition information using a smartphone app (pregnant + app), they found that the women using the app experienced a

sense of control and increased motivation for behavioral change (Skar, Garnweidner-Holme, Lukasse, & Terragni, 2018). Further, the study concluded that an app potentially can have positive impacts on the management of GDM by increasing women's confidence (Skar et al., 2018).

4.2 The Norwegian guidelines for the care of women with GDM

In 2017, the Norwegian Directorate of Health updated and published own guidelines for the care of women with GDM (Helsedirektoratet, 2020). The guidelines implied a task shift from women with GDM being treated and followed-up in SHC to mostly being followed-up in PHC (Helsedirektoratet, 2020). The guidelines are based on up-to-date information about who should be screened for GDM using an oral glucose tolerance test (OGTT) and aim to identify women with the greatest risk of negative outcomes for mother and child (Helsedirektoratet, 2020).

In the new guidelines, the Norwegian Directorate of Health emphasize preventive measures with self-monitoring of blood glucose and diet intervention for women with GDM (Helsedirektoratet, 2020). According to the guidelines, GDM implies that most women should be trained in self-monitoring of blood glucose and receive dietary advice, preferably by health care professionals in PHC. The Norwegian Directorate of Health (2020) recommends health care professionals to individually adapt information on diet and blood glucose management in order to reduce total BGLs. This is due to meta-analyzes (Hartling et al., 2013; Thangaratnam et al., 2012; Viana et al., 2014) showing that diet intervention and follow-up has a great impact in reducing the risk of negative outcomes related to GDM. If needed, as e.g. if the woman does not reach targeted BGL, she will be referred to SHC for follow-up and possible treatment with metformin and/or insulin (Helsedirektoratet, 2020). Pregnant women with diabetes prior to pregnancy or obesity in combination with GDM should be referred to SHC directly for follow-up. Women are also referred to SHC if the PHC in the women's region lacks resources to follow her up (Helsedirektoratet, 2020). Further, all women diagnosed with GDM, regardless of where they receive follow-up, will get an additional ultrasound examination at the maternity clinic at the hospital (SHC) in gestational week 36 (Helsedirektoratet, 2020).

4.2.1 Screening for GDM

Worldwide, there is an ongoing on diagnostic and treatment criteria for GDM (Behboudi-Gandevani, Amiri, Bidhendi Yarandi, & Ramezani Tehrani, 2019; Rani & Begum, 2016). A systematic review from Tieu, McPhee, Crowther, Middleton, and Shepherd (2017) aimed to study whether a universal screening method for GDM could improve health outcomes. In conclusion, Tieu et al. (2017) found little evidence that universal screening had better health outcomes than if only women with risk factors were screened (Tieu et al., 2017).

The Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study discovered an increased risk of adverse infant and maternal outcomes with increasing levels of blood glucose (Coustan et al., 2010). The study recommended reducing the old criteria for diagnosing for GDM to a plasma glucose level of 5.1 mmol/L fasting and 8.5 mmol/L after 2 hours (Coustan et al., 2010). In 2010, the International Association of Diabetes in Pregnancy Study Group (IADPSG) (an umbrella organization wishing to facilitate an international approach to enhance the quality of care for women with diabetes in pregnancy), approved the criteria and in 2013, the WHO published new criteria for diagnosing GDM (Coustan et al., 2010; World Health Organization, 2013). However, Gillespie, O'Neill, Avalos, and Dunne (2012) comments that the new screening criteria can lead to overdiagnosis, which may affect the cost of care for pregnant worldwide. To that end, the Norwegian Directorate of Health set the diagnostic thresholds higher than the IADPSG/WHO criteria (see table 2), with the intention of identifying women with the greatest risk of negative birth outcomes (Helsedirektoratet, 2020).

Table 2: Diagnostic criteria for GDM (Zhu & Zhang, 2016).

Norwegian guidelines	WHO
Fasting BGL (Norway) 5,3-6,9 mmol/L	Fasting BGL (WHO) 5,1-6,9
2- hours after 75-gram glucose 9-11	2- hours after 75-gram glucose 8,5-11

Some women enter a pregnancy with an undetected pre-gestational diabetes (Helsedirektoratet, 2020). Thus, the Norwegian Directorate of Health (2020) recommends some women to screen with a glycated or glycosylated hemoglobin (HbA1c) test, also

described as a form of hemoglobin that primarily is measured to identify average plasma glucose concentrations over a period of time, before they reach gestational week 16 (Brown et al., 2017; Helsedirektoratet, 2020). The screening method is recommended in order to identify women with type 1 diabetes mellitus (T1DM), T2DM or women with an increased risk of developing GDM (Hughes, Moore, Gullam, Mohamed, & Rowan, 2014). Recommendations of early testing with HbA1c is based on good test properties in order to identify pregnant women with highest risk of developing severe pregnancy outcome (Hughes et al., 2014). The criteria for screening with an HbA1c are displayed in table 3. If the woman is diagnosed with diabetes in pregnancy, HbA1c >6,5 (48 mmol/mol) or hyperglycemia, HbA1c 5,9-6,4% (41-46 mmol/mol) she should be referred to SHC for further follow-up (Helsedirektoratet, 2020).

After pregnancy, women with prior GDM should be offered an HbA1c test four months after giving birth. The HbA1c test is recommended by the Norwegian Directorate of Health (2020) to early diagnose and treat women with high risk of T2DM and T1DM.

Table 3: Criteria for screening with HbA1c and OGTT in pregnancy (Helsedirektoratet, 2020).

HbA1c	OGTT
<p>Criteria for screening with HbA1c before gestational week 16:</p> <ul style="list-style-type: none"> • Ethnic background from Africa or Asia • First-degree relatives with diabetes (mother, father, siblings) • Pre-gestational BMI >30 	<p>Criteria for screening for GDM between gestational week 24-28:</p> <ul style="list-style-type: none"> • Ethnic background from Africa or Asia • First-degree relatives with diabetes (mother, father, siblings) • Pre-gestational BMI >25 • Primiparous >25 years

<p>The test is also recommended to women who have had one or more childbirths where she:</p> <ul style="list-style-type: none"> • Had a baby that weighed >4,500 grams • Had impaired glucose intolerance • Is previously diagnosed with GDM • Had pregnancy and birth outcomes that can be associated with GDM (Preeclampsia, complications during birth) 	<p>The test is also recommended to women who have had one or more childbirths and is:</p> <ul style="list-style-type: none"> • >40 years of age • Given birth to a baby that have weighed >4,500 grams • Have had glucose intolerance • Have previously been diagnosed with GDM • Had pregnancy and birth outcomes that can be associated with GDM (preeclampsia, complications during birth)
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In order to screen women without pre-existing diabetes for GDM, the woman must meet one or more criteria (see table 3) (Helsedirektoratet, 2020). According to the new guidelines, pregnant women are encouraged to take an OGTT between weeks 24-28 of pregnancy to screen for GDM. The method is considered gold standard for screening and diagnosis of GDM (Helsedirektoratet, 2020). The test includes 8-14 hours of fasting before the woman has to drink 2.5 dl glucose and water orally. Plasma glucose is taken after the woman has abstained from food and drink and two hours after ingestion (Helsedirektoratet, 2020).

The criteria defining whom to screen for GDM are based on who is most at risk for potentially negative outcomes (Helsedirektoratet, 2020). One of the biggest changes after the implementation of the new guidelines is that younger women pregnant with their first child (primiparous) are screened today (> 25 years) than before (> 38 years) (Qvigstad, Voldner, Bollerslev, & Henriksen, 2009), and that the criteria for which BGLs qualify as GDM have been changed.

4.2.2 The recommendations of a healthy diet and self-monitoring of blood glucose for women with GDM

Dietary advice and self-monitoring of blood glucose are the main pillars in treatment of GDM (Helsedirektoratet, 2020). Treatment of women with GDM through dietary advice and self-monitoring of blood glucose provides an important opportunity to prevent severe health outcomes, such as development of T2DM later in life (Dolatkah, Hajifaraji, & Shakouri, 2018).

If a woman is diagnosed with GDM, she should be offered dietary advice by either a midwife or their general practitioner (GP) in the PHC at the time of diagnosis (Helsedirektoratet, 2020). The dietary advice involves; Having a varied diet with lots of vegetables, fruits, fish, berries, coarse cereals and limited amounts of processed meat, red meat, salt and sugar. It is also recommended to have lean dairy products as part of the daily diet and to consume fish two to three times a week (Helsedirektoratet, 2019, 2020). According to the Norwegian Directorate of Health (2020), the woman should also be informed about what GDM entails, as well as receive training in self-monitoring and management of blood glucose. The Norwegian Directorate of Health (2020) further recommends that women with GDM are informed by health care professionals in PHC to manage their diet and BGL over a period to identify any areas of improvements or deviations from the recommended diet. The answers given can thus be used to form the basis for further diet recommendations (Helsedirektoratet, 2020).

In order to achieve and maintain stable BGL, women with GDM are recommended to consume complex carbohydrates that take a long time to digest and therefore have a lower effect on blood glucose (low GI) compared to food items with carbohydrates that give higher and faster blood glucose spikes (Helsedirektoratet, 2020). This involves recommending distributing carbohydrate intake evenly across all meals, limiting the intake of sugary drinks and foods, as well as eating multiple, regular meals throughout the day (Helsedirektoratet, 2020).

After the woman has received written and oral information on how/what she should eat and how to perform self-monitoring of blood glucose, her blood glucose values should be evaluated regularly. Women with GDM should be trained in self-monitoring of blood glucose by qualified personnel, preferably in PHC. The first 1-2 weeks after diagnosis women are advised to measure and record their BGL values 3 times a day, every day (Helsedirektoratet, 2020). After 1-2 weeks it is further recommended that the women be given follow-up in PHC

to assess the effect of her BGL. The frequency of measurements will thus vary depending on whether the woman has achieved her treatment goals or not (Helsedirektoratet, 2020). By reaching the treatment goal, self- measurement of BGL 1-2 days a week, 3 times a day is considered sufficient. (Helsedirektoratet, 2020). However, if a woman's BGL exceed recommended value two or more times a week or three or more times in two weeks, it should be considered whether she should be referred to the SHC for assessment and possible treatment with medication (Helsedirektoratet, 2020).

4.3 Health and nutrition communication for women with GDM

Good communication between the pregnant women and their health care professionals can be important for successful management of GDM (Carolan et al., 2012).

In general, health communication aims to improve health in the population and can be described as “*the study and use of communication strategies to inform and influence individual and community decisions that enhance health*” (Schiavo, 2014). Nutrition communication is a sub-category of health communication and can be described as “*the study and use of knowledge-based communication strategies to inform and influence individual and societal choices to improve and ensure a healthy diet*” (Engeset, Torheim, & Øverby, 2019, p. 175).

Health communication has often been divided into three categories, also presented in Figure 2. (1) Mass communication, where a relatively large heterogenic audience receives the same information. (2) Targeted communication, where separate segments of the audience, often divided demographically, receive similar information and (3) tailored communication, where the information is intended to be adapted to the needs and preferences of individuals (Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008).

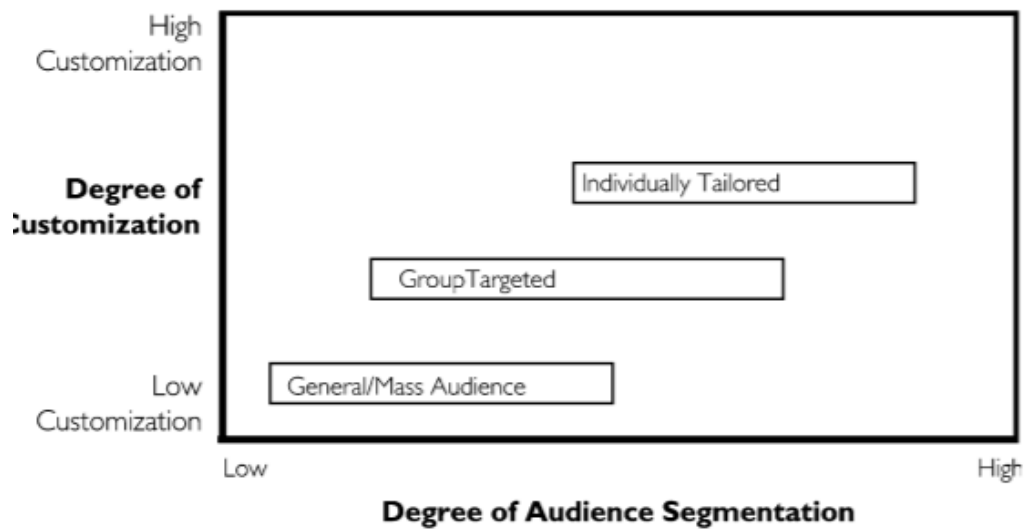


Figure 2: Degree of Audience Segmentation (Hawkins et al., 2008).

The Norwegian Directorate of Health (2020) emphasizes the importance that health care professionals individually tailor information about diet and training in blood glucose management for women with GDM. Health and nutrition communication towards women with GDM should take their cultural background into account. In this context, “individually tailored” information may be of special relevance for health care professionals in order to adapt the information to the women’s needs (Hawkins et al., 2008).

4.3.1 Tailored communication

Since the 1990s, several articles have been published on the effectiveness of individualized communication compared with communication aimed at more heterogenous groups (Hawkins et al., 2008). Hawkins et al. (2008) comments that tailoring is about creating communications so that information about a given individual is used to determine what content a person will receive. It is further explained that the environment and context around a person, who is to present the information and where the information is to be disseminated, may be important for an individual to be able to perform a desired action (Hawkins et al., 2008).

Tailoring may imply to take cultural differences into account (Bandyopadhyay et al., 2011). Schiavo (2014) recognizes that different cultural backgrounds between health care professionals and their clients can be barriers for successful health communication. A

qualitative study by Garnweidner, Pettersen, and Mosdøl (2013) found that women perceived information about diet as too general and had difficulties understanding diet related information provided by their health care professional. The authors of the study further suggested that nutrition communication in antenatal care should be tailored to each woman's needs (Garnweidner et al., 2013).

Schiavo (2014) comments that with the goal of achieving greater health outcomes, it is desirable to empower, engage and influence individuals. This involves acquiring the person's cultural values, language preferences and other important elements that can influence the quality of the conversation (Schiavo, 2014). In a qualitative study conducted on women with GDM in the Winnipeg area, Australia, it is shown that individualized meal plans which take the women's food preferences into account can be useful when giving dietary advice (Hui et al., 2014). Further, assessment of follow-up on how meals can be balanced and adapted may help to identify women's barriers of modifying their diet (Hui et al., 2014).

Health literacy can be defined as; *«The cognitive and social skills that determine the motivation and ability of individuals to gain access to understand and use information in ways that help promote and maintain good health»* (Dalland, 2012, pp. 152-162; Nutbeam, Harris, & Wise, 2010, p. 39). The understanding of dietary advice and training in self-monitoring of blood glucose may depend on the women's degree of health literacy (Borgen et al., 2019; Schiavo, 2014). In a cross-sectional study by Borgen et al. (2019) it was found that knowledge about GDM among immigrant women in Norway was lower than among ethnic Norwegians. The number of immigrants in Norway has risen in recent years and figures from 2020 show that 18.2% of the population in Norway consisted of immigrants and/or children born of immigrant parents (SSB, 2020). A cross-sectional study from Gele, Pettersen, Torheim, and Kumar (2016) shows that the degree of HL among the Somali immigrant population in Norway is lower than among the general population. One of the reasons highlighted by Gele et al. (2016) is that immigrants potentially can have greater difficulties understanding the information given to them (Gele et al., 2016). Furthermore, in order to provide women with GDM understandable information and appropriate care it is suggested that women should receive individually tailored information (Borgen et al., 2019; Gele et al., 2016). In this way, health care professionals can assure women with e.g. immigrant background information that are adapted to their cultural and linguistic background (Borgen et al., 2019; Garnweidner-Holme et al., 2019).

4.3.2 Inter-professional collaboration

Good health communication also requires collaboration between health care professionals. Inter-professional collaboration is described by the World Health Organization (2010) as; “*A collaborative practice in healthcare that occurs when multiple health care workers from different professional backgrounds provide comprehensive services by working with patients, their families, carers and communities to deliver the highest quality of care across settings*”. Good collaboration between health care professionals can be important in reducing morbidity and mortality in the population (World Health Organization, 2010). Especially as women with GDM in Norway potentially meet several health care professionals from both PHC and SHC during their pregnancies (Helsedirektoratet, 2020).

As shown in an intervention study by De La Rosa, Pitts, and Chen (2020), good inter-professional collaboration between health care professionals in PHC and SHC may improve the quality of life of the women, and reduce complications surrounding the diagnosis (De La Rosa et al., 2020). Parsons et al. (2018) states that good collaboration between health care professionals (inter-professional collaboration) is important to enhance the experiences women with GDM are left with after diagnosis (Parsons et al., 2018).

Parsons et al. (2018) recognizes that there are few qualitative studies exploring women with GDM's relationship with their health care professionals (Parsons et al., 2018). For a woman with GDM, it is important to self-monitor their BGL (Landon et al., 2009). As shown by Parsons et al. (2018) this may increase the time pressure on both the woman and the health care professional who is responsible for her. In many cases, this can leave the woman with a feeling that she is an object where her feelings and thoughts around the process are overshadowed by focus on the outcome of the baby and that she loses her feeling of autonomy (Parsons et al., 2018).

5.0 Method

5.1 Choice of methodology

In this thesis, individual qualitative interviews were conducted to gain a better understanding of how women with GDM experiences advice about diet and self-monitoring of blood glucose in PHC and SHC. Qualitative approaches can provide a better understanding of the experiences of the participants and help to understand experiences that are novel or not well understood (Malterud, 2011). Individual qualitative interviews were chosen as it provides the opportunity for the respondents to explain how they experience their situation (Thagaard, 2013, p. 58). Further, it gives the opportunity for the respondents to talk, be heard and elaborate on topics from the interview guide which might be sensitive for the participant (Thagaard, 2013, p. 97).

Women were recruited through purposive sampling as it provided with the opportunity of selecting women with the qualifications or characteristics in relation to the research question (Thagaard, 2013, p. 60). It was focused on recruiting women with GDM with experiences of being followed-up in both PHC and SHC due the task shift of follow-up from SHC to PHC. Women were recruited from a group on Facebook called “gestational diabetes” and midwives at mother and child health centers (MCHC) from the Oslo region. The midwives were contacted to assist with recruitment, of which two midwives from two different districts have been assisting with recruitment. I have also had contact with three health care professionals at Ullevål Hospital. The health care professionals gave me an opportunity to be at the Hospital for four days to recruit women.

Both women recruited by midwives in PHC and the Facebook group “gestational diabetes” received mine and my supervisors’ telephone number to contact us to schedule the interview. Women from SHC were recruited at the hospital by either me or the health care professionals directly. Women accepting to be interviewed either gave me contact information for further agreement on the time of the interview or they were interviewed directly in a private room at the hospital. During recruitment process, interviews where transcribed and analyzed continuously and the data where gathered continued until we met the saturation point. The saturation point was met when no new interviews provided with more information and when we felt the research questions had been answered.

In total 12 women were interviewed, one from the Facebook group, two from the midwives and nine from the hospital.

Women eligible for this study had been diagnosed and treated for GDM; were over 18 years; had received follow-up for GDM in PHC and/or SHC. Information about the women's BMI, age, ethnicity, degree of education, municipality of residence, whether she has had GDM in previous pregnancies, if she's using insulin or not and where she has been followed-up, were also collected.

5.2 Interviewing

The research questions served as the foundation for the interview guide. The last research question was changed during the project as it was found difficult to map informational needs with qualitative methods. As this thesis also aimed to focus on collaboration, this was implemented as the last research question. The interview guide (see appendix nb.1 and 2) was developed together with the main supervisor and the co-supervisor of the project. The co-supervisor has been responsible for the new guideline criteria and the research questions was characterized by the Norwegian Directorate of Health's interests. Four categories were included in the interview guide: (1) experiences of getting information about a healthy diet, (2) experiences of getting information about training in self-monitoring of blood glucose, (3) women's information needs about diet and self-management of blood glucose and (4) experiences of collaboration between different health care professionals involved in women's GDM care.

With the use of a qualitative approach it has provided the opportunity to form and correct the interview guide if needed, to delete or add something of relevance (Malterud, 2002). The interview guide had a semi-structured approach. Semi-structured interview allows the respondent and moderator to adjust the conversation without being restricted by the interview guide (Thagaard, 2013, p. 98). Semi-structured interview was used with the intention of creating as natural interview setting as possible. Furthermore, it may provide the opportunity for women to speak freely about the topic that concerns them and at the same time answer the questions that are desired to be answered (Thagaard, 2013, p. 98).

A pilot interview was conducted to test how well the interview guide worked in meeting with a potential participant. The woman who participated in the pilot interview was recruited

through the Facebook group, where she got mine and my supervisor's information and later contacted me for an interview. The pilot interview led to minor changes in the interview guide as e.g. change of wording (see appendix nb.1 and 2). The pilot interview has thus been included in the data material.

I conducted the interviews myself. The interviews lasted from 15 to 45 minutes and the informants were interviewed where they preferred to be interviewed. Four women were interviewed at their homes, one woman preferred meeting at a local shopping mall, one woman was interviewed at Oslo Metropolitan University's (OsloMet) premises. The remaining six interviews were held in a meeting room at a local hospital. The interviews were conducted and transcribed during the period September 2019-January 2020.

5.3 Transcription and analysis

The interviews were recorded using an Olympus WS-832 sound recorder without network connection. The sound recorder was in compliance with Oslo Mets' guidelines for data security and privacy. Expressions such as laughter were also noted down during transcription. During the transcription process, the audio files were thoroughly reviewed and transcribed verbatim on a computer without network connection.

There are several ways to perform thematic analysis. This thesis is based on Braun and Clarke (2006) 's six-step framework for data analysis. Thematic analysis is widely used in qualitative research (Braun & Clarke, 2006). Thematic analysis is described as; *“a method used to identify, analyze and report different topics in a dataset”* (Braun & Clarke, 2006). The method differs from other approaches to analyze qualitative data, such as e.g. IPA (Interpretative phenomenological approach) and grounded theory (Braun & Clarke, 2006). Thematic analysis is not linked to any pre-existing theoretical framework like the other mentioned methods and can be used within different theoretical frameworks and play different roles (Braun & Clarke, 2006).

The goal of the analysis is to find a theme or pattern in the dataset that can explain something about what is being investigated (Braun & Clarke, 2006). Braun and Clarke (2006) comments that the framework provides a good opportunity to investigate areas that are novel or if the researcher has little knowledge on the respondents' view of the topic that are investigated

(Braun & Clarke, 2006). In this thesis, interviews were analyzed using an inductive approach. This by marking anything of interest at first which later developed sub-themes and themes. (Braun & Clarke, 2006).

The six- step process was carried out as followed:

1. *Familiarize with data*

I already started to familiarize myself with the data when I was conducting the interviews. The interviews were first transcribed by listening through the recorded interviews meanwhile I wrote them down on a computer without any network connection. Further, the transcripts were read and re-read by both me and my supervisor.

2. *Generating initial codes*

After transcription I read through the transcribed interviews in order to look for potential codes. Codes can be described as the smallest unit that capture the interest and that is potentially relevant for the research question (Braun & Clarke, 2006). After gathering some thoughts and ideas about potential codes existing in the dataset, I identified and labeled codes using Nvivo 12. In this step it was important to mark everything of interest for the research questions. Further, I made detailed comments on the dataset that could be helpful in the next step in identifying the sub-themes and themes.

3. *Searching for themes*

In this step, I started generating potential sub-themes. Codes that had similar meanings were grouped into meaningful sub-themes and labeled under main themes. The thesis is organized in three theme levels: 1. Main themes, 2. Sub-themes and 3. Codes. An example of identifying codes and arranging to sub-theme and theme is shown table 4.

4. *Reviewing themes*

In this step, the sub-themes and main themes were further identified and reviewed. All the codes, sub-themes and themes that were produced during process of analysis were discussed with both supervisor and co- supervisor. We assessed how the themes matched with the coded data. We also examined whether the codes and themes were in relation to each other. We

found that some of the sub-themes had varying relevance for the research questions. These sub-themes were removed.

5. Defining and naming themes

The main themes comprehensiveness on whether they worked in relation to other themes were evaluated. Through the analysis I have tried to capture the story of what each theme and the themes overall tells. It has also been determined which aspect of the data each theme captures.

6. Producing the results

The results were reported and involved telling the complicated story of the dataset in a way that merit the validity and accomplishment of what was being obtained. Relevant citations were translated from Norwegian to English. A total of four themes and 25 sub-hemes were identified. The results will be described in detail in Chapter 6.

Table 4: Example of identifying codes and arranging to sub-theme and theme

Text in the transcript	Codes	Sub-theme	Theme
<p>- Yes, shocked. I had never thought about getting it [GDM].</p> <p>- Those who are at risk in relation to inherence, obesity and bad diet (..) So I would never believe that I could get it (GDM).</p>	<p>- Was surprised to be diagnosed with GDM</p> <p>- Thought that only women with obesity and bad diet got GDM</p>	<p>- Surprised by being diagnosed with GDM</p>	<p>Reactions to being diagnosed with GDM</p>

5.4 Validity and reliability

Thagaard (2013), taken from Silverman (2011), outlines that both validity and reliability are key concepts in the discussion of whether the research is credible or not (Thagaard, 2013, p. 202). Thagaard (2013) states that there are two ways to describe reliability: internal and external reliability. Internal reliability is described to be about if researches working in the same project have managed to maintain consistency in building the data (Thagaard, 2013, p. 202). Further, external reliability is described to be the form of reliability in which the research is transparent or not. In other words, if the research that are done in one situation give the same results in another situation (Thagaard, 2013, p. 202). In order to achieve both kinds of reliability it is described that the researches working on the process should be as precise and specific when reporting the procedure.

Validity is described to be about how the researcher has interpreted the data which is obtained and if the interpretation is considered valid or not (Thagaard, 2013, pp. 204-205). Thagaard (2013) states that validity is the question whether the interpretation is valid set up against the reality we are researching (Thagaard, 2013, p. 205). Validity can also be described in two ways; internal and external validity. External validity is about whether the interpretation of data in one study can be valid in other contexts. The term internal validity is used to say whether there is agreement in the interpretations of the study, or more simply, if the data presented explains something about what was to be studied (Malterud, 2002; Thagaard, 2013, p. 205). What I have done to ensure validity and reliability will be further described in chapter 7.

5.5 Ethical considerations

This study was approved by the Norwegian Centre for Research Data (NSD; Nr 936404) and was carried out in line with Oslo Mets ethical research guidelines, which allowed us to obtain sensitive data such as audio files. The women in this study signed a consent form (see appendix number 3) after being told both orally and in writing that they had the opportunity to withdraw from the study at any time and that their participation was completely anonymous. This included names of midwives, health care professionals and names of places they have been followed-up. It was also informed that the information they provided would be treated with confidentiality.

6.0 Summary of results

This study investigated how women with GDM experienced advice about diet and managing in self-monitoring of blood glucose in both PHC and SHC.

Four main themes were identified: Reactions to being diagnosed with GDM, experience with dietary advice in PHC and SHC, experience with training in self-monitoring of blood glucose in PHC and SHC and experiences of collaboration between health care professionals in PHC and SHC.

Reactions to being diagnosed with GDM

Women were often shocked to be diagnosed with GDM. The feeling of shock was more often present in the women who didn't consider themselves at risk compared to the women who were aware of their risk of developing GDM. Many women expressed an immediate need for information about GDM after being diagnosed as they perceived they had no or little knowledge of management and consequences of GDM. Some felt ashamed and blamed themselves for developing GDM.

Experience with dietary advice in PHC and SHC

The women often described health care professionals in both PHC and SHC as important sources for dietary advice related to GDM. Women also felt that dietary advice had good consistency between health care professionals in PHC and SHC. However, many of the women used other sources for dietary advice like the internet, friends or family.

The reason for this was that several women had questions that were not answered during the consultations.

Many women received written material by midwives in PHC. They experienced this as health care professionals in PHC not having enough time or resources to explain it directly to the women. Most ethnic Norwegian women did not perceive information from midwives in PHC as sufficient and perceived the written information as not sufficient tailored to their individual needs, e.g. how different foods may affect their blood glucose values. Many women followed-up by PHC felt the information provided on diet was sufficient at first. However, after being followed-up by SHC several women had changed their mind. The women often felt that health care professionals in SHC had better time, knowledge and that they provided more thorough information about diet. More individually tailored advice perceived in SHC also made the women more aware of a healthy diet. Both women with and without ethnic

Norwegian background perceived the GP, s knowledge about GDM as lacking and felt the information provided was less sufficient than information from midwife or SHC. However, women of immigrant background tended to perceive that information provided from midwife in PHC and SHC as sufficient and adapted to their culture.

Experience of training in blood glucose measurement in PHC and SHC

In general, women were satisfied with training in how to perform self-monitoring of blood glucose. However, women felt that self-monitoring of blood glucose affected their daily lives, because they continuously had to plan when and where to measure and had to eat according to their values.

Women perceived to have received more detailed information about self-monitoring of blood glucose in SHC compared to PHC, e.g. why and how diet can affect their blood glucose levels. They also stated that health care professionals in the SHC seemed more professional than GPs or midwives in PHC and that the information was more individualized.

Most women were surprised that they had to start measuring their blood glucose. Some women perceived it as a logical consequence of being diagnosed with GDM and others, mostly women with immigrant background didn't like the idea of having to start measuring their BGL and looked at it as a burden in the beginning. However, many women experienced that blood glucose management went smoothly after some time, often motivated by doing so for the sake of the baby. The women commonly mentioned that they felt uncomfortable with too high values and that they in these situations needed more specific dietary advice, especially by the GP and midwife in the PHC on how blood glucose can be affected by different foods.

Experience of collaboration between health care professionals in PHC and SHC

Women often experienced insufficient collaboration between health care professionals in PHC and SHC. Some women felt that they had to coordinate their care owned to a lack of communication between health care professionals in PHC and SHC.

In addition, some women experienced that the GP and the midwife in PHC did not collaborate well. This resulted in some women getting information twice, and some did not receive any information at all. The women perceived a better collaboration between health care professionals in SHC and felt that the inter-professional collaboration was better in SHC than PHC.

7.0 Methodological discussion

7.1 Choice of method

To my knowledge, this study is the first to explore how women with GDM perceive advice about diet and blood glucose measurement from health care professionals in Norwegian PHC and SHC after implementation of the new guidelines for GDM care.

Individual interviews gave me insights in how women experience information about diet and blood glucose management from health care professionals in both PCH and SHC. Women had time to think and elaborate on questions asked. It also made it possible for me to follow-up on answers that have been unclear or not well understood. In addition, individual interviews were considered as appropriate since several women seemed to find topics in the interview guide as sensitive to talk about.

The use of a semi-structured interview guide might have made the conversation feeling more natural for the women compared to strictly following questions (Thagaard, 2013, p. 98).

Some of the women were recruited and interviewed in a separate room at the local hospital where they received follow-up. Even though qualitative interviews can provide respondents with the feeling of being questioned in a natural atmosphere (Thagaard, 2013, p. 98), women interviewed at the hospital may have felt otherwise. Some women were interviewed while waiting for their consultation at the diabetes outpatient clinic and may have been mentally occupied as they might have been thinking of other issues related to their pregnancies. A few women also seemed in a hurry, which may have affected their answers and prevented them from elaborating on questions being asked.

Thagaard (2013) recognizes that the foundation for a good interview is that the researcher has familiarized itself with the respondent's situation as it provides the opportunity of recognizing the phenomenon that is being investigated (Thagaard, 2013, p. 206). With this in mind I have acquainted myself with the Norwegian guidelines for the care of women with GDM.

Reading about how women should be followed-up in advance of the interviews has made it easier for me to ask follow-up questions and get into the women's situation. Nevertheless, gaining an understanding of the investigated topic in advance may have led me overlooking opinions and experiences that differs from my own. (Thagaard, 2013, p. 206).

7.2 Choice of inclusion criteria

Together with the supervisors, we decided to only include pregnant women diagnosed with GDM. We could have recruited women with previous GDM who had recently given birth. This could have contributed to an easier recruitment process as we were contacted by more women with previous GDM than pregnant women with GDM from the Facebook site. We chose not to do so as we wanted an accurate picture of the women's experience of follow-up.

We also chose to recruit women that had experience with follow-up in PHC and SHC. As our study aimed to explore how women with GDM experience advice about diet and self-management of blood glucose in both PCH and SCH, we wanted that women preferably had been followed-up in both. However, one of the participants was not followed-up in SHC. We chose to include the interview in the analysis as it gave us insight in inter-professional collaboration in-between PHC. In addition, we preferred the women to speak and understand Norwegian when interviewed since we did not have the resources for the use of an interpreter. We wanted the women to understand the question being asked and wanted to interpret the answers as correct as possible.

Nonetheless, during interviewing I had some difficulties obtaining mutual understanding of the questions being asked due to reduced skills in the Norwegian language from some of the women attending. Important meanings may have been lost as answers given or questions asked has been misunderstood and interpreted in a way that doesn't reflect reality. As I was aware of this problem during interviewing the women, I often tried to repeat what was said in order to achieve mutual understanding and ensure good quality of the interview.

We have chosen to study the experiences of GDM follow-up by the women's view. It is nevertheless important to recognize that the women's health care professionals' experiences may differ from the women's experiences.

7.3 Recruitment strategy

In qualitative research a smaller sample is often used than in quantitative research (Thagaard, 2013, p. 17). Thagaard (2013) states that a sample should be small enough for the analysis to be carried out, as analyzing qualitative data can be both resource intensive and time consuming. Thagaard (2013) also recognizes that it is important to have enough respondents to explain the complexity and reality of what is being studied. This implied that we finalized recruitment when we felt that no new information appeared in the interviews and that we had achieved an understanding of the phenomenon that has been investigated (Thagaard, 2013, p. 65).

The purposive recruitment described by Thagaard (2013) may have implications for the transferability of the study's results. Purposive sampling provided the opportunity of recruiting women that could give a description of the phenomenon that has been investigated (Thagaard, 2013, pp. 60-61).

We chose to recruit women from arenas where women with GDM attend to. This resulted in us recruiting from a Facebook- group called "gestational diabetes", from a diabetes outpatient clinic at a local hospital in Oslo and from two different MCHCs in Oslo. Additionally, we could have recruited women from different areas and hospitals in Oslo or Norway to get a bigger variety as it can describe how women perceive follow-up from other health care professionals in SHC. However, due to limited time and resources we chose not to. This led to many of the recruited women (N=9) being recruited from the same local hospital where they also were followed-up by the same health care professionals. Moreover, this can have affected the results for whether women with GDM experience follow-up in SHC better than in PHC. Due to this our findings are context-specific and cannot be generalized.

During recruitment process, interviews were transcribed and analyzed continuously.

Furthermore, we happened to end up with a multi-ethnic sample which has proven to be interesting as we wanted to highlight several appealing aspects that may be relevant to our findings. This as studies (Carolan et al., 2010; Dayyani et al., 2019) indicate that women with immigrant background can have problems in following and understanding dietary advice and training in self-management of BGL.

7.4 Analysis

During analysis I used Braun & Clarke's (2006) 6-step approach of thematic analysis. As mentioned earlier, interviews were analyzed using an inductive approach. This approach was used because I had little preexisting knowledge regarding the research question from before. At the same time, not having any preconceptions may be hard as data is difficult to analyze in a "epistemological vacuum" (Braun & Clarke, 2006). My background as a public health nutritionist may have had an impact on meeting and interviewing the women and when analyzing the data. This is because before interviewing I have introduced myself into guidelines that can influence how I ask questions in relation to how women have been followed-up by health care professionals. Additionally, my influence during process of analysis may be more present than during meeting and interviewing. This is because I have introduced myself to other research in the field that can be linked to the results of my own research (Thagaard, 2013, p. 121). Furthermore, I have been aware of this and tried to position myself as neutral as possible during the interviews and during analysis.

Thematic analysis has helped me reflecting the reality through the women's feelings and thoughts (Braun & Clarke, 2006). Thus, the method has been of good use for me as a researcher without any pre-existing knowledge of qualitative approaches as it doesn't require any theoretical knowledge of other qualitative approaches (Braun & Clarke, 2006). Although, when doing thematic analysis, I felt that not having a theoretical background to commit to made it somewhat more complex and confusing at first. It also made me struggle a bit to know what to look for at the beginning of the analysis.

Thematic analysis allowed me to identify, analyze and report different sub-themes and themes in our dataset (Braun & Clarke, 2006). Sub-themes and themes were based on codes that could help us explain something about our research question. Thematic analysis has been a relatively simple method to implement for me without any previous experience in carrying out qualitative data and research. The method has further given me the opportunity to interpret and pass on data in a good way that helps to describe the women's experiences as they described it. Since thematic analysis focuses on themes formed across interviews rather than on individual participants it can affect how women participating in the study recognize themselves in the reality described in the results. On the other hand, the views that the women

have had in common can potentially cause the women to recognize themselves in what is presented in the results (Thagaard, 2013, p. 191).

7.5 Ensuring validity and reliability

To ensure both the validity and reliability of the data presented in the study, several factors have been taken into consideration. Thagaard (2013), taken from Corbin and Strauss (2008), states that the importance of qualitative research is assessed on the basis of its credibility. Reliability and validity are mentioned to be key concepts in measuring the research's credibility (Thagaard, 2013, pp. 201-202).

7.5.1 Reliability

Reliability is described by Thagaard (2013) to be about if the reported study gives the impression that the research has been done in a reliable and trustworthy way.

To ensure external reliability, I have carefully described how the data has been developed through the research process. Replicability is about whether another researcher can achieve the same results by using the same methods as I have (Thagaard, 2013, p. 202). I have tried to explain the whole research process as thorough as possible. This includes how the interview guide has been formed, how the women have been recruited, where they have been recruited, how they have been interviewed and how I have positioned myself during the recruitment and interview situation. At the same time, I have tried to explain and show the analyze process as carefully and accurately as possible. Nevertheless, even though I have carefully described the entire process, it can be difficult to know if replicability has been achieved. This is because it is difficult to use oneself as a neutral instrument throughout the process as you may be affected by factors around you.

When interviewing I have tried to be as neutral as possible without trying to ask any leading questions. Although, it should be mentioned that in a few circumstances during the interview process I asked leading questions.

The interviews have been transcribed verbatim to ensure a correct description and reproduction of the women's stories. In this way I have tried to ensure that we have given a precise report of the research strategy and analyse method that were used in order to strengthen the internal reliability in which it is made more transparent. To further enhance

credibility, both supervisors read and went through the interviews to ensure the quality of the transcribed interviews. By doing this it may give others a chance to evaluate the research process step-by step.

7.5.2 Validity

Validity is related to the interpretation of the data (Thagaard, 2013, p. 204). The transcribed interviews, sub-theme and themes have thus been reviewed by both me, my main supervisor and co-supervisor to ensure mutual understanding of the themes implemented in the results. The fact that we have been several researches to thoroughly gone through the results of the research and agree that the results reflect the reality we have studied can help strengthen its validity. It is important to keep in mind that the results of this study are context-specific and only transferable to similar contexts as for the participating women and cannot be generalized to all women with GDM.

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9.0 The article

Title: Experience with Advice about Diet and Self-monitoring of Blood Glucose of Women with Gestational Diabetes Mellitus: Qualitative Study

To be submitted to: Scandinavian Journal of Primary Health Care

Key points

Current awareness:

- The management of gestational diabetes mellitus requires appropriate follow-up by health care professionals

Main statements:

- Pregnant women asked for more information about the consequences and management of GDM immediately after diagnosis
- Women perceived to have received more individually tailored information about diet and self-monitoring of blood glucose in secondary health care
- Women experienced that general practitioners had little knowledge about GDM
- Based on our results, collaboration between health care professionals involved in the care of women with GDM should be improved

Abstract

Objective: We aim to explore how women with gestational diabetes mellitus (GDM) experience advice about diet and self-management of blood glucose received in primary health care (PHC) and secondary health care (SHC), with specific focus on how women perceived the collaboration between health care professionals.

Design, setting and subjects: Twelve individual interviews were conducted with 12 pregnant women diagnosed with GDM. The women had either immigrant backgrounds (n=6) or were ethnic Norwegian (n = 6). Women received GDM care in PHC and/or SHC in the area of Oslo, Norway. Interviews were analysed using thematic analysis.

Results: Women described being diagnosed with GDM with a feeling of shock and felt an immediate need for information about the consequences and management of GDM. Most of the women experienced that their general practitioner had too little knowledge about GDM to answer their questions. Especially women of immigrant background felt that midwives in the PHC provided them with sufficient dietary advice related to GDM, whereas ethnic Norwegian women often asked for more individually tailored dietary advice, as perceived to receive in SHC. Self-monitoring of blood glucose influenced women's daily lives, however, they perceived the training in PHC and SHC as sufficient. Women experienced poor collaboration between health care professionals in PHC and SHC, which implied that they sometimes had to initiate follow-up steps in their GDM care by themselves.

Conclusions: Women diagnosed with GDM should meet health care professionals with sufficient knowledge about GDM immediately after being diagnosed. The collaboration between health care professionals involved in the care of women with GDM should be improved to avoid that the women themselves feel the need to coordinate their care.

Key Words: Gestational diabetes mellitus; qualitative; primary health care; secondary health care; inter-professional collaboration;

Introduction

Gestational diabetes mellitus (GDM) is defined as hyperglycemia detected at any time during pregnancy (1). The prevalence of GDM is increasing globally and ranges between 1.8-31.5%, depending on the screening procedure and population characteristics (2). According to the Norwegian Medical Birth registry, the prevalence of GDM among women giving birth in Norway in 2018 was 5.0% (3). A cohort study in a district in Oslo identified GDM in 13% of all women, 11% in ethnic Norwegians, and 12% to 17% in groups of non-European origin (4). Women of South Asian and African origins tend to develop GDM at a lower body mass index and age compared to white Europeans (5). Other risk factors for developing GDM include overweight and obesity, advanced maternal age, a family history of diabetes, and GDM in a previous pregnancy (6). Even though GDM resolves in most women after they have given birth, its development may affect the future health of both mothers and children (7,8).

A healthy diet and stable blood glucose levels throughout pregnancy can prevent adverse health outcomes for the mother and the newborn child (9). First-line management of GDM involves dietary advice based on women's regularly measured BGLs (10). About 70-85% of the diagnosed women can manage GDM with lifestyle changes, such as healthy eating and physical activity, without the need for oral metformin or insulin therapy (9). However, lifestyle changes presuppose knowledge, motivation, and follow-up by health care professionals (11).

In Norway, new guidelines for the management of GDM were implemented in 2017 and implied a task-shift from secondary health care (SHC) to primary health care (PHC) (10). According to the new guidelines, women with mild GDM shall primarily be followed-up by general practitioners (GPs) and/or midwives in PHC (10). Only women with additional medical risk factors in combination with GDM or if the woman does not reach the treatment target for blood glucose levels are referred to diabetes outpatient clinics in SHC (10). All women should receive written and verbal dietary advice and training in self-monitoring of blood glucose from health care professionals in PHC or SHC (10). Little is known about how women receive this follow-up. Studies among women with GDM from UK and Australia highlight challenges in changing lifestyle through standard GDM care; such as time-constraint and women's emotional response after diagnosis (12, 13). Women from disadvantaged and migrant communities are the most at risk of misunderstanding and

mismanaging GDM (14, 15). According to a systematic review investigating migrant women's experiences of pregnancy care in their destination European country (16), migrant women need culturally-competent health care providers who provide interdisciplinary, team-working and continuity of care (16).

Good collaboration between health care professionals is an important factor to enhance the care of women with GDM (12, 16). To our knowledge, no studies have investigated the experiences of women of GDM care followed-up in both PHC and SHC. Thus, the main aim of this study was to explore how women with GDM experience dietary advice and self-management of blood glucose in both PCH and SCH. We specifically focused on how they perceived the collaboration between PCH and SCH.

Materials and methods

Recruitment and participant characteristics

We conducted individual interviews with 12 women diagnosed with GDM. All interviews were conducted face-to-face. Table 1 describes women's background information and where they received GDM care. The women were recruited at a diabetes outpatient clinic in Oslo, Norway (n = 9), a closed Norwegian Facebook group for women with GDM (n = 1) and a municipal mother and child health center (MCHC) in the area of Oslo, Norway (n = 2). The women had either immigrant backgrounds (n=6) or were ethnic Norwegian (n = 6). Almost all women (n=11) were first followed-up for their GDM in PHC and at a later point referred to diabetes and/or maternity outpatient clinics in SHC. Only one of the women had not been followed-up in SHC. Four of the women were treated with insulin and/or metformin.

[Table 1 near here]

Data collection

A semi-structured interview guide was developed by the research group for data collection. One pilot interview was conducted to see how well the interview guide worked in meeting with potential women. As this only led minor adjustments (e.g. change of wording) the pilot interview was included in the final analysis. The main themes in the final interview guide were; experiences of getting information about a healthy diet, experiences of getting information about training in self-monitoring of blood glucose, women's information needs

about diet and self-management of blood glucose, and experiences of collaboration between different health care professionals involved in women's GDM care (see appendix 1). The first author (MH) conducted the interviews. The interviews lasted from 15 to 45 minutes and the women were interviewed where they preferred to be interviewed. Four women were interviewed at home, one woman at a local mall, one woman was interviewed at Oslo Metropolitan University's (OsloMet) premises. The remaining six interviews were held at the diabetes outpatient clinic. The interviews were conducted and transcribed between September 2019 to January 2020.

Data processing and analysis

All interviews were audiotaped, transcribed and analyzed using Braun and Clarke's 6-step thematic analysis (17). The analysis involved the following steps: 1) transcripts were read and re-read; 2) initial codes were developed by identification and highlighting of meaningful text in the dataset that were relevant for our research question; 3) codes were grouped into meaningful sub-themes and labeled under main themes; 4) the sub-themes and main themes were reviewed; 5) the main themes' comprehensiveness on whether they worked in relation to other themes were evaluated; 6) the results were reported. Relevant citations were translated from Norwegian to English.

Ethical considerations

This study was approved by the Norwegian Center for Research Data (Nr 936404) and was carried out in line with OsloMet's ethical research guidelines. All the women received written and oral consent describing the study's purpose and aims. They were told that they had the opportunity to withdraw from the study at any time and that their personal information will be handled anonymously.

Results

Overall, women stated that they were satisfied with the care they had received to manage GDM. However, analysis revealed perceived challenges and aspects for improvement in the following four super-ordinated themes (Table 2): *Reactions to being diagnosed with GDM; Experience with dietary advice from health care professionals in PHC and SHC; Experience of training in blood glucose measurement in PHC and SHC; and Experience of collaboration between health care professionals in PHC and SHC.*

[Table 2 near here]

Reactions to being diagnosed with GDM

Women were often shocked to be diagnosed with GDM. The diagnosis appeared to be more difficult to accept for women who did not consider themselves at risk for developing GDM, compared to those women who were aware of their risk, as described by the following primiparous woman from Nepal:

Yes, shocked. I had never thought about getting it [GDM]. (P11).

The women expressed an immediate need for information about GDM after being diagnosed as they perceived to have no or little knowledge about the consequences and management of GDM. Women wanted to know why they developed GDM. Some felt ashamed and blamed themselves for developing GDM, as described by a woman who has not had GDM previously: *When I was first told that I had gestational diabetes, I put the blame on me (..) That it was me who had a bad diet, me who did not exercise enough, me who did not (...), that it was more on me as a person (P10).*

Experience with dietary advice

The women often described health care professionals in both PHC and SHC as important sources for dietary advice related to GDM. They also experienced good consistency of dietary advice between health care professionals in PHC and SHC. Still, there were several women who used other sources for nutrition-related information, like the internet, family and friends. The reason for this was that several women had questions that were not answered during the consultations, as described by a woman who has received care in both PHC and SCH:

*I have also looked up some information myself and have joined a Facebook group called *laughs a bit* GDM, ehh so I have in a way done as good as I can to get into it, with diet and stuff, but I think my GP was probably not the best at informing and follow-up. (P1)*

Women also felt that GPs had little knowledge about GDM and what to eat and that they did not receive the answers they needed, as this primiparous woman residing from Afghanistan told:

Because my doctor, you know it's a GP (..) And a GP doesn't know what to say about diabetes anymore (..) he doesn't have information on how, for example, eh you're pregnant, how to experience such things, he does not have that much information (P7).

None of the women with immigrant background experienced difficulties to understand health care professionals' dietary advice. One of the women from Afghanistan reported that her GP had provided her with dietary advice related to GDM in her own language. However, the woman did not perceive to get enough information:

Avoid sugar. Not the sweet fruit, which contains a lot of sugar. Don't eat stuff like that. Because he explained to me in Persian (..) He gave me information, it was not enough for me (P7).

Particularly after follow-up in SHC women experienced the information given in PHC as insufficient. For instance, especially women of immigrant background acknowledged the dietary advice from their midwives in PHC. However, more individually tailored advice perceived in SHC made the women more aware of a healthy diet, as this woman from the Philippines stated:

Conscious and interested and (..) because they told me you have to buy whole grain bread it has like that, flour like that (talking about the bread scale) (P3).

Women often stated that health care professionals should have more time during their consultations to provide them with more individually tailored advice.

Many women received written material by midwives in PHC. They experienced this as health care professionals in PHC not having enough time or resources to explain it directly to the women. Especially ethnic Norwegian women did not perceive that the written information was sufficiently tailored to their individual needs, e.g. how different foods may affect their blood glucose values, as this primiparous woman told:

I got a lot more information about why I got high measurements when I came here (diabetes outpatient clinic). Then I realized that yes, it had something to do with diet. And I didn't understand that from the information leaflet that the midwife had given me (..) because it (the information) was very general (P10).

Experience with training in self-monitoring of blood glucose

Women often told that self-monitoring of blood glucose affected their daily lives because they had to plan when and where to measure and had to eat according to their values. They were satisfied with how they were trained in self-monitoring of blood glucose and did not perceive difficulties to understand the training by their health care professionals.

In both PHC and SHC, women received written and verbal information about how often and when to measure their blood glucose. They were also provided with a paper diary to record their glucose measurements that were discussed in the consultation. Women perceived to have received more detailed information about self-monitoring of blood glucose in SHC compared to PHC, e.g. why and how diet can affect their blood glucose levels. They also stated that health care professionals in the SHC seemed more professional than GPs or midwives in PHC and that the information was more individualized, as described by this Swedish primiparous woman:

Because she (midwife in SHC) had more knowledge (..) Like, more detailed knowledge (...) I do think also midwife (PHC), she like gave information, but she (midwife in SHC) gave me more detailed information (P8).

How often women had to measure their blood glucose varied between 2-5 times a day, depending on the individual woman and where the women were followed-up. Several women perceived that they were told to measure their blood glucose more frequently from health care professionals in SHC compared to PHC, as this woman who has had GDM for the first time described:

I was told to measure ehh about 3 days a week (by midwife in PHC) (..) but after coming to the diabetes outpatient clinic (SHC) I measured every day (..) but the same number of times then (P1).

Most women were surprised that they had to start measuring their blood glucose. Some women perceived the measurement as simple and a logic consequence after being diagnosed.

Others, mostly women of immigrant background, did not like the idea of having to start with self-monitoring blood glucose and considered it a burden in the beginning. However, many women experienced that blood glucose management went smoothly after some time, often motivated by doing so for the sake of the baby, as described by a woman who also had to use insulin:

No, I did. But I had to, I had no choice. You have no choice anymore, you just have to (..) Eh, if you don't, then it will affect the baby, and everything affects the baby (P4).

The women commonly mentioned that they felt uncomfortable with too high values and that they in these situations needed more specific dietary advice, especially by the GP and midwife in the PHC on how blood glucose can be affected by different foods, as this Pakistani primiparous woman stated:

You are so tired, and you can't just grab something to eat (..) You have to think about what to eat and somehow plan your meals, and you can't just eat anything when you're hungry (P9)

Experience of collaboration between health care professionals in PHC and SHC

Women in this study often experienced insufficient collaboration between health care professionals in PHC and SHC. Some women felt that they had to coordinate their care owed to a lack of communication between health care professionals in PHC and SHC. For instance, a woman complained that her GP did not follow-up a message from SHC that she should start with insulin. Others had to call to the GP to ask for the status of their referral to the hospital.

In addition, some women experienced that the GP and the midwife in PHC did not collaborate well. This resulted in some women getting information twice, and some did not receive any information at all, as a Norwegian woman told:

GDM? She (the midwife in PHC), didn't talk that much about it. She figured I had been at the GPs office, so maybe she counted on the GP having provided me with information. But I am thinking that it has something to do with the communication between the GP and the midwife (P6).

The women perceived a better collaboration between health care professionals in SHC, were they often had succeeding consultations with gynecologists, nurses specialized in diabetes and midwives on the same day.

Discussion

This study explored experiences with the dietary advice and training in self-monitoring of blood glucose in women with GDM followed-up in Norwegian PHC and SHC. Overall, women were satisfied with the care they have received to manage their GDM. The women were shocked to be diagnosed with GDM and expressed an immediate need for more information about the consequences and management of GDM. The women perceived that GPs often had little knowledge about GDM. We found differences in women's satisfaction with dietary advice depending to their ethnical backgrounds: women of ethnic Norwegian background asked for more specific and individually tailored advice than women of immigrant backgrounds. All women felt that this specific need appeared to be better addressed in SHC. According to the women, cooperation between health care professionals in PHC and SHC should be improved.

Also, previous studies have investigated how pregnant women perceive GDM care (13, 15, 18). A study of antenatal consultations between midwives and their clients at four diabetes clinics in Norway found that most women, like in our study, experienced self-monitoring of blood glucose in SHC as adequate (18). The study by Risa also shows that midwives often had greater focus on the physical and clinical aspects of GDM rather than normalizing diabetes for a better experience of pregnancy in women (18). A qualitative study among non-Western immigrants with GDM explored how non-Western immigrants with GDM experienced the hospital-based information about GDM and how they integrated this information in their daily lives. Participants with low health literacy and/poor Danish language skills struggled to implement the recommended behavior (15). Interestingly, women of immigrant backgrounds in our study did not report challenges to understand and follow advice about diet and blood-sugar management. Only one study investigated women's experiences with being followed-up by different health care professionals (12). This qualitative study among women with GDM in southern London, UK emphasizes that GDM care benefits from good collaboration between health care professionals (12). According to women in our study, collaboration between health care professionals in PHC and SHC should be improved.

Women feeling shocked when diagnosed with GDM has also been described in other studies (19, 20, 21). In our study, the women who were shocked after being diagnosed, expressed an

immediate need for more knowledge about GDM. Studies have shown that women with GDM often had little knowledge about GDM (22, 23, 24, 25). For instance, a cross-sectional study among 238 pregnant women found that non-native Norwegian speakers were significantly more likely to have poor knowledge of GDM compared to native Norwegian speakers (25). According to a systematic review about the effect and experience of follow-up for women with GDM, knowledge about GDM can have an impact on the extent to which a woman follows health and treatment recommendations (26). According to women in our study, GPs knowledge about GDM should be improved in order to meet their informational needs.

Many women perceived that self-monitoring blood glucose interfered their daily lives. A qualitative study among women with GDM in New Zealand showed that some women disliked the change of focus from pregnancy to their blood glucose levels (21). The study further showed that women developed barriers in achieving glycemic control e.g. inconsistent advice from health care professionals and lack of health information and information in women's first language (21). Time pressure during consultations and limited comprehension of training requirements may be barriers for self-monitoring of blood glucose (13) that can be solved by good communication between the women and health care professionals (13). In our study performing self-monitoring blood glucose affected the women's daily lives because they had to plan more carefully than before, when and what to eat. However, they were satisfied with the training they have perceived.

Other studies indicate that immigrant women can have problems to understand and follow dietary advice and training in self-management of blood glucose (14, 15, 20). In a qualitative study in Australia, women with immigrant and low socioeconomic background tend to show a lack of understanding of the performance in self-monitoring blood glucose (13). Pregnant women with immigrant backgrounds in Norway were often confused about the dietary advice provided by their midwives (27). Even though we did not find differences in how the women experienced training in self-monitoring blood glucose and dietary advice depending on their ethnical background, Norwegian women more often asked for more specific and individually tailored dietary advice than women of other ethnic background. This might be owned to their higher educational background compared to the women of immigrant backgrounds in this study. Health care professionals could provide women with individual meal plans which take individual food preferences and blood glucose values into account (28). However, as outlined

by the women in this and another study, limited time during the consultations might be a barrier to provide individually tailored advice (28).

Strengths and limitations

To our knowledge, this is one of the first published studies investigating pregnant women's experiences of receiving GDM care by different health care professionals (12). Findings from this study might be especially valuable for policy makers and health care professionals in countries with increased task-shift of the care for women with mild GDM from SHC to PHC. We managed to recruit women of various ethnical backgrounds. However, some of the women recruited had limited Norwegian skills, language differences may have affected the interviews. The researcher often repeated what the women said to ensure mutual understanding during the interviews. Many of the women in this study were recruited and followed-up by the same health care professionals in SHC, thus our findings may be context-specific and cannot be generalized. Even though one of the women was not followed-up for GDM in SHC, this interview was included in the analysis for this study, as this woman provided us with important insights about the inter-professional collaboration in-between PHC.

Conclusions and implications for policy and practice

Even though women were generally satisfied with the GDM care they received, women asked for more individually tailored advice. It is nevertheless important to recognize that the women's health care professionals' experiences may differ from the women's experiences. Women diagnosed with GDM should meet health care professionals with sufficient knowledge about GDM immediately after being diagnosed. The collaboration between health care professionals involved in the care of women with GDM should be improved to avoid that the women themselves feel the need to coordinate their care.

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Table I: Characteristics and follow-up of the women

Participant	Age	Education*	Country of Birth	Pre-pregnancy BMI	Diagnosed with GDM in gestational week	Previous GDM	Insulin use	Follow-up
1	34	High	Norway	32,8	23	No	Yes	Midwife, GP (PHC) and SHC
2	32	Middle	Eritrea	22	27	Yes	No	Midwife, GP (PHC) and SHC
3	36	Middle	Philippines	21,9	24-28	No	Yes	Midwife, GP (PHC) and SHC
4	24	Low	Norway	38	25	No	Yes	GP (PHC) and SHC
5	31	High	Norway	34,3	24	No	No	Midwife and GP (PHC) and SHC
6	41	High	Norway	26,2	26	Yes	No	Midwife, GP (PHC) and SHC
7	28	Middle	Afghanistan	31,6	19	No	No	GP (PHC) and SHC
8	36	High	Sweden	22,8	31	No	No	Midwife, GP (PHC) and SHC
9	28	High	Pakistan	36,5	26	No	No	Midwife (PHC)
10	28	Middle	Norway	22,9	29	No	No	Midwife, GP (PHC) and SHC
11	30	High	Nepal	24	31	No	No	Midwife, GP (PHC) and SHC
12	28	High	Norway		25	No	Yes	Midwife, GP (PHC) and SHC

* Education was categorized as high (3-5 years at University or University college level); middle (8-13 years) or low (1-7 years).

Table II: Summary of main themes and sub-themes

Super-ordinated themes	Sub-themes
Reactions to being diagnosed with GDM	<ul style="list-style-type: none"> - Shocked to be diagnosed with GDM - Difficult to accept the diagnosis - Worries for their baby(s) - Need for more information about GDM - Blamed themselves for GDM
Experience with dietary advice in PHC and SHC	<ul style="list-style-type: none"> - Health care professionals as important source for information about diet - Good agreement of dietary advice between different health care professionals in both PHC and SHC - Experienced that the GP (PHC) had little time and knowledge about GDM and diet - Immigrant women's perceptions of dietary advice by the midwife and health care professionals in SHC - Acknowledged written dietary information - Ethnic Norwegian women often asked for more detailed dietary advice
Experience with training in self-monitoring of blood glucose in PHC and SHC	<ul style="list-style-type: none"> - General satisfaction with training in self-monitoring of blood glucose - Perceived to get more detailed information about self-monitoring of blood glucose in SHC - More professional follow-up in SHC - Institutional variations in how often blood glucose should be measured - Surprised to have to measure blood glucose so often - Perceived self-monitoring of blood glucose as a simple and logic consequence of the diagnosis - Perceived self-monitoring of blood glucose as tiring - Self-monitoring of blood glucose affected their daily lives - Felt uncomfortable with too high BGL
Experiences of collaboration between health care professionals in PHC and SHC	<ul style="list-style-type: none"> - Lack of collaboration between PHC and the SHC - Lack of collaboration within PHC - Good inter-professional collaboration in SHC - Positive experiences with referral from PHC to SHC

	- Women felt responsible to initiate follow-up after diagnosis
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Appendix 1 Interview guide prior to pilot-testing

Vedlegg: Intervjuguide (utkast)

Samtale om opplevelsen kvinner med svangerskapsdiabetes har om å få informasjon om kosthold og blodsukkerregulering, hvordan de opplevde møtet med forskjellig helsepersonell og deres informasjonsbehov

Målgruppe: Gravide kvinner med svangerskapsdiabetes; > 18 år; med erfaring fra å få informasjon om kosthold og blodsukkerregulering av helsepersonell fra primær og/eller sekundærhelsetjeneste

Formål: Denne studien ønsker å få mer kunnskap om hvordan kvinner med svangerskapsdiabetes opplever å få informasjon om et sunt kosthold og blodsukkerregulering fra forskjellig helsepersonell i primær- og sekundærhelsetjenesten.

Uformell innledning (5 minutter): Presentasjon av studien, presentasjon av moderator, informert samtykke, forklaring om bruk av lydopptak og tidsbruk;

(Start lydopptak her)

Introduksjonsspørsmål:

Hadde du noe kjennskap til svangerskapsdiabetes før du ble diagnostisert?

Kan du fortelle noe om dine generelle erfaringer med oppfølging av din svangerskapsdiabetes (har du vært hos fastlege/jordmor og eller poliklinikk på sykehus?)

Nøkkelspørsmål:

- Opplevelser av å få informasjon om et sunt kosthold

Hva tenker du om informasjonen du har fått om kosthold i svangerskapet?

Hvem/eller hva var dine viktigste informasjonskilder for å få råd om et sunt kosthold?

Hva slags informasjon har du fått før du fikk diagnosen svangerskapsdiabetes?

Hva slags informasjon har du fått etter at du har fått diagnosen?

Hvordan opplever du å få informasjon om kosthold fra ulike helsepersonell?

Opplevde du noen utfordringer?

- Opplevelser av å få informasjon om blodsukkerregulering

Hvem ga deg opplæring i egenmåling av blodsukkerregulering? Hvordan opplevde du opplæringen?

Hvordan føler du at egenmålingen av blodsukker fungerer for deg?

Kan du fortelle meg om dine erfaringer med å få råd fra forskjellig helsepersonell for hvordan oppnå best mulig blodsukkernivå?

- Kvinners informasjonsbehov

Føler du at du har fått tilstrekkelig informasjon om et sunt kosthold og blodsukkerregulering slik at du føler deg trygg, at barnet har det bra og at du mestrer situasjonen? Hvis nei, hva skal til for å oppnå dette?

Hvordan kan helsepersonell tilpasse informasjon om kosthold best mulig til deg som gravid med svangerskapsdiabetes?

(Hvis det ikke har allerede kommet frem i intervjuet stilles følgende oppfølgings spørsmål):

- Opplevelser av å møte forskjellige helsepersonell

Hvordan opplevde du møtet med helsepersonell under din oppfølging av svangerskapsdiabetes?

Hvordan opplevde du ditt første møte med helsepersonell før du ble diagnostisert med svangerskapsdiabetes?

Hvordan opplevde du ditt første møte med helsepersonell i forbindelse med diagnostisering av svangerskapsdiabetes?

Avsluttende spørsmål:

Hva var din motivasjon for å være med i denne studien?

Etter samtalen vil kvinnene bli spurt om alder, kroppsmasseindeks før svangerskapet, etnisitet, grad av utdanning, om vedkommende er førstegangsfødende og om hun har hatt svangerskapsdiabetes i tidligere svangerskap.

Appendix 2: Final Interview guide

Vedlegg: Intervjuguide (utkast)

Samtale om opplevelsen kvinner med svangerskapsdiabetes har om å få informasjon om kosthold og blodsukkerregulering, hvordan de opplevde møtet med forskjellig helsepersonell og deres informasjonsbehov

Målgruppe: Gravide kvinner med svangerskapsdiabetes; > 18 år; med erfaring fra å få informasjon om kosthold og blodsukkerregulering av helsepersonell fra primær og/eller sekundærhelsetjeneste

Formål: Denne studien ønsker å få mer kunnskap om hvordan kvinner med svangerskapsdiabetes opplever å få informasjon om et sunt kosthold og blodsukkerregulering fra forskjellig helsepersonell i primær- og sekundærhelsetjenesten.

Uformell innledning (5 minutter): Presentasjon av studien, presentasjon av moderator, informert samtykke, forklaring om bruk av lydopptak og tidsbruk;

(Start lydopptak her)

Introduksjonsspørsmål:

Hadde du hørt om svangerskapsdiabetes før du ble diagnostisert?
Hvor/hvem hadde du hørt det fra?

Kan du fortelle noe om dine generelle erfaringer med oppfølging av din svangerskapsdiabetes (har du vært hos fastlege/jordmor og eller poliklinikk på sykehus?)

Nøkkelspørsmål:

- Opplevelser av å få informasjon om et sunt kosthold

Hva tenker du om informasjonen du har fått om kosthold i svangerskapet?

Hvem/eller hva var dine viktigste informasjonskilder for å få råd om et sunt kosthold?

Hva slags informasjon har du fått før du fikk diagnosen svangerskapsdiabetes?

Hva slags informasjon har du fått etter at du har fått diagnosen?

Hvem ga deg informasjon om kosthold før og etter diagnostisering?

Hvordan opplever du å få informasjon om kosthold fra ulike helsepersonell?

Opplevde du noen utfordringer med å få informasjon om kosthold fra ulike helsepersonell?

Var det noe du savnet da du fikk informasjon om kosthold?

- Opplevelser av å få informasjon om blodsukkerregulering

Hva tenkte du da fikk beskjeden om at du måtte måle blodsukkeret ditt?
Hvem ga deg opplæring i egenmåling av blodsukkerregulering? Hvordan opplevde du opplæringen?
Hvordan føler du at egenmålingen av blodsukker fungerer for deg?

Kan du fortelle meg om dine erfaringer med å få råd fra forskjellig helsepersonell for hvordan oppnå best mulig blodsukkernivå?

- Kvinners informasjonsbehov

Hvordan tenker du at helsepersonell kan tilpasse informasjonen om kosthold og blodsukkerregulering best mulig til deg som gravid med svangerskapsdiabetes?

(Hvis det ikke har allerede kommet frem i intervjuet stilles følgende oppfølgingsspørsmål):

- Opplevelser av å møte forskjellige helsepersonell

Hvordan opplevde du samarbeidet mellom ulike helsepersonell i forbindelse med å gi deg kostråd og opplæring i blodsukkerregulering?

Avsluttende spørsmål:

Hva var din motivasjon for å være med i denne studien?

Etter samtalen vil kvinnene bli spurt om alder, kroppsmasseindeks før svangerskapet, etnisitet, grad av utdanning, om vedkommende er førstegangsfødende og om hun har hatt svangerskapsdiabetes i tidligere svangerskap, bruk av insulin ila svangerskapet.

**Vil du delta i forskningsprosjektet
” Kvinner med svangerskapsdiabetes og deres
informasjonsbehov”?**

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å innhente en bredere forståelse for hvordan kvinner med svangerskapsdiabetes opplever oppfølging fra forskjellig helsepersonell. I dette skrevet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Gjennom kvalitativt intervju ønsker vi å innhente en bredere forståelse for hvordan kvinner med svangerskapsdiabetes opplever oppfølging fra forskjellig helsepersonell. Dette innebærer informasjon gitt av jordmødre og fastlege i primærhelsetjenesten, samt helsepersonell fra fødepoliklinikk på sykehus. Det er ønskelig å intervju ca. 10 gravide kvinner over 18 år med svangerskapsdiabetes. Kvinnen bør ha erfaring fra å ha fått tildelt informasjon fra helsepersonell i primær og /eller sekundærhelsetjenesten.

Vi ønsker å stille spørsmål basert på problemstillingen og ulike forskningsspørsmål.

Problemstilling: Hvordan opplever kvinner med svangerskapsdiabetes å få informasjon om kosthold og blodsukkerregulering fra forskjellig helsepersonell?

Forskningsspørsmål:

- Hvordan opplever kvinner å få informasjon om kosthold og blodsukkerregulering fra ulike helsepersonell?
- Hvordan opplevde kvinner å møte forskjellig helsepersonell? få informasjon fra ulike helsepersonell?
- Hva slags informasjonsbehov om kosthold og blodsukkerregulering har kvinnene?

Prosjektet er en del av et masterprosjekt for masteroppgave i Samfunnsnærings ved OsloMet.

Hvem er ansvarlig for forskningsprosjektet?

Lisa Garnweidner- Holme fra OsloMet vil være ansvarlig for prosjektet. Monica Sørensen fra Helsedirektoratet vil fungere som eksternt oppdragsgiver.

Hvorfor får du spørsmål om å delta?

Som gravid med svangerskapsdiabetes ønsker vi å spørre deg om du ønsker å delta i vårt prosjekt. Du bør være over 18 år, og ha erfaring fra å ha fått informasjon vedrørende kosthold og blodsukkerregulering av helsepersonell (jordmor, fastlege) fra sykehus eller helsestasjon/legekontor.

Hva innebærer det for deg å delta?

Vi kommer til å benytte intervju som metode for å innhente så mye informasjon om tema som mulig. Intervjuet vil bli tatt opp via en lydfil slik at det kan analyseres. Det kommer til å bli samlet inn bakgrunnsinformasjon slik som; alder, bostedskommune, BMI, etnisitet, grad av utdanning, om du er førstegangsfødende, har føtt flere ganger, om du har hatt svangerskapsdiabetes i tidligere svangerskap, og hvor du har blitt fulgt opp.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrevet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

- *Beskriv hvem som vil ha tilgang ved behandlingsansvarlig institusjon (f.eks. prosjektgruppe, student og veileder, etc.)*
- *Beskriv hvilke tiltak du gjør for å sikre at ingen uvedkommende får tilgang til personopplysningene, f.eks. «Navnet og kontaktopplysningene dine vil jeg erstatte med en kode som lagres på egen navneliste adskilt fra øvrige data», lagre datamaterialet på forskningsserver, innelåst/kryptert, etc.*

Hvis aktuelt, opplys også om:

- *navn på databehandler som skal samle inn, bearbeide, lagre data, f.eks. leverandører av transkripsjon eller spørreskjema*
- *personer ved andre institusjoner skal ha tilgang, navngi institusjoner, skisser antall personer, og opplys hvilke type opplysninger de får tilgang til*
- *at personopplysninger skal behandles utenfor EU (f.eks. feltarbeid, analyse, skytjeneste, konferanse), navngi institusjon og land, og beskriv sikkerhetstiltak.*

Beskriv om deltakerne vil kunne gjenkjennes i publikasjon eller ikke, og eventuelt hvilke type opplysninger som vil publiseres.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet skal etter planen avsluttes [sett inn dato]. Beskriv hva som skjer med personopplysninger og eventuelle opptak ved prosjektslutt.

Hvis datamaterialet ikke skal anonymiseres ved prosjektslutt: oppgi formål med videre oppbevaring/bruk av personopplysninger (f.eks. etterprøvnbarhet, oppfølgingsstudie, arkivering for senere forskning), hvor opplysningene skal lagres, hvem som vil ha tilgang, samt endelig tidspunkt for anonymisering (eller, hvis aktuelt, presiser at personopplysningene skal lagres på ubestemt tid).

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra [sett inn navn på behandlingsansvarlig institusjon] har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- [sett inn behandlingsansvarlig institusjon] ved [sett inn navn og kontaktopplysninger til prosjektansvarlig]. I studentprosjekt må kontaktopplysninger til veileder/prosjektansvarlig fremgå, ikke kun student
- Vårt personvernombud: [sett inn navn på personvernombudet hos behandlingsansvarlig institusjon]
- NSD – Norsk senter for forskningsdata AS, på epost (personverntjenester@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig
Lisa Garnweidner- Holme

Maria Helmersen

Jeg har mottatt og forstått informasjon om prosjektet [*sett inn tittel*], og har fått anledning til å stille spørsmål. Jeg samtykker til:

1. å delta i intervju

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca. 10.mai 2020

(Signert av prosjektdeltaker, dato)

Appendix 4: NSD approval

6/28/2019

Meldeskjema for behandling av personopplysninger



NSD sin vurdering

Prosjekttittel

Gravide kvinners erfaringer med informasjon om et sunt kosthold og blodsukkerregulering i svangerskapsomsorgen

Referansenummer

936404

Registrert

21.06.2019 av Lisa Garnweidner-Holme - lgarnwei@oslomet.no

Behandlingsansvarlig institusjon

OsloMet - storbyuniversitetet / Fakultet for helsevitenskap / Institutt for sykepleie og helsefremmende arbeid

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Lisa Garnweidner-Holme, lgarnwei@oslomet.no, tlf: 48091956

Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

Maria Helmersen, maria.helmersen@hotmail.com, tlf: 93650917

Prosjektperiode

12.08.2019 - 18.12.2020

Status

28.06.2019 - Vurdert

Vurdering (3)

28.06.2019 - Vurdert

NSD har vurdert endringen registrert 27.06.2019.

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 28.06.2019. Behandlingen kan fortsette.

Endringen gjelder at koblingsnøkkelen lagres i papirform i et låsbar skap. Lydfilene og sensitive data lagres på en PC uten nettilgang.

OPPFØLGING AV PROSJEKTET

NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Kontaktperson hos NSD: Jørgen Wincentsen

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

27.06.2019 - Vurdert

NSD har vurdert endringen registrert 27.06.2019.

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 27.06.2019. Behandlingen kan fortsette.

Endringen gjelder at personopplysninger skal lagres på en kryptert fysisk isolert minnepenn. Prosjektet skulle i utgangspunktet benytte Tjenester for Sensitive Data (TSD).

OPPFØLGING AV PROSJEKTET

NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Kontaktperson hos NSD: Jørgen Wincentsen

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

21.06.2019 - Vurdert

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet den 21.06.2019 med vedlegg. Behandlingen kan starte.

MELD VESENTLIGE ENDRINGER

Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde:

https://nsd.no/personvernombud/meld_prosjekt/meld_endringer.html

Du må vente på svar fra NSD før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle særlige kategorier av personopplysninger om etnisk opprinnelse og helse, samt alminnelige kategorier av personopplysninger frem til 18.12.2020.

LOVLIG GRUNNLAG

Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 nr. 11 og art. 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse, som kan dokumenteres, og som den registrerte kan trekke tilbake.

Lovlig grunnlag for behandlingen vil dermed være den registrertes uttrykkelige samtykke, jf. personvernforordningen art. 6 nr. 1 a), jf. art. 9 nr. 2 bokstav a, jf. personopplysningsloven § 10, jf. § 9 (2).

PERSONVERNPRINSIPPER

NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:

- lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen
- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke viderebehandles til nye uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER

Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20).

NSD vurderer at informasjonen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og eventuelt rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET

NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Kontaktperson hos NSD: Jørgen Wincentzen

Tlf. Personverntjenester: 55 58 21 17 (tast 1)