Pregnant Women's Experiences with Gastrointestinal Discomforts and Strategies They Use to Cope

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Pregnant Women’s Experiences with Gastrointestinal Discomforts and Strategies They Use to Cope

by

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A Dissertation submitted to the Faculty of the Graduate School
Marquette University
in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

Milwaukee, Wisconsin
August 2021
Problem
The experience of gastrointestinal (GI) discomforts of pregnancy is almost universal. Heartburn, constipation, nausea and/or vomiting are the most common, with variation in frequency and intensity by trimester. GI discomforts of pregnancy are understudied. Most research on GI discomforts of pregnancy has employed quantitative instruments, before and after specific therapeutic approaches. Little research has focused on women’s experiences of GI discomforts of pregnancy and self-management strategies. Women are experts in their experience of their own pregnancies and their voices are rich sources of data but have been largely ignored in the study of GI discomforts of pregnancy.

Methodology
The purpose of this qualitative exploratory-descriptive, narrative study was to explore women’s experiences with GI discomforts of pregnancy and strategies they used to cope with them. A convenience sample of 22 pregnant women were interviewed virtually. The interviews were transcribed verbatim and analyzed by themes.

Findings
Participants average 31.9 years of age, were white (100%), had at least two years of college education, were either married or partnered, and in the third trimester of pregnancy. Three major themes were identified: heartburn, constipation, and nausea and/or vomiting. Two subthemes: descriptions of GI discomforts and self-management strategies for each of the themes. Heartburn was the most frequently reported GI discomfort. Participants described heartburn as pervasive and disruptive to food choices and sleep. Self-management strategies were subdivided into five categories: food-related, beverage-related, activity-related, over-the-counter remedies, and prescription medications (only related to nausea and vomiting). Participants limited their use of over the counter or prescription medications in favor of non-pharmacologic strategies. For example, most participants reported relief from nausea and heartburn by using frequent, small meals. Standing activities or upright postures were described as providing relief for both heartburn and nausea. None of the participants reported using acupressure or acupuncture. Although some discussed GI discomforts with their providers, many participants used their own trial and error approach to find symptom relief.

Conclusion
Although the sample lacked diversity, participants provided important insights into the experience of GI discomforts of pregnancy and their self-management. More research is needed on non-pharmacologic strategies favored by participants.
ACKNOWLEDGMENT

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Chapter I
INTRODUCTION

Problem and Purpose

Pregnant women experiences of gastrointestinal (GI) symptoms and the strategies they use to cope with them are not well understood. Some pregnant women have reported that their health care providers (HCPs) do not seek to fully understand their GI symptoms, and even trivialize them (Heitmann et al., 2016; Locock et al., 2008). It is imperative that pregnant women’s voices are heard about their experiences of GI symptoms and strategies they use to cope with them. Research on GI symptoms of pregnancy, however, has primarily been approached by using quantitative methods. Therefore, the voices of pregnant women have largely been unheard; HCPs understanding of how pregnant women experience and manage their GI symptoms is limited; and evidence-based guidance that HCPs could offer these women on management strategies is minimal.

The purpose of this qualitative exploratory-descriptive, narrative study was to examine women’s experiences with GI discomforts of during pregnancy. The study also sought to understand strategies women use to cope with their GI discomforts throughout pregnancy. Results of this study may provide pregnant women and HCPs new methods to cope with GI symptoms of pregnancy more effectively. Optimal management of GI symptoms of pregnancy may improve the mental and physical well-being of expectant mothers and their infants (Ebrahimi et al., 2010).

Interpretation and use of the words, symptom, or discomfort, may vary in and among HCPs and the general public, including pregnant women. A distinction between both words is needed to identify the subtle differences. For example, the word symptom may be used when
referring to a disease state and the word discomfort may be used to describe experiences in a more casual manner.

Initially, as I was conceptualizing this study, the word symptom was my first word choice. Published articles on symptoms of pregnancy were readily found in the review of literature. The initial title of this study and chapters one, two and three, included the use of the word symptom rather than discomfort. Upon discussion with my dissertation committee, the decision was made to avoid medicalized language as much as possible; therefore, the informed consent and title were modified to include the word discomfort, rather than focusing primarily on symptom language. As a result, I intentionally began to use the word discomfort rather than the word symptom when speaking of the GI experiences of pregnancy. To accurately reflect my journey, the word symptom was more prevalent in chapters one, two and three, but was changed to discomfort in chapters four and five. This change would be the most effective method to link the science view of the word symptom with the experiential use of the word discomfort by participants.

There are common GI discomforts of pregnancy that can lead to a series of symptoms. Nausea is both a discomfort and a symptom while heartburn is a discomfort with a variety of symptoms. In general, GI symptoms and discomforts of pregnancy are time limited, do not produce long-term disabling problems and may have a negative effect on the woman’s quality of life and activities of daily living. For the purpose of my study, discomfort was defined as physical and/or psychological unpleasant feelings resulting in avoidance or decreased use of the source causing the change in state (Ashkenazy & Ganz, 2019). In contrast for the purpose of my study, symptom was defined as subjectively perceived experiences reflecting changes in sensations of an individual and reported to occur in a common way during pregnancy (Bebee et al., 2017; Dodd et al., 2001).
There are pregnant people that don’t identify as females, women, or mothers, and their voices and experiences are valuable. In this study participants referred to themselves as mothers and women and so these are the terms that I used.

**Background**

The most common GI symptoms women report experiencing during their pregnancy are nausea, vomiting, constipation, and heartburn (Lee & Saha, 2011). Research supports 70-85% of pregnant women experience nausea and 50% of these women also experience vomiting (Gadsby et al., 1993; Lee & Saha, 2011); 40-85% of women experience heartburn (Rodriguez et al., 2001; Kazemi & Hajian, 2018); and 11-56% of pregnant women experience constipation (Orloff et al., 2016). These GI symptoms of pregnancy may fluctuate throughout the gestational period and can affect a woman’s functional and/or emotional status, and quality of life (QOL) (Chou et al., 2003, Chou et al., 2008; Clark et al., 2013; Harper & Rail, 2012; Wood et al., 2013).

Each woman’s experience of the number and intensity of GI symptoms is unique (Lacroix et al., 2000). Some women may experience only one symptom while others could experience two symptoms or a cluster of three or four symptoms (Lee & Saha, 2011). In addition, whether women have one or four symptoms, their individual interpretations are uniquely related to intensity, evaluation, and perceived coping (Hickey et al., 2019; Lee & Saha, 2011).

Despite the impact GI symptoms of pregnancy can have on women’s lives, researchers have primarily used quantitative rather than qualitative methods to research this phenomenon. There are two major concerns with primarily using a quantitative approach to study the GI symptoms of pregnancy and how women manage them. First, quantitative research designs use instruments to measure the prevalence and severity of women’s GI symptoms during pregnancy; and secondly, quantitative intervention research studies (such as clinical trials) are
used to develop treatment plans. However, quantitative approaches can force women to compartmentalize their GI symptoms via closed-ended questionnaires, without asking them about their personal experiences and perceptions. Such approaches also limit researchers’ capacity to truly understand how pregnant women perceive their symptoms and how they manage them. And, because researchers fear harming the developing fetus, quantitative intervention research is necessarily limited (Kaybonge, 2019; Yakerson, 2019). Because of these reasons, there is limited qualitative research that addresses women’s own perspectives on pregnancy. Thus, women’s voices, as rich sources of data, have been largely ignored.

Feminism is a philosophic tradition that guided this study. Feminism advocates for the political, economic, and social equality of the sexes. Feminism recognizes that women’s perspectives are true and valid, and that women share these experiences through narratives or stories (Devault, 1990; Sandelowski, 1994).

Women are experts in their experience of their own pregnancy. Their stories provided a rich source of data that increased understanding of their perspectives on their GI symptoms and how they coped with them. These data could serve as a foundation for further research which could result in education and practice changes in the care of women experiencing GI symptoms.

**Significance to Nursing**

**Practice**

It is important that nurses better understand how pregnant women perceive and cope with their GI symptoms (Carver et al., 2008; Locock, 2008). Knowing this can help the nurses validate the women’s perceptions of their GI symptoms.

These findings may also contribute to the understanding of psychological, physiological, and unknown influences on GI symptoms of pregnancy. Nurses can use this knowledge to help
women manage their GI symptoms of pregnancy more effectively and to inform their care of other pregnant women with GI symptoms.

**Research**

The findings of this study may lead to more research that involves listening to pregnant women’s experiences of their GI symptoms and self-management practices. Building this body of knowledge will benefit pregnant women and practitioners. Benefits for pregnant women could include improved education regarding symptoms and relief strategies, normalization of their experiences, and improved self-management options. Benefits to practitioners could include development of best practice guidelines. It also could result in practitioners maintaining and enhancing their interest in seeking out pregnant women’s understanding of their GI symptoms and other phenomena pregnant women may experience.

**Education**

Nurse educators could use the results of this study to teach students the importance of symptom self-management strategies for pregnant women. In other words, this study could be used to help students understand the importance of using anticipatory guidance as a nursing intervention for pregnant women.

**Definition of Terms**

It is important to have clear and concise definitions of concepts that are fundamental to the study. When analyzing data and presenting themes from the participants, it is important to share the major concepts used throughout the study. The definitions are listed in alphabetical order for ease of reference.


**Constipation** - the slow movement of stool through the colon (Lowdermilk et al., 2020).
**Discomfort**- physical and/or psychological unpleasant feelings resulting in avoidance or decreased use of the source causing the change in state (Ashkenazy & Ganz, 2019).

**Feminism**- a social movement and ideology that fights for the political, economic, and social rights for women and all people (Hall & Stevens, 1990; Sigsworth, 1995).

**Gastroesophageal Reflux Disease (GERD)**- condition in which the lower esophageal sphincter allows gastric acids to regurgitate into the esophagus, causing heartburn, and acid indigestion (Lowdermilk et al., 2020).

**Gastrointestinal**- relating to the stomach and/or intestines.

**Health Care Provider (HCPs)**- in this study, health care provider means physicians, midwives, nurse practitioners, and/or registered nurses.

**Heartburn**- a burning sensation in the chest that can extend to the neck, throat, and face; it is worsened by bending or laying down and is the primary symptom of gastroesophageal reflux disease (GERD) (Lowdermilk et al., 2020).

**Hyperemesis Gravidarum**- term used during pregnancy when a woman has excessive nausea and vomiting (Lowdermilk et al., 2020).

**Marginalization of Pregnant Women**- the process by which pregnant women are viewed as being “different,” outside of the norm, or cast out of the social “center” to the periphery during their pregnancy care (Hall & Stevens, 1994; Smith & Condit, 2000).

**Medicalization of Pregnancy**- the process by which behaviors or conditions take on disease-oriented meanings, thus increasing the focus on diseases and related symptoms, rather than health and illness (Cahill, 2000; Davis-Floyd, 1990).

**Multiparous**- having borne more than one child (Lowdermilk et al., 2020).
Nausea- is an unpleasant sensation experienced in the back of the throat and the epigastrium that may or may not result in the expulsion of material from the stomach. This is a symptom of many different conditions, not a disease (Rhodes & McDaniel, 2001).

Nulliparous- never borne a child (Lowdermilk et al., 2020).

Parity- the ability of a woman to carry a pregnancy to viability (Lowdermilk et al., 2020).

Pregnant- the condition of carrying a developing embryo in the uterus (Lowdermilk et al., 2020).

Reliability- the ability to reproduce a consistent result and refers to how stable or accurate an instrument is when used more than once (Sauza et al., 2017).

Retching is the attempt to expel contents of the stomach without bringing anything up (Rhodes & McDaniel, 2001).

Symptom- subjectively perceived experiences reflecting changes in sensations of an individual and reported to occur in a common way during pregnancy (Bebee et al., 2017; Dodd et al., 2001).

Treatment- a session of individual care or the administration of a dose of medicine.


Validity- how accurately the tool measures exactly what it proposes to measure (Sauza et al., 2017).

Vomiting- involves the actual forceful upward expulsion of contents from the stomach (Rhodes and McDonald, 2001).

Chapter I Summary

More research is needed that uses a qualitative approach to study the GI symptoms of pregnancy and how women cope with them. This will help HCPs, researchers, and educators to
understand the meaning GI symptoms have for pregnant women. This knowledge also could help validate pregnant women’s experiences and help them manage their symptoms more effectively. The purpose of this qualitative exploratory-descriptive narrative study was to examine women’s experiences with GI discomfots during pregnancy. The study also sought to understand strategies women use to cope with their GI discomfots throughout pregnancy.
There is limited research that explores GI symptoms of pregnancy from women’s viewpoints. Given that it is women who experience these symptoms, their voices need to be heard as they could provide rich sources of data. These data could be used to help women self-manage these symptoms and to assist HCPs in caring for these women. To better understand women’s experiences with GI symptoms and how they cope with them, a review of the literature was completed.

**Philosophical Underpinnings: Feminism**

Philosophy is used to describe what is believed by human beings. Philosophical assumptions in qualitative research consist of a stance toward the nature of reality which asks the question “What is reality?” (ontology), and how researchers know, which is the question “How can I know reality?” (epistemology) (Cypress, 2017). Aristotle, a Greek philosopher, believed knowledge occurred from the perspective of empiricism in which all knowledge begins with the senses. Since that time, scientists have come to realize multiple sources influence knowledge development, so many philosophical perspectives have emerged. Feminist philosophy is one perspective with which to view the acquisition of knowledge and the way in which knowledge is used (Gortner, 2000).

Feminism is a philosophic tradition with many viewpoints, definitions, and beliefs, yet all exist to benefit the interests of women and men who are in biological and social systems which are dominated by males. A classic work posits feminisms share three basic principles: (a) oppression of women (through the existence of ideological, structural, and interpersonal conditions), (b) valuing women and validating their experiences, and (c) wanting to bring about social change (Hall & Stevens, 1991). The culture of domination has oppressed women in all
aspects of their lives (Klima, 2001). Within healthcare, oppression of women has resulted in varying degrees of marginalization. For example, based on gender, race, economic status, politics, or culture, women are often viewed as being “lesser” or “different” from socially dominant males (Hall & Stevens, 1991). Pregnant women have been further marginalized because scientists were concerned about harming the fetus in intervention research, therefore, there are limited studies that used pregnant women as subjects (Kabonge, 2019; Yakerson, 2019).

**Theoretical Framework: Constructivism**

The theoretical framework chosen to guide this study is constructivism. Constructivism denies the existence of an objective reality, instead asserting that realities are understood and reconstructed from previous interpretations that are held by people. The ontological question is “what is the form and nature of reality, and therefore, what is there that can be known about it?” (Guba & Lincoln, 1994). For a constructivist reality is made by people in social ways and is a product of mutual understanding between people.

Women’s realities of pregnancy are constructed from multiple, tangible, and intangible mental constructions based on their individual subjective and alterable interpretations, as well as external sources of related information. Women interpret and develop different meanings related to the same event. It is useful for women to share these interpretations to better understand their perspectives about their experiences.

The epistemological question raised in constructivist inquiry is “what is the nature of the relationship between the knower and would-be knower and what can be known?” (Guba & Lincoln, 1994). Constructivists believe knowledge is co-constructed between the researcher and participant and used for building theory. Researchers and pregnant women are interactively linked for the findings to be “literally created” as the research study progresses (Guba & Lincoln,
For women to benefit from new knowledge, obtained through the systematic analysis of their perspectives, it is important that the results of research be shared with wider audiences.

The relationship of the knower to the known is the interaction between the researcher and the pregnant woman. This interaction is essential to understanding the phenomenon of interest (Wilson & Clissett, 2010). In addition, women construct meanings about their experiences through interactions with others. Lastly, the nature of constructivism is dependent on how individuals place meanings on their constructions (Appleton & King, 2002).

Constructivism has been used in nursing research because the underlying principles reflect the values of the nursing profession (Wilson & Clissett, 2010). Building nursing theories to explain findings may lead to changes in interventions which could support and promote positive coping behaviors in pregnant women. The nature of reality represents informed construction, which is an ongoing process during an individual life. In addition, the nature of reality is viewed as pluralistic, which means that there are many different interpretations that can be made (Wilson & Clissett, 2010).

Constructivism assists researchers to better understand real-life experiences like GI discomforts in pregnancy by the co-creation of reality between the researcher and the pregnant participant. Pregnant women’s interpretations are shared through their interactions with researchers and in this manner are co-constructed by the participants and by the researchers. In constructivist research, researchers must be aware of how they change as a result of the research process, and how these changes affect the research process. Researchers’ self-awareness is critical so that they do not misinterpret subtle meanings in the data. This self-awareness and recognition on the part of the researcher is called reflexivity (Palagnanas et al., 2017) and is explored and recorded in an ongoing manner throughout the process.
Gastrointestinal (GI) Symptoms of Pregnancy

GI symptoms and patterns of these symptoms are among some of the most common experiences pregnant women report. For example, the symptom pattern of nausea, vomiting in pregnancy (NVP) characteristically is described in the first trimester, while heartburn and constipation are more commonly described in the third trimester (Beebe et al., 2017; Gadsby et al., 2019; Sayle et al., 2002). The type and severity of GI symptoms women report varies by gestational age (Hanson et al., 2020). Some women find the GI symptoms reassuring as they validate their pregnancies (Locock et al., 2008). Other pregnant women find them stressful as they can greatly impact their daily lives. Prior maternal experience, education, ethnicity, age, and gestational weight gain can contribute to the perception and experience of GI discomforts of pregnancy (Beebe et al., 2017; Dodd et al., 2001; Parker et al., 2014). For the purposes of this study, the researcher focused on three major GI symptom areas in pregnancy: heartburn, constipation, and NVP.

Outline of the Literature

The databases searched for this literature review include the: Cochrane Library of Systematic Reviews; Cumulative Index to Nursing and Allied Health Literature (CINAHL); Dissertations and Theses Global from ProQuest: Full Text; and Medline/PubMed, PsyINFO, Google Scholar. Initially the search included articles from 2015-2020. In order to capture more research on the topic, the search was expanded to include articles from 2010-2015, and ultimately articles from 2000-2010.

The key words used in the literature searches included: pregnancy, symptoms, GI symptoms, nausea, vomiting, heartburn/GERD, constipation, and symptom management. During the analysis of the data, it became apparent that what I referred to as GI symptoms,
were called GI discomforts by the study participants. Therefore, I completed another search using the word discomfort.

A wide search for extant literature on GI symptoms of pregnancy in healthy women was completed for the review of literature, with the result that NVP, constipation, and heartburn were identified as the most reported GI symptoms (Lee & Saha, 2011; Wood et al., 2013). The same three were readily identified as themes in my qualitative data from interviewing participants.

I only included studies in which participants were currently pregnant. I decided that hyperemesis gravidarum (HG) would not be used as a search term, as the goal of this study was to understand the healthy pregnant women’s experience of episodic nausea that is sometimes accompanied by vomiting, and typically subsides at 12 weeks or after. The focus of my study was not to understand women’s experiences of persistent nausea that is accompanied by severe vomiting that does not subside without hospitalization and other interventions. Similarly, the specific mental health diagnoses of anxiety and depression were not included in this study because the purpose was to explore essentially healthy women’s experiences of physiologic GI discomforts during pregnancy.

Various search techniques were applied. Major concept terms and variation of the terms were combined as subject heading and key words. Concept terms were combined with the term ‘AND.’ Synonyms and related terms were combined with the term ‘OR.’ Other variations were used in the literature search, including tree structures which display subjects by hierarchy and relationship, subject heading, truncation which uses symbols such as * to replace endings in words, nesting which uses parentheses to group words, and limiting date range techniques, such as selecting a specific start and end date for the search.
Other filters used in this literature search included English language, qualitative research, systematic reviews, and clinical guidelines. The previous filters identified a limited number of research studies on GI symptoms of pregnancy and management. Therefore, the literature search was expanded to include quantitative research studies - single and multiple randomized controlled trials (RCTs), and meta-analyses. Integrative review articles were also included.

The following section is a summary and critical review of the literature for each of the three most reported GI symptoms of pregnancy: heartburn, constipation, NVP, and on how women cope with them (Lee & Saha, 2011; Wood et al., 2013). A total of 31 studies were reviewed. Qualitative research was reviewed first, followed by a review of the quantitative evidence. Non-pharmacological and pharmacological management was discussed where applicable.

**Nausea and Vomiting in Pregnancy (NVP)**

Thirty-one of the 83 reviewed studies pertained to NVP. Of the 31 reviewed studies, 29 were quantitative and two were qualitative studies. Critical appraisals of the qualitative studies can be found in Table 1. Table 2 contains the critical appraisals for the quantitative studies.

**Prevalence, Severity and Common Management of NVP**

NVP are often described as the first symptoms of pregnancy because these GI symptoms may begin as early as four weeks after a missed menstrual period and are reportedly experienced by 70-85% of pregnant women (Lee & Saha, 2011). Although historically, Semmens (1971) reported NVP was rare among Africans, Native Americans, Inuit, and many Asian populations, a later study by Lacasse et al. (2009) found that Black and Asian women did experience NVP of pregnancy but were less likely to report it to researchers compared to Whites.
These GI symptoms are manifested in a variety of ways. The terms nausea and vomiting are often used together, but this may not be an accurate description for all pregnant women. For example, some women may experience only nausea or only vomiting, and the pattern may be irregular. And, although “morning sickness” is the term frequently used to describe the nausea and vomiting of pregnancy, Gadsby et al. (1993) reported less than 2% of pregnant women experienced nausea only in the morning and 80% of pregnant women reported nausea throughout the day. In a more current study, LaCroix et al. (2000) recorded 74% of study participants had NVP for 34.6 days, 1.8% reported morning sickness, 80% nausea all day and 50% had NVP beyond 14 weeks gestation.

NVP has been classified into three levels: mild nausea (may not include retching and/or vomiting); moderate nausea (can occur with or without vomiting); and severe nausea is considered persistent vomiting leading to dehydration (Deuchar, 1995), also known as hyperemesis gravidarum (HG). In a recent study of pregnant women by Crozier et al. (2017), 89% of women described being nauseous; 48% with mild nausea, 30% with moderate nausea, and 11% reporting severe nausea. The latter is beyond the scope of this study.

Pregnant women’s management of their nausea and vomiting is dependent on their perceptions of the severity of their symptoms and the effects on their quality of life (QOL) (Davis, 2004). Typically, in an attempt to decrease their symptoms, pregnant women individually try to adjust their diet and lifestyle to cope with their symptoms (Lee & Saha, 2011). Unfortunately, these self-management practices are not always successful. Every woman has her own approach to cope with her NVP, some women express reluctance to take prescription medications early in pregnancy because they fear use of a medication will harm the development of their baby. Other women are thankful prescription medications are available to
decrease their symptoms of NVP (Davis, 2004; Gray et al., 2018; Mulder et al., 2018; Munoz et al., 2020).

Although the GI symptoms of NVP are pervasive, and management of these symptoms are varied, explanations for the etiologies of the GI symptoms and their best management remain elusive. Qualitative and quantitative research are reviewed to better understand the GI symptoms of pregnancy, how women cope with them, and to identify the gaps in the literature to identify future research needs.

**Qualitative Research on NVP**

The aim of both NVP qualitative studies was to better understand how pregnant women cope with nausea and vomiting and how it affects their QOL (Heitmann et al., 2016; Locock et al., 2008). Heitmann et al. (2016) further explored the thoughts and attitudes among pregnant women and general practitioners on the treatment of NVP.

Locock et al. (2008) performed a qualitative study to explore women’s experiences of NVP. They performed a secondary thematic analysis of data collected by narrative interviews on experiences of antenatal screening and pregnancy. From this analysis they developed a new framework to understand women’s reactions to NVP. According to this framework, NVP is something pregnant women are to expect, survive, resent, and something that others are to acknowledge.

Heitmann et al. (2016) conducted four focus group discussions. Two were with pregnant women and two with HCPs. The HCPs thought it was important to acknowledge NVP symptoms as a normal experience of pregnancy. In contrast, even though the women agreed NVP was to be acknowledged, they voiced that HCPs trivialized their NVP distress. This was consistent with Locock et al. (2008) in which women commented on the need for recognition of their NVP.
In the Heitmann et al. (2016) study, the women further stated that they thought HCPs should be comfortable prescribing anti-nausea medications. In comparison, HCPs stated they were uncomfortable prescribing medications due to their teratogenic potential and one HCP even stated it was outside his/her area of responsibility.
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<th>Author</th>
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<th>Design/Method</th>
<th>Sample Setting</th>
<th>Findings</th>
<th>Critiques</th>
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<tr>
<td>Locock</td>
<td>2008</td>
<td>Explore women's experiences of NVP</td>
<td>Thematic analysis of previous narrative interviews</td>
<td>N=73 women, (n=39 in prenatal study, n=34 in pregnancy study). GA not identified Recruitment through national research network</td>
<td>Women believe NVP is to be expected, survived, resisted, something to be resented, and to be acknowledged by others</td>
<td>Narrative interviews support rich data retrieval. Purposes of two studies from which data was obtained, were not specific on women’s experiences of NVP. Open ended questions about physical &amp; emotional health were asked. Potential self-selection bias as these participants were willing to share experiences. Conflicting information about women being pregnant or within 2 years post-partum leads to uncertainty of sample fitting and supporting study &amp; also adds recall issues</td>
</tr>
<tr>
<td>Heitmann 2016 Norway</td>
<td>Explore thoughts &amp; attitudes among pregnant women &amp; GPs on tx &amp; care of NVP</td>
<td>Narrative Descriptive/Focus Group</td>
<td>N=10 pg women, GA= 17-18 weeks, who experienced NVP in current pregnancy</td>
<td>Women feel NVP trivialized by GP’s because they normalize it</td>
<td>Focus group environment may provide data with less detail &amp; depth about pg women and GP experiences compared to personal interviews</td>
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<td>2 groups of pg women &amp; 2 groups of GP’s</td>
<td>N=10 GPs (5 male and 5 female)</td>
<td></td>
<td>The women were all in the 2nd trimester and had experienced NVP</td>
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<td></td>
<td>GPs’ gender was represented equally</td>
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Notes: tx= treatments, pg = pregnant/pregnancy, GP= general practitioner
Both of the preceding qualitative studies used interviews or focus groups as data collection methods, but neither study specifically asked women to describe their GI symptoms. Locock et al. (2008) identified Grounded Theory as guiding their research and used narrative stories (unstructured) to gather data. Heitmann et al. (2016) did not identify a theory to guide their research and used interviews with prompts to gather the data (semi-structured) and a focus group. The symptoms of NVP are experienced and interpreted at a personal level, thus, rich, contextualized data is needed to gain a deeper understanding of this phenomena.

Regardless of the difference in data collection methods, women in both studies spoke of the expectation that the NVP symptoms were an inevitable feature of pregnancy that decreased their quality of life. Isolation was associated with severe symptoms of NVP and women’s inability to express the depth of their feelings to others. Locock (2008) concluded that it was important for HCPs to express empathy to pregnant women experiencing NVP. Also, pregnant women may experience NVP before their initial appointment with HCPs which may be another obstacle to learning self-management strategies for NVP.

Despite the fact that only Heitmann et al. (2016) purposely explored thoughts and attitudes among HCPs and pregnant women about treatment of NVP and pregnancy care, results of both qualitative studies supported pregnant women’s identification that their HCPs trivialized their distress due to NVP. Women participants reportedly wanted greater empathy about the impact the nausea had on their daily lives, as well as possible coping strategies. It should be noted than none of the two qualitative studies provided further clarification on how pregnant women self-managed their symptoms.

**Quantitative Research on NVP**

Of the 29 quantitative studies reviewed, most of the quantitative studies measured NVP with four different instruments. Although many of the authors of the studies I reviewed did not
report their study’s reliability and validity statistics, they used well-designed instruments with previously reported acceptable levels of reliability and validity. Included among the instruments used to measure NVP were the: (a) Rhodes Index of Nausea and Vomiting (RINVR) (O’Brien & Zhou, 1992, 1995; Koren et al, 2002; Smith, 2000); (b) Pregnancy-Unique Quantification of Emesis (PUQE) questionnaires (Clark, et al., 2013; Ellilia, 2018; Heitmann et al., 2017; Koren et al., 2001, 2002, 2004; Lacasse et al., 2008, 2009); (c) McGill Nausea Questionnaire (Lacroix et al., 2000); (d) Nausea and Vomiting in Pregnancy Instrument (NVPI) (Kramer, et al., 2013; Swallow et al., 2002, 2004 & 2005). Validity and reliability of the proceeding instruments has been established by multiple researchers (Koren et al., 2001; Ebrahimi et al., 2009; Melzack et al., 1995; Swallow et al., 2002).

It is important to note that there may have been a conflict of interest with the development of the Pregnancy-Unique Quantification of Emesis and Nausea (PUQE-12)(Koren et al., 2001). Duchesnay, the pharmaceutical company that manufactures the commonly prescribed antiemetic Diclegis, also provided financial support for the hotline that women called in to discuss and seek advice on how to manage their NVP. If Diclegis was recommended as a treatment for NVP, a conflict of interest could exist. In addition, Duchesnay funded the study to develop the PUQE using the data women provided about their NVP on the hotline (Koren et al., 2001). Given that the pharmaceutical company was involved with funding this study and also produces one of the most commonly prescribed antiemetics for NVP concern about the possibility of a conflict of interest is warranted.
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<th>Data Analysis/Results</th>
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<tr>
<td>Lacroix</td>
<td>2000</td>
<td>Describe patterns of nausea and vomiting of pregnancy</td>
<td>Prospective study</td>
<td>N=160, No gestational age identified</td>
<td>McGill Nausea Questionnaire</td>
<td>74% of women reported nausea lasting an average of 34.6 days. &quot;Morning sickness&quot; occurred in only 1.8% of women, whereas 80% reported lasting all day. Only 50% of women were relieved by 14 weeks gestation, 90% had relief by week 22</td>
<td>Assess NVP that occurred throughout pregnancy</td>
</tr>
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<td>Smith</td>
<td>2000</td>
<td>Describe the impact of NVP have on women in early pregnancy</td>
<td>Interview with structured questionnaire</td>
<td>N=593, 1st trimester</td>
<td>Rhodes inventory of nausea and vomiting &amp; MOS 36 Short form Health Survey (SF-36)</td>
<td>SF-36-lower scores for energy, physical functioning for pg vs non-pg. (M=61.1, SD 26.3 vs 88.9 SE 0.6) 89% women reduced household activities</td>
<td>All women in first trimester and Rhodes instrument used to assess NVP</td>
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Women who experienced longer and more severe NVP scored low on all SF-36 items, particularly on physical functioning, energy, social functioning, and well-being. The women described substantial
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<tr>
<td>Chandra 2002</td>
<td>Assess severity of physical symptoms of NVP correlates with the woman's overall perception of the severity of her condition</td>
<td>Structured telephone interview-quantitative</td>
<td>N=500 Women called into a pregnancy health line. Mean gestational age 9.5 weeks±2.6 weeks</td>
<td>NVP-QOL questionnaire</td>
<td>Least square linear regression used to look for correlation between women's perception of NVP severity and nausea duration</td>
<td>Sample was recruited from telephone health line which may have limited diversity &amp; generalizability of results</td>
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<tr>
<td>Chandra 2003</td>
<td>Identify factors commonly reported by women that</td>
<td>Structured telephone interview-quantitative</td>
<td>N=500 Women called into a pregnancy</td>
<td>NVP-QOL questionnaire</td>
<td>218 (44%) used antiemetic drug therapy. 162(33%) used non-pharmacological therapies during pregnancy</td>
<td>Sample was recruited from telephone health line which may have limited diversity &amp;</td>
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<td>Author Year</td>
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<tr>
<td>Koren 2004 Canada</td>
<td>Assess accuracy of recall by women on NVP</td>
<td>Prospective cohort</td>
<td>N=200 counseled for NVP first time at mean 5.7 weeks (1st trimester) followed up mean 3.25 weeks later</td>
<td>Pregnancy-unique quantification of emesis and nausea (PUQE-12)</td>
<td>Student pair T to compare initial PUQE score to f/u PUQE, linear regression used to correlate different values, Multivariate analysis used to define determinants that affected recall of NV. Reported hours of N was longer than original reported 19.4± 6 h/d, 16.1 ±5 h (p&lt;.001)</td>
<td>Recall bias was identified, instrument PUQE used, but reliability and validity of tool not reported</td>
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Women did not accurately recall NVP (recall bias). Multivariate analysis revealed the more severe the NVP the better the women recalled their symptoms (P<.001); the more time that had lapsed the less accurately the
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<tr>
<td>Swallow 2005 UK</td>
<td>Determine aversive stimuli r/t NVP, determine food and fluid intake in early pregnancy, explore relationships between aversive stimuli and health measures</td>
<td>Mixed methods</td>
<td>N=273 from antenatal clinic. Mean gestation 12.8 weeks (SD=2.8)</td>
<td>Tools handed to women after ultrasound, completed forms placed in box in waiting room. Nausea and vomiting in pregnancy instrument (NVPI), General Health Questionnaire (GHQ), measures of perceived mood and illness, food and fluid intake, and open-ended questions r/t perceived</td>
<td>t-tests used for differences in means. Pearson's correlation coefficient used for relationships. Open ended questions were subjected to content analysis. 65% women mention olfaction as mechanism responsible for NVP and only 1% taste</td>
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<td>Odors appears to be an important stimulus r/t NVP, with perceived aversive smells r/t severity of nausea. 162 (57%) mentioned an aversive food or smell. Of these, 106 (65%) state that the olfactory system was mechanism responsible for making N &amp; V symptoms worse</td>
<td>The use of open-ended questions to obtain the women’s perspective of noxious stimuli removed the focus from predetermined categories</td>
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women accurately reported their symptoms (p<.05)
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<tr>
<td>Chan 2011 USA</td>
<td>Examine potential risk factors for NVP symptom severity, timing of onset, and duration</td>
<td>Longitudinal (4 year) Prospective cohort study</td>
<td>N=2407 All first trimester</td>
<td>Telephone interviews, early gestational ultrasound, and medical record abstractions</td>
<td>Generalized linear models used to model possible risk factors for each NVP chart. 89% of women had NVP and for 99% of them symptoms started in 1st trimester. The risk of delayed symptom onset ↑age [RR=1.3, 95% CI: 0.4, 4.2 (30-34 yrs old); RR=1.7, 95% CI: 0.4, 6.9 (≥35 years old), p for trend &lt;0.5 ↓duration NVP with increased maternal age, non-Hispanic black and Hispanic women race/ethnicity, and ↑duration with ↑ gravidity</td>
<td>To assess NVP symptom severity was classified as no symptoms, nausea only and nausea with vomiting episodes No report of instrument reliability and validity</td>
</tr>
<tr>
<td>Kramer Canada 2013</td>
<td>To examine the prevalence, severity, and psychosocial determinants of NVP during early</td>
<td>Longitudinal, Observational cohort</td>
<td>N=648. Time 1 gestational age 17.6±5.1 weeks (2nd tri), Time 2 30.7±</td>
<td>Nausea and Vomiting in Pregnancy Instrument, the Cambridge Worry Scale, the Edinburgh</td>
<td>Multinomial regression model</td>
<td>The prevalence of NVP was 63.3% in early pregnancy, and 45.4% in late pregnancy. The more severe the women’s NVP the earlier</td>
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<td>Author Year</td>
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<td>and late pregnancy</td>
<td>weeks (3rd tri)</td>
<td>Postnatal Depression Scale</td>
<td>they were in their pregnancy, the more likely they were to use antiemetic medication and to have symptoms of major depression. Maternal smoking and having the support of three or more persons were associated with a decrease in NVP</td>
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</table>
Regardless of the assessment methods used, from as early as the year 2000 to the present, studies have demonstrated that NVP impacts QOL for the pregnant women (Bai et al., 2016; Clark et al., 2013; Lacasse et al., 2008; Muchanga et al., 2020). Because NVP affects quality of life (QOL), to better understand women’s experiences with NVP, I chose to include studies that specifically looked at NVP and women’s QOL. In these studies, QOL was assessed using a variety of instruments, including the Short Form Health Surveys (SF-12, SF-36) (Bai et al, 2016; Lacasse et al., 2008, 2009; Smith et al., 2000); and Nausea, Vomiting of Pregnancy Quality of Life Questionnaire (NVP-QOL) (Chandra et al., 2002, 2003; Lacasse et al., 2008, 2009; Magee et al., 2002).

Lacasse et al., (2008), using the SF-12, found that NVP was associated with decreases in both the physical and mental component scales. Other researchers found that as the severity of NVP worsened, all eight domains measured by the SF-36 (physical functioning, physical role functioning, bodily pain, general health perceptions, vitality, social functioning, emotional role functioning, and mental health) decreased (Chan et al., 2011; Munch et al., 2011; Smith et al., 2000). Additionally, scores on all four domains (physical symptoms and aggravating factor, fatigue, emotions, and limitations) of the population specific NVP-QOL instrument worsened as the severity of NVP increased (Lacasse et al., 2008). Study results consistently support that NVP affects every aspect of a women’s life including lifestyle. As NVP worsens a women’s quality of life decreases. Therefore, researchers need to have a better understanding of what NVP means to pregnant women and how they manage it to help decrease its effects on women’s quality of life.

Several researchers studied the relationship of NVP to specific variables. Muchunga et al. (2020) reported that women with severe NVP symptoms were at a higher risk to develop post-partum depression. Latva-Pukkila et al. (2009) reported that NVP did not affect total
gestational weight gain. Swallow et al. (2005) reported that pregnant women who were adversely affected by odors had more NVP compared to those who were not. Given that research that links NVP to other variables is limited, and at times contractionary, more studies are needed to better understand possible relationships.

There is a need for standardized and consistent use of a measurement for GI symptoms of pregnancy to collect data which could be used to scientifically understand the impact of the symptoms on women’s lives. Recently, Hanson et al., (2020) adapted the Severity of Dyspepsia Assessment (SODA), Non-Pain Scale Assessment (Rabeneck et al., 2001), for use with healthy pregnant women. Construct validity was supported by confirmatory factor analysis (posterior predictive small p value = 0.49, gamma-hat =0.970, and root mean square error of approximation = 0.65), which indicated that the single-factor model is a plausible data-generative model for GI symptoms. The maximal reliability coefficient of 0.75 and Cronbach’s alpha coefficient of 0.67 supports scale reliability. This instrument holds promise for use in future studies to better understand women’s perceptions of their GI symptoms.

Management of NVP

Non-Pharmacologic Management of NVP

Many pregnant women suffering from NVP self-manage their GI symptoms with non-pharmacologic interventions. Non-pharmacologic strategies are favored by many women and HCPs because of concerns for continued healthy fetal development in the first trimester (Lowdermilk et al., 2019). The only two non-pharmacologic approaches that have been submitted to scientific evaluation are ginger and acupressure.

Ginger

Studies of the effectiveness and safety for the use of ginger to treat nausea and vomiting of pregnancy are summarized in Table 3. For the purposes of this research only studies
that compared Ginger to a placebo publish after 2000 were included. Ginger has been used for
centuries in cooking as well as medicinally to treat indigestion, nausea, vomiting, flatulence, and
fever (Fischer-Rasmussen et al., 1991). Ginger appears to decrease NVP because it increases
gastric emptying by acting on the cholinergic M receptors and serotonergic 5-HT receptors.
Pregnant women have incorporated various forms of ginger as a non-pharmacologic method to
self-manage their GI symptoms by consuming food or drinks made with ginger (biscuit, soda,
capsule, tea, candy) (Basirat, 2009; Keating, 2002). Women are comfortable taking ginger
because it has been recognized as safe for pregnant women and their fetuses by the U.S. Food
and Drug Administration (Bryer, 2005).

A total of six randomized controlled trials (RCTs) of ginger as a NVP intervention were
reviewed. Ginger has a unique aroma and taste that may be familiar to people who cook or
ingest it. Two studies reported their methods for blinding participants to the odor and taste of
the ginger. Vutyavanich et al. (2001) and Smith et al. (2004), reported placing the ginger and
placebo into identical gel capsules as a method of blinding. Vutyavanich et al. (2001) also
included pre-trial testing by providing 10 volunteers with four days of either ginger or placebo
doses. Three (30%) of the volunteers were not certain about their answers but were able to
correctly identify what they were taking. The researchers who tested ginger during pregnancy
reported they double blinded with placebos but did not describe how they accomplished
blinding the ginger or placebo condition from the participants. The issue of blinding ginger has
been addressed more recently by van Tilburg (2012) in a nonpregnant sample. She reported the
use of blister packaging for the ginger and placebo to maintain effective blinding, however she
did not offer whether the difference could be detected once the capsules were out of the blister
packs.
Table 3

_Ginger as a Treatment for NVP_

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<th>Instrument</th>
<th>Results</th>
<th>Critiques</th>
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<tbody>
<tr>
<td>Vutyavanich</td>
<td>2001</td>
<td>Determine effectiveness of G for the treatment of NVP</td>
<td>Randomized double masked placebo-controlled</td>
<td>N=70 GA=&lt;17 weeks</td>
<td>Antenatal Clinic</td>
<td>VAS, Five-item Likert scales</td>
<td>Ginger more effective than placebo to decrease nausea (P=.014).</td>
<td>Ginger capsules were processed by staff pharmacist making it difficult to replicate the ginger capsules for another study. Pilot study to confirm blinding of Ginger aroma.</td>
</tr>
<tr>
<td>Keating</td>
<td>2002</td>
<td>Determine if ginger syrup mixed in water is an effective remedy for the relief of nausea and vomiting in the first trimester of pregnancy</td>
<td>Double-blind placebo controlled RCT</td>
<td>N=26 GA &lt; 12 weeks</td>
<td>Private Practice Office</td>
<td>Nausea &amp; Vomiting 10 point scale</td>
<td>The ingestion of 1 g of ginger syrup in a divided dose daily may be useful in some patients experiencing nausea and vomiting in the first trimester of pregnancy</td>
<td>Instrument to assess NVP was a developed by authors and reliability was not reported.</td>
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<tr>
<td>Author</td>
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<tr>
<td>Willets</td>
<td>2003</td>
<td>Investigate effect of Ginger extract</td>
<td>Double blind randomized placebo controlled</td>
<td>N=120 GA= &lt;20 weeks, &amp; experienced NVP X1 week without relief from changes in diet</td>
<td>Rhodes Index questionnaire (Rhodes et al., 1984)</td>
<td>Ginger extract ↓ nausea and retching, but not vomiting (P=0.515)</td>
<td>Ginger and placebo supplied in wax sealed capsules to mask Ginger aroma Authors completed a pilot study to determine most effective Ginger dose &amp; frequency</td>
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<tr>
<td>Ozgoli</td>
<td>2009</td>
<td>Assess effectiveness of ginger capsules in the treatment of NVP</td>
<td>Single Blind Clinical Trial/ E: Ginger 250 mg capsules x4 days C: placebo 250mg capsules X4 days</td>
<td>N=67 GA ≤ 16 weeks Outpatient clinic</td>
<td>VAS before &amp; after tx</td>
<td>Ginger is an effective herbal remedy for decreasing nausea and vomiting during pregnancy. 84% tx group vs 56% placebo had ↓ nausea intensity</td>
<td>NVP in women was assessed for 1 week only</td>
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<tr>
<td>Saberi</td>
<td>2014</td>
<td>Assess effectiveness of ginger in the</td>
<td>RCT 3 groups: treatment (250 mg Ginger capsule, TID x 4</td>
<td>N=120 GA &lt; 16 weeks</td>
<td>Rhodes Index questionnaire (Rhodes et al., 1984)</td>
<td>Ginger was effective for the relief of mild to moderate nausea and vomiting in pregnant women at less than 16</td>
<td>Randomization of women Valid &amp; reliable instrument</td>
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<tr>
<td>Author Year</td>
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<tr>
<td>Moghadam 2019 Iran</td>
<td>Examine effect of Ginger pill on treating NVP</td>
<td>RCT double blind Tx with Ginger for 3 days</td>
<td>N=58 GA =10-15 weeks Outpatient clinic</td>
<td>Rhodes Index questionnaire (Rhodes et al., 1984)</td>
<td>Using Ginger had a positive effect on reducing the severity and frequency of NVP</td>
<td>Authors did not provide information on how participant were blinded to Ginger aroma</td>
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**Note:** GA = gestational age, E= experimental group, C= control group, Tx= treatment, VAS= visual analog scale
In addition to the studies on ginger summarized above, two meta-analyses and four systematic reviews (Borrelli et al., 2005; Dante, et al., 2013; Ding, et al., 2013; Ernst & Pittler, 2000; Thomson, et al., 2014; Viljoen et al., 2014) also have consistently supported ginger as a non-pharmacologic treatment of NVP throughout pregnancy. The results of these analyses concur that 1-1.5 grams of ginger per day decreases the symptoms of NVP.

However, the design of several the above studies was flawed. Small sample sizes, inconsistencies in the form (pills, powder, syrup) and amount of ginger that was ingested (500-2500 mg/day), the possible difficulty of blinding participants to the presence of ginger, and differences in how NVP was measured could have affected the study results. Generally, the ginger dosing time frames were unclear or not standardized. It is evident that more research on the effectiveness of ginger as a non-pharmacological treatment for NVP is needed.

Acupressure

Studies on the efficacy of acupressure by pregnant women to decrease their NVP are summarized in Table 4. For the purposes of this research only studies published after 2000, that investigated the use of the common and easy to self-identify P6 acupressure site, on non-hospitalized pregnant women were included.

Acupressure is a form of ancient Chinese medicine based on numerous energy paths (meridians) that flow through the body. Stimulation of an acupoint is believed to correct the energy flow and improve health. The most studied antiemesis acupoint is the P6 (Nei Guan) which is located on the anteromedial aspect of the forearm, three fingers distal to the wrist crease and between the palmaris longus and flexor carpi radialis tendons (Rad, 2012). When pressure is applied to this area, there is evidence for a decrease in nausea intensity. Bracelets or bands have been developed to be worn on both wrists to apply pressure and lesson the intensity of seasickness as well as NVP.
P6 acupressure was compared to a “sham” acupressure in seven studies that are presented in Table three (Gurkan & Arslan, 2008; Mobarakabadi et al., 2020; O’Brien et al., 1996; & Steele et al., 2001). P6 acupressure, medication and sham acupressure were compared in two RCTs (O’Brien, 1996; Tara, 2020). Jamigoon and Phupong (2007) compared the effectiveness of Vitamin B6 to acupressure to relieve NVP and results showed acupressure was not more effective than B6 to relieve NVP. Participants were given a visual demonstration on band placement as well as written instructions. Overall, results on the effectiveness of acupressure to relieve NVP are mixed. Four of these studies were randomized controlled trials RCT with small sample sizes. Van den Heuvel et al. (2016) conducted a systematic review of 20 RCTs with data from a total of 3,519 subjects to investigate if there was any clinical evidence for the use of acupressure in the treatment of NVP. They, too, found inconclusive evidence for the use of acupressure on NVP. More research is needed with rigorous designs and larger sample sizes to help determine the role of acupressure in the treatment and self-management of NVP.
<table>
<thead>
<tr>
<th>Author Year</th>
<th>Purpose</th>
<th>Design/ Method</th>
<th>Sample/Setting</th>
<th>Instrument/Tool</th>
<th>Results</th>
<th>Critiques</th>
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<tbody>
<tr>
<td>Steele, USA 2001</td>
<td>Determine effect of continuous acupressure at P6 applied by Sea-Bands with acupressure buttons on the frequency and severity of NVP during the 1st trimester.</td>
<td>Two Group, Quasi-Experimental, posttest only &amp; posttest-repeated measures</td>
<td>N=110 GA &lt; 13 weeks OB clinic</td>
<td>A modified and abbreviated version of the Rhodes Index of Nausea and Vomiting.</td>
<td>Sea-Bands with acupressure buttons are a noninvasive, inexpensive, safe, and effective treatment for the nausea and vomiting of pregnancy.</td>
<td>Non-randomized sample</td>
</tr>
<tr>
<td>Jamigorn &amp; Phupong, Thailand 2007</td>
<td>Compare effectiveness of acupressure and Vitamin B6 on NVP</td>
<td>RCT Acupressure device &amp; placebo Non-stimulating placebo device &amp; Vitamin B6</td>
<td>N=66 33 acupressure group 33 B6 group GA=6-12 weeks Antenatal clinic</td>
<td>Rhodes Index questionnaire (Rhodes et al., 1984)</td>
<td>Both acupressure (p&lt;0.001) &amp; vitamin B6 (p&lt;0.001) improved NVP; one was not more effective than the other</td>
<td>Participants were given visual teaching on technique for correct placement of Sea-bands to promote accurate and consistent placement</td>
</tr>
</tbody>
</table>

Table 4

Acupressure as a Treatment for NVP
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Purpose</th>
<th>Design/ Method</th>
<th>Sample/Setting</th>
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<th>Results</th>
<th>Critiques</th>
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<tbody>
<tr>
<td>Gurkan &amp; Arslan</td>
<td>2008</td>
<td>Determine efficacy of acupressure application in pregnant women suffering from nausea, with or without associated vomiting</td>
<td>RCT</td>
<td>N=75</td>
<td>Nausea and vomiting diary that included a visual analogue scale.</td>
<td>Acupressure group had decreased NVP days 4-6 (z= -3.35; p&lt;0.001)</td>
<td>Placement of bands</td>
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<td></td>
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<td></td>
<td>Acupressure band &amp; placebo to P6 for days 4-6 of study</td>
<td>26 acupressure group</td>
<td>Use of the VAS strengthened results.</td>
<td>Inclusion criteria of singleton pregnancy only (women with multiple gestation pregnancies may experience more NVP)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>24 placebo group</td>
<td>Exclusion criteria included no diagnosis of hyperemesis gravidarum</td>
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<td>Participants shown where to position</td>
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<td></td>
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<td>25 control group</td>
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<td></td>
<td></td>
<td></td>
<td>GA = 8-12 weeks</td>
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<td>Antenatal clinic</td>
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<td>Author</td>
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<tr>
<td>Mobarakabadi</td>
<td>2019</td>
<td>Iran</td>
<td>Examine effect of Pericardium 6 (P6) acupressure with Sea-Band on the severity and frequency of NVP and to compare it with a placebo and a control group.</td>
<td>Randomized Single-blind Placebo Control-3 groups: Acupressure-Sea-band button applied with pressure to P6 x 3 days Placebo-sea-band applied without pressure to P6 x 3 days Control-no interventions</td>
<td>N=75 (25 each in three groups) GA &lt; 20 weeks</td>
<td>Daily diary</td>
<td>Acupressure applied on P6 using a wristband displayed effectiveness as reported on a Likert scale for ↓ frequency and severity of NVP compared to placebo; but not more effective than placebo to ↓ duration of nausea &amp; frequency of vomiting</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Purpose</td>
<td>Design/ Method</td>
<td>Sample/Setting</td>
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<tr>
<td>Tara</td>
<td>2020</td>
<td>Determine efficacy of P6 acupressure stimulation on the severity of nausea, vomiting, and retching in pregnant women.</td>
<td>RCT 3 groups; P6 acupressure (4X day for 10 min), Sham acupressure, Medication with B6 &amp; metoclopramide</td>
<td>N=90 (30 in each group)</td>
<td>Rhodes Index questionnaire (Rhodes et al., 1984)</td>
<td>P6 acupoint pressure can reduce the severity of nausea, vomiting, and retching in pregnant women (p &lt; 0.001)</td>
<td>Acupressure effectiveness measure for 3 days versus longer time. Placebo effect (women believed wristband would ↓ NVP) may have impacted results. Inclusion criteria of singleton pregnancy only (women with multiple gestation pregnancies may experience more NVP)</td>
</tr>
</tbody>
</table>
Pharmacologic Management of NVP

Medications and vitamins that have been used (off-label) to reduce symptoms of NVP without evidence of teratogenicity include antihistamines, hydroxyzine, dopamine antagonists and pyridoxine. In 2013 the Food and Drug Administration approved Diclegis as the first prescription medication indicated for the management of NVP. Nuangchamnong & Niebyl, 2014; Nyebil, 2010). Pregnant women reported hesitancy in taking medications and some HCPs are resistant to prescribing medication for NVP because they fear teratogenicity (Heitmann et al., 2016; Locock et al., 2008). More research is needed to determine the safety and efficacy of medications for NVP (Davis, 2010; Mulder et al., 2018; Munoz et al., 2020).

Heartburn in Pregnancy

Five of the 31 reviewed studies on GI discomforts of pregnancy pertained to heartburn (see Table 5). In reviewing the literature, I noticed that researchers tended to use the words heartburn and GERD interchangeably, therefore, I included studies that used either the term GERD or heartburn in this review. All five of the reviewed studies used quantitative methods. No qualitative studies meeting the search criteria were retrieved. Two of the five studies identified heartburn as their concept of interest, however, neither of these studies used a tool that specifically measured heartburn. Three of the five studies had definitive criteria to classify GERD.
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Purpose</th>
<th>Design/Method</th>
<th>Sample Setting</th>
<th>Instrument/Tool</th>
<th>Results</th>
<th>Critique</th>
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</thead>
<tbody>
<tr>
<td>Bor</td>
<td>2007</td>
<td>Evaluate the predisposing effect of heartburn during pregnancy on the presence and severity of post-pregnancy GERD</td>
<td>Correlational/Questionnaire</td>
<td>N=1180 from Bornova area in Turkey GA= NR</td>
<td>GERD Questionnaire (Kitapcioglu et al., 2004) -</td>
<td>The risk of GERD is increased by the presence of heartburn during pregnancy (p&lt;.001)</td>
<td>Large sample size, randomly selected, validated GERD questionnaire</td>
</tr>
<tr>
<td>Gill</td>
<td>2009</td>
<td>Determine whether heartburn/acid reflux during pregnancy contribute to increased severity of nausea and vomiting</td>
<td>Correlational/Interviews via telephone helpline using three questionnaires from 1/1/07-12/31/07</td>
<td>N=194 GA= NR n=60 (only HB) n= 42(only AF) n=92 (both HB &amp; AF)</td>
<td>PUQE-24 (Ebrahimi et al., 2009) Well-being Scale (Koren et al., 2005) Self-reported severity</td>
<td>Heartburn and acid reflux are associated with increased severity of nausea and vomiting</td>
<td>Potential conflict of interest as Duchesnay funded Motherisk program and Koren hold research leadership for better pharmacology therapy during</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Purpose</td>
<td>Design/Method</td>
<td>Sample Setting</td>
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<tr>
<td>Malfertheiner</td>
<td>2009 Germany</td>
<td>Determine frequency and severity of GERD symptoms, and their impact on quality of life and therapeutic management in advanced pregnancy</td>
<td>Correlational/questionnaires</td>
<td>N=135</td>
<td>RDQ, QOLRAD, socio-demographic questionnaire</td>
<td>GERD present in 56.3% of pregnant women. Among symptoms, regurgitation was the most frequent at 47.3%, whereas heartburn was graded as the most severe symptom.</td>
<td>First study to report on the prevalence and impact of QOL of GERD in 3rd trimester of pregnancy</td>
</tr>
<tr>
<td>Malfertheiner</td>
<td>2012 Germany</td>
<td>Assess prevalence &amp; severity of GERD symptoms during pregnancy</td>
<td>Prospective longitudinal cohort</td>
<td>GA &lt; 12 weeks at enrollment, follow-up continued into 2nd and 3rd trimesters</td>
<td>RDQ socio-demographic questionnaire</td>
<td>GERD symptoms occur more often in pregnant women than in non-pregnant women and the frequency</td>
<td>Longitudinal study, adequate sample size and control group leads to generalizability</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Purpose</td>
<td>Design/Method</td>
<td>Sample Setting</td>
<td>Instrument/Tool</td>
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<tr>
<td>Malfertheiner</td>
<td>2017 Germany</td>
<td>Establish impact of GERD symptoms on health-related quality of life during pregnancy</td>
<td>Prospective longitudinal cohort E=510 pregnant C= 330 non-pregnant</td>
<td>N=840 GA&lt; 12 weeks at enrollment, follow-up continued into 2\textsuperscript{nd} and 3\textsuperscript{rd} trimesters</td>
<td>RDQ, QOLRAD, socio-demographic questionnaire</td>
<td>GERD is frequently seen in pregnant women, GERD worsens through pregnancy, GERD negatively impacts health-related QOL (emotional distress, sleep disturbance, vitality, food/drink problems and physical/social functioning) with most significant impact on sleep</td>
<td>GERD diagnosis confirmed using Montreal Criteria (2006) Used validated questionnaires</td>
</tr>
</tbody>
</table>

Notes: HB = heartburn, AR = acid reflux, NVP = nausea and vomiting pregnancy, RDQ = reflux disease questionnaire, QOLRAD = quality of life in reflux and dyspepsia questionnaire, GA = gestational age, E = experimental group, C = control group, NR = not reported
Management of Heartburn

Non-pharmacologic Management of Heartburn

There has been long standing consensus on the use of lifestyle modifications to manage the symptoms of heartburn in pregnancy. These lifestyle modifications include consuming smaller meals during the day; using pillows to maintain an upright body position for sleep; and avoiding the intake of spicy food, alcohol, and tobacco (Richter, 2003).

Pharmacologic Management of Heartburn

There is limited research examining management for heartburn. The few studies that are published have significant flaws and therefore, the results are inconclusive. Rayburn et al. (1999) used an intervention group (calcium carbonate antacids and hydrogen receptor antagonist (Ranitidine) and a control group (calcium carbonate antacid and placebo). Ten participants left the study because they had relief of the GI symptom of heartburn from the antacid use alone. More recently, Malfertheiner et al. (2017) conducted a RCT to determine the efficacy of alginate-based (a biomaterial that can be used for drug delivery) reflux suppressant and magnesium-aluminum antacid gel for treatment of heartburn in pregnancy. The researchers reported no difference between treatment and control groups in intensity or frequency of heartburn between groups.

Pharmacologic and Non-pharmacologic Interventions for Heartburn

Neilson (2013) conducted a meta-analysis, to determine the most effective treatments for self-management of heartburn during pregnancy. The results were inconclusive. Although heartburn is prevalent during pregnancy, there is a dearth of research on medications and other strategies for self-management. The research that exists has methodological flaws, and although there is evidence that commonly used medications are effective for heartburn, it cannot be assumed they are safe in pregnancy.
Constipation commonly occurs in pregnancy (Lee & Saha, 2011). This may be the first time some women experience discomfort and pain from constipation, while for others constipation continues or worsens (Derbyshire et al., 2007). Symptoms of constipation vary during pregnancy because of hormonal and mechanical physiological alterations. There are no published best practice guidelines for constipation in pregnancy (Rungsiprakarn et al., 2015). Therefore, women commonly seek advice from family, friends, and the internet. Women may be less likely to seek advice from their HCP because they may be embarrassed to discuss their bowel habits.

Four of the 31 reviewed studies pertained to constipation in pregnancy (see Table 6). All five of these used quantitative methods, one of the six was a Cochrane Review (Rungsiprakarn et al., 2015).

Quantitative Research on Constipation in Pregnancy

Of the four studies, two were descriptive with the goal of assessing the prevalence of constipation for all three trimesters of gestation and six-weeks post-partum (Derbyshire et al., 2007, 2006). Broussard (1998) measured the test-retest reliability, content validity, and internal consistency of the Constipation Assessment Scale (CAS) which was developed by McMillian and Williams (1989). They found the CAS to be reliable and valid (alpha = 0.82, content validity =.75), and recommended it be used in future studies designed to identify potential interventions for constipation in pregnancy. However, no future studies were found using this instrument to measure constipation in pregnant women. deMilliano et al. (2012) conducted a pilot study as an uncontrolled intervention study to evaluate feasibility, adverse effects, and effect size of the probiotic use in constipated pregnant women. Although the sample size was small, the researchers found that all participants had significantly more stools per week. At baseline, women
had 3.0 stools per week and the frequency increased to 7.0 stools per week in week two (p < 0.01), and 6.0 stools per week in week four (p < 0.01).
Table 6

Studies on Constipation in Pregnancy

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Purpose</th>
<th>Design/Method</th>
<th>Sample Setting</th>
<th>Instrument/Tool</th>
<th>Outcome</th>
<th>Critiques</th>
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</thead>
<tbody>
<tr>
<td>Derbyshire</td>
<td>2006</td>
<td>Investigate prevalence of constipation throughout pregnancy and post-partum</td>
<td>Correlational longitudinal/diary &amp; questionnaire</td>
<td>N=72 at 13 weeks</td>
<td>Food diary, International Physical Activity Questionnaire, bowel habit diary</td>
<td>Compared with non-constipated pregnant women, constipated women consumed less water in 1st trimester (P=0.04), more food in 2nd trimester (P=0.04) and less iron (P=0.02) and less food (P=0.04) in 3rd trimester</td>
<td>The Rome II diagnostic criteria were used to assess constipation based on bowel habit information women recorded for 7 consecutive days during the same week. Self-reporting methods may not accurately describe bowel habits due to possibility of women’s own biases</td>
</tr>
<tr>
<td>Derbyshire</td>
<td>2007</td>
<td>Determine baseline data for a range of constipation in pregnancy</td>
<td>Correlational bowel habit diary</td>
<td>N=72 at 13 weeks</td>
<td>Bowel habit diaries</td>
<td>Sensations of incomplete evacuation of stool increased in all 3 trimesters of pregnancy and post-partum (P&lt;0.05)</td>
<td>Convenience sample with race homogeneity prevents generalization to all pregnant women</td>
</tr>
<tr>
<td>Author Year</td>
<td>Purpose</td>
<td>Design/ Method</td>
<td>Sample Setting</td>
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<tr>
<td>deMilliano 2012 Netherlands</td>
<td>Determine if a mixture of probiotics in the treatment of constipation during pregnancy is effective</td>
<td>Pilot study</td>
<td>N=20 Convenience sample GA=12-34 weeks</td>
<td>Non-validated questionnaire created by authors to document stool frequency, consistency, sensation of incomplete evacuation or anorectal obstruction, abdominal pain or reflux</td>
<td>Women taking the probiotic experienced increase frequency in the number of stools per week (p&lt;0.01)</td>
<td>Weekly recall for symptom data collection may have been limited by recall bias. Convenience sample, no control group and use of a non-validated questionnaire → difficult to generalize results. Women reluctant to report stooling frequency therefore could lead to small sample size and unreliable results.</td>
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<tr>
<td>Author Year</td>
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<td>Design/Method</td>
<td>Sample Setting</td>
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<tr>
<td>Rungsi-prakarn 2015</td>
<td>Assess effectiveness and safety of pharmacologic and non-pharmacologic interventions for treating constipation in pregnancy</td>
<td>Meta-analysis</td>
<td>4 studies identified, but only 2 studies were included in the analyses. N=180 women</td>
<td>Literature Review</td>
<td>The authors stated that a meta-analysis was not performed because data were limited and insufficient, only 2 studies met the inclusion criteria and therefore, data for analysis was limited</td>
<td>Small number of studies →↓ generalizability of results</td>
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</table>

**Note:** GA = Gestational Age
Finally, Rungsiprakarn et al. (2015) completed a Cochrane Review to assess the effectiveness and safety of stimulant laxatives and fiber supplementation for treating constipation in pregnancy. The review was comprised of two studies, with a total sample of 180 pregnant women. Although the sample size was small, the evidence supported supplementing the diet of pregnant women with fiber did increase the frequency of stools.

**Management of Constipation in Pregnancy**

**Non-pharmacologic Management of Constipation in Pregnancy**

There is consensus that increasing the daily water (≥ 35 mL per day per kg of body weight) (Nicolaidis, 2004) and fiber intake (25-30 grams/day), per the American Pregnancy Association (Kashton, 2017), will decrease the symptoms of constipation. The American College of Sports Medicine also suggested that pregnant women should participate in 30 minutes of moderate exercise on most days of the week. This was recommended to maintain GI motility, thereby decreasing the chance of constipation (Artal & O’Toole, 2003).

**Pharmacologic Management of Constipation in Pregnancy**

Stimulant laxatives include bisacodyl (Correctol, Dulcolax), sennosides (Ex-lax, Senokot), castor oil, and plant cascara. The active ingredient triggers bowel muscles to contract and move stool through the intestine. Stimulant laxatives were more effective than bulk-forming laxatives in improving constipation in pregnant women (Rungsiprakarn et al., 2015). However, they may also cause more abdominal discomfort and diarrhea, although there is no difference in the satisfaction of pregnant women with either laxative. Because of the limited number of studies, small sample size, and the overall risk of bias, more RCTs evaluating the effectiveness of how various laxatives improve constipation is needed.
Summary of Chapter II

Even though the GI symptoms of heartburn, constipation, and nausea and/or vomiting in pregnant women have been studied for approximately 40 years, women continue to experience the same issues. The lack of scientific inquiry into establishing the cause and/or treatment for the GI symptoms is ironic, as the care of pregnancy has become very medicalized. The impact of not developing the science on GI symptoms of, heartburn, constipation, and NVP continues to marginalize pregnant women. Therefore, the information gained from listening to pregnant women’s stories about their GI symptom and how they coped with them could provide new insights. These insights could impact how pregnant women are cared for, provide new ideas for research, and change curricula for HCP students related to pregnancy. It could help validate pregnant women’s feelings and assist them in self-management practices.

Gaps in the Literature

In the past 30 years, there has been limited research that asks women about their experiences with GI symptoms and how they manage them. The quantitative research on pregnant women’s most common GI symptoms, heartburn, constipation, and NVP is not robust; have primarily asked women to quantify their symptoms; and the results have been insufficient to make symptom management decisions. After completing the preceding extensive review of the literature about the GI symptoms of pregnancy and how women manage them, several gaps were identified.

1. Instruments only focused on women’s quantification of their nausea and vomiting. The questionnaires had women respond to predetermined answer choices. The answers were forced answer choices and did not give the women an opportunity to truly describe what they were experiencing.
2. HCPs did not consistently ask pregnant women about their GI symptoms and/or self-management strategies. In fact, in several studies women stated that their HCPs expected them to accept their GI symptoms as a normal part of pregnancy. These women further identified that their GI symptoms were trivialized by their HCP’s, and therefore, they were hesitant to broach the topic of their GI symptoms with their HCPs. As a result, pregnant women sought guidance from family, friends, and the internet.

3. The majority of the published literature on NVP is quantitative versus qualitative. The voices of women, voices that could truly help us understand and support pregnant women with their GI discomfort, are lacking. Exploring the pregnant woman’s voice using a feminist lens and constructivism could help researchers and practitioners better understand and target self-management strategies to prevent or mitigate the severity of their GI symptoms.
Chapter III
RESEARCH DESIGN AND METHODS

The purpose of this qualitative exploratory-descriptive, narrative study was to explore women’s experiences with GI symptoms during pregnancy. The study also sought to understand strategies women use to cope with their GI symptoms throughout pregnancy. The two research questions that I used to guide the collection and analysis of data were:

1. What are women’s experiences of GI discomforts during pregnancy?
2. What self-management strategies do women use to cope with their GI discomforts?

This chapter provides a description of the research design and methods, data collection, assurance of scientific rigor, data analysis, provisions for the protection of human rights, and study limitations.

Exploratory, Descriptive, Narrative Method Design

A qualitative exploratory-descriptive narrative study design was used to explore women’s experiences with select GI symptoms during pregnancy and strategies women use to cope with their GI symptoms throughout pregnancies. In qualitative research, narrative methods are often used to allow individuals’ stories to be told to illuminate actual situations. Narratives, or stories, are a rich resource for knowledge. In research, narratives are used to interpret the meanings people attribute to their world and gain greater understanding from different perspectives. Narratives can give insight into marginalized lives, illuminating the realities experienced in life, which can lead the researcher to reflect, search for significance, and be transformed (Bleakley, 2005). Narratives are a useful method for this study because there is limited research examining the experiences of pregnant women through a framework designed to hear and validate their stories. The stories pregnant women share about their GI symptoms
and strategies they use to cope with their GI symptoms throughout pregnancy formed the raw data of this study (Bleakley, 2005).

In nursing research, narratives can offer a more in-depth view than a questionnaire by revealing a woman’s point of view, facilitating an empathetic reflection on the experience, and serving to provide nurses with new perspectives that may impact development of nursing interventions (Bleakley, 2005; Lai, 2010; Sandelowski, 2004). Feminist research views women’s experiences as resources, listening to and valuing women’s voices, focusing on new areas of inquiry, with the belief that women are experts in their own lives and can be trusted to tell the truth regarding their experiences. It is important to listen closely to women’s narratives and then systematically analyze their stories to facilitate women’s voices being heard. This approach supports a more humanistic model of pregnancy than currently exists with the medicalization of women’s bodies. The humanistic paradigm is based upon the belief that is impossible to treat women’s physical symptoms without addressing the psychological components (Davis-Floyd, 2001). Nurses are committed to holistic approaches to care that are client-centered.

**Procedures**

The study design consisted of individual interviews using an open-ended research question. Open-ended interviews maximize the participants’ information and help the researcher identify outliers and commonalities among the research subjects. Each woman was interviewed privately once. All interviews were completed virtually given the current state of the COVID-19 virus pandemic and the need for social distancing. Individual interviews using technology met current guidelines to limit spread of the virus.

In-depth individual interviews were chosen over focus groups for data collection because it provided each participant the flexibility, time, and space to share information of importance to them (Green & Thorogood, 2009). Individual interviews versus focus groups also
provided the participants with more privacy to express their experiences fully and freely. This facilitated any participant, who may be embarrassed by their experiences of GI symptoms during pregnancy, to express them more openly. And, in the context of an individual interview, I could more easily encourage each woman to elaborate on and clarify her feelings. This allowed me the time to develop an in-depth understanding of each woman’s descriptions, what the GI symptoms meant to her, and how she managed them (Sandelowski & Barrows, 2003). The use of individual open-ended interviews was congruent with the theory of Constructivism (Appleton & King, 2002). In Constructivism, learning and knowledge are created through social interaction. Relativism is the ontological assumption of constructivism and infers that humans organize their experiences in understandable, comprehensible, and explainable forms to find individual meanings (Cupchik, 2001; Guba & Lincoln, 2001). Individual interviews are also consistent with the philosophic framework and approaches used in feminist analyses (Hall & Stevens, 1991). Unstructured interviews allowed conversation to proceed naturally with the participant at the center of the experience, freely sharing her story.

**Recruitment Procedures**

Approval for the protection of human subjects was obtained from Marquette University. Once obtained, women participants were recruited through social media and word of mouth. More specifically, a letter describing my study and the study flyer with a quick response (QR) code was shared with social media groups (BabyCenter, Lynzy & Co, Momjunction Pregnancy tips, My Pregnancy Life), a CNM clinic, colleagues, friends, and family members. A QR code is a two-dimensional type of matrix barcode that when scanned (by the camera option on a cell phone or ipad) allows the user immediate access to information. The recruitment information described the purpose of the study, eligibility criteria, that the length of the interview is dependent on the pregnant woman’s story, that the interview would be audiotaped, and my
contact information. Women interested in participating in the study were directed to scan the QR code. After scanning the QR code, a link for the Qualtrics survey automatically appeared. The purpose of the Qualtrics survey was to determine if the pregnant woman was eligible to participate in the study. Women who met the inclusion criteria were given the opportunity to complete the demographics survey titled “mypregnancyGIsymptoms” (See Appendix B). The Qualtrics survey included a question asking women if they agreed to receive texts from me, and then if they did, the pregnant women were instructed to add their telephone number into the survey.

Sample Recruitment

Purposive and snowball sampling was used to recruit the study sample. Purposive sampling consists of intentionally selecting a sample using specific criteria (Munhall, 2007). The purpose of snowball sampling is to enhance variation and aid in identifying pregnant participants (Maykut & Morehouse, 1994). Snowball sampling involves asking women in the study to reach out, talk, and encourage other pregnant women to participate in the study. These women may know other pregnant women who are willing to share information about the study and/or participate.

Inclusion criteria for this study were: (a) pregnant women who were 18 years and older and self-identified as being healthy, (b) 26-30 weeks gestation at recruitment, and 28-40 weeks gestation for enrollment, (c) able to speak and read English, (d) willing to be interviewed and audiotaped, (e) had access to an electronic device (smart phone or laptop) that was able to access the internet to conduct a virtual interview, and (f) were willing to provide an email address to receive the link from Microsoft Teams. Exclusion criteria for this study were: (a) nonpregnant and pregnant women less than 18 years or over 18 who had not self-identified as being healthy, (b) less than 26-30 weeks gestation at recruitment, (c) unable to speak and read
English, (d) unwilling to be interviewed and audiotaped, (e) did not have access to an electronic device (smart phone or laptop) that was able to access the internet to conduct a virtual interview, and (f) unwilling to provide an email address to receive the link from Microsoft Teams.

Upon being contacted by a potential participant, I again shared the purpose of the study, and verified that she fit the inclusion criteria; she is pregnant and had been experiencing GI symptoms such as heartburn, constipation, and/or NVP; had access to an electronic device for the Microsoft Team’s interview; and agreed to be audiotaped. Once confirmed, the women were informed of the study risks and benefits, that they could withdraw from the study at any time, and that they would receive a copy of the informed consent to review in advance of the meeting and that we would be read together prior to beginning the interview.

If the pregnant woman met the inclusion criteria, a mutually agreed upon date and time for the virtual interview was established. I sent out an email invitation that reconfirmed this information. Two days before the interview, I also emailed or texted, based on the women’s preference, to confirm the time of the virtual meeting. Data collection occurred within a single interview. Prior to initiating the actual interview, I read through the written informed consent with each woman and the interview concluded by asking for her verbal consent to participate in the study. All transcripts were reviewed closely and identifying information was removed. The length of the interview was determined by the women’s story.

After introducing myself, I shared my background as a nurse and educator in women’s health who has a keen interest in GI symptoms during pregnancy. I then invited each woman to participate freely by asking her to “Please describe your GI discomforts during pregnancy and any strategies you may have used to cope with them. Your descriptions can include your feelings, thoughts, opinions, perceptions, experiences, memories, images, influences, and
anything else you wish to share.” During the interview, I encouraged the woman to elaborate by using reflection of her key words and asking her to “tell me more about that,” or to “explain that further.” I actively listened, encouraged and clarified phrases until the woman indicated she was done sharing her views.

**Adequacy of Sample Size**

Originally, I planned to recruit a sample of up to 20 pregnant women. I made the decision to obtain a sample size of up to 20 based on a review of qualitative sampling saturation literature for a focused topic, and several previous dissertations using qualitative research methods (Sandelowski, 1995; Garcia, 2018; Kasprovich, 2016). Also, Sandelowski (1995) proposed beginning researchers may need more participants to discover the themes within the data through analyses. For this study, subject recruitment stopped when data saturation was reached. Saturation of the data occurred when no new themes were identified in the interview transcripts.

**Data Analyses**

**Reflexive Journaling and Bracketing**

Reflexive cultural bracketing was utilized in this study to enhance its rigor. Prior to meeting with the women, I reflected on my background as a clinical nursing faculty member, board-certified neonatal nurse practitioner, doctoral student, and mother. I wrote in a reflexive journal throughout the study. In this journal, I noted the participants’ thoughts, feelings, beliefs, and opinions that surfaced during the interviews. This helped me identify and bracket or set aside any of my preconceived beliefs, biases, emotions, and assumptions during data collection and analysis (Tufford & Newman, 2012). Reflecting on this journal helped me remember that data collection and analysis is an iterative versus a linear process (Braun & Clark, 2006; Lichtman, 2013).
A systematic approach to data analysis was used to enhance the rigor of the study. Data analysis began with the first interview and continued until the end of the study. Consistency is important with data analysis in narrative method. Therefore, I guided the interviews and data collection to learn maximally from each participant and also be a central part in the interpretation of the data.

All interviews were transcribed, and I reviewed them for accuracy. I examined the transcribed narratives repeatedly using NVivo qualitative software to organize the data. Next, I used cyclic revisiting of the data codes to identify commonalities and differences. I then formed related ideas and created nodes, which represented themes. I looked for themes using the theoretical framework of social constructivism and through the lens of feminist philosophy. After each interview, I wrote in my reflexive journal to document any key statements recalled from the interview, my immediate thoughts and reactions in response to each woman, her words, and any emotions expressed. I referred and added to these notes as other reactions occurred to me, forming an audit trail that became part of the development of my analyses. I worked with two committee members to come to consensus on themes, subthemes, and categories. After completing 22 interviews, redundancies were consistently emerging in the data indicating data saturation.

**Ensuring Scientific Rigor**

To ensure the study’s methodological rigor, I used a systematic and iterative process to support the reliability, credibility, and validity of my analysis. Guba & Lincoln (1985) postulate that trustworthiness in research is key to evaluate the worth of qualitative studies. The four key components to ensure trustworthiness include: establishment of credibility, dependability, transferability, and confirmability.
Credibility is comparable to internal validity and is established when others believe the experiences of the participants in the study. I used the strategy of persistent observation to demonstrate credibility in my study. In order to obtain persistent observation, I actively listened during the interview and identified the relevant characteristics participants described about their GI symptoms and how they self-managed them.

I reviewed the transcripts and audiotapes until I identified the similarities and differences within and between the participants’ narratives. I also retained and examined all outlier perspectives that were shared. I worked with two researchers, experienced in qualitative methods, to code the same two interviews. From this experience I gained insight into my potential biases and preconceived assumptions in order to prevent them from inadvertently being expressed in my analysis. For example, I learned techniques to remain in an active listener role during the interview rather than in an information teaching and sharing role as a nurse.

The next component to ensure trustworthiness in qualitative research is dependability which is comparable to reliability in quantitative work. It is established when the study findings demonstrate consistency in my approaches to analysis and they were clearly described. Dependability was achieved through the process of auditing, which was demonstrated in my reflexive journal notes that informed the analysis process. I documented the entire research process for others to examine to ensure the process was logical and traceable. I explained the coding method, identification of commonalities and outliers in the pregnant women’s responses, and the movement toward describing patterns and themes in the data and developing my interpretations of them.

The third component to ensure trustworthiness is transferability which is comparable to external validity and was established in the study by applying a “thick transcription” technique. This technique consists of a detailed description based on the interviews about women’s
descriptions of GI symptoms (Phillippi & Lauderdale, 2018). These insights are the themes identified.

The final component to ensure trustworthiness is confirmability which is the result of credibility, transferability, and dependability being established (Thomas & Magilvy, 2011). I established confirmability during the research process by reflecting on each interview, identifying personal biases, bracketing them, and detailing observations and ongoing thoughts about the data in the reflexive journal. I acknowledged my previous experience and knowledge about discomforts in pregnancy by bracketing them so I could set my personal biases aside to obtain each participant’s unique perspectives. In the final phases of the analysis, I provided the interpretation and conclusions from the results to provide a context from the pregnant women’s perspectives and suggest directions for future work.

**Provisions for the Protection of Human Rights**

As indicated above, due to the COVID-19 requirements for social distancing and stay-at-home orders, all individual interviews were completed virtually. Data analysis was conducted in the following manner. After each interview recorded via Microsoft Teams, I reviewed the Microsoft Teams text transcription and sent the audio recording to the transcriptionist. When the transcriptions were completed, I carefully checked the transcriptions for accuracy, compared the Microsoft Teams recording to the written transcriptions and de-identified the transcript by removing any personal names, information, or places. The de-identified interview data was imported into NVivo, a qualitative software that facilitated collection, organization, and analysis of data. This assisted in identifying robust themes and patterns in the data. The transcriptions were stored on an external hard drive that was only used for this study. That external hard drive was stored in a locked and secure file cabinet at my residence.
**Researcher Bias**

As a health care provider and educator in women’s health, I believe women are truthful when they share stories about their GI discomforts in pregnancy and how they coped with them. I further believe listening to pregnant women’s stories is the best method for learning from them about their experiences. As a researcher and from working in hospitals, I have first-hand knowledge and experience in the medicalization of pregnancy. Also, I am a woman who has experienced three pregnancies and believes each woman’s pregnancy is unique as is her self-management of any issues (e.g., GI symptoms) that arise during pregnancy.

In addition to identifying personal biases, I remained cognizant of them during the entire research process, reflected on the biases in my journal, and reported how they may have challenged my analysis of the interviews. Finally, as a scientist, I know information shared between pregnant women and their HCP may be incomplete and may not be evidence-based, given the historic lack of research into women’s actual experiences of pregnancy. This can leave many pregnant women confused, which they were free to share in their narratives.

**Limitations**

It is important to acknowledge potential limitations of the study. The COVID-19 pandemic impacted this study in ways that may not be immediately apparent. I worked to maintain objectivity and flexibility and continually assessed the impact COVID-19 may have had on my study. Many burdens were placed on women during this crisis and I was cognizant of possible signs of stress and trauma in the women (Pfefferbaum & North, 2020). If a woman would have expressed stress and/or traumatic effects during an interview, I would have recommended that she follow-up immediately with her HCP, but this did not surface.

Sample diversity would likely be limited and related to the impact of the pandemic which required social isolation, distancing, and need for virtual interviews.
interviews would have provided an opportunity for increased engagement between me and the participants. Torrentira (2020) states that telephone interviews and video-conferencing during a pandemic are methods that could suffice to collect data in real-time during the pandemic. While the access to mobile devices is widespread among most populations (Vogels, 2021), the use of social media for recruitment, and the time needed for completion of the eligibility survey and the entire interview, may have been discouraging for possible participants who exclusively used their mobile device. Accessing possible participants through multiple HCP offices was complicated by the need for several time-intensive institutional review board approvals, during the time when research was essentially stopped due to the pandemic (Vogels, 2021). Early and repeated targeting of recruitment efforts through multiple community sources, could result in more diverse participation in future studies. For example, making connections among nursing faculty who represent varied communities was a strategy attempted. The use of word of mouth and snowball sampling techniques was encouraged, whenever interacting with pregnant women who expressed interest in being interviewed. This helped widen the reach of recruitment as did the use of social media sites that focused on pregnancy.

Finally, another potential limitation of this study could have been my personal biases. This information about my biases was intended to allow others to evaluate the study more fully than if the biases were not presented.

**Summary of Chapter III**

In summary, Chapter III identified the research questions and provided a detailed description of the qualitative research design and methods. A step-by-step plan for maintaining the rigor of the study, while collecting and analyzing data, was also provided. Details about how human rights would be protected with both the COVID-19 pandemic and stay-at-home restrictions were discussed. Finally, potential limitations to this study were included.
In Chapter IV, I explained the results from interviews of 22 pregnant women who provided descriptions about their GI discomorts and the self-management strategies they used to cope with them. Approximately 75% of the participants began the interview describing discomforts they experienced in the first trimester and continued in a chronological order throughout pregnancy. I believe all the participants were truthful and generous with sharing their time and experiences. In keeping with the feminist philosophical underpinning, the participants provided their own thoughts and experiences that I analyzed and then used quotes of the participants to illustrate their descriptions of their perspectives.

This process resulted in the identification of three themes that I decided most clearly illustrated participants’ experiences of GI discomforts during pregnancy. Theme development in qualitative research requires repeated analysis of the data and relating themes to established knowledge based on the participants’ experiences. The organization of Chapter IV is based on themes I derived from the participants’ interviews and is known as a strategy of meaning making, not truth making (Bailey & Tilley, 2002). My intent was to understand pregnant women’s experiences of GI discomforts more deeply. The participant’s descriptions of heartburn, constipation, and NVP were frequent, unique, and distinct, clearly supporting my choice of these three themes from these data.

Only a few participants talked about diarrhea and feelings of hypoglycemia and related “brain fog.” These comments were outliers that were inconsistently and rarely mentioned by the study participants and did not form a GI discomfort theme. Therefore, I chose the three themes, Heartburn, Constipation, and NVP, based on the fact that all participants identified one or more of them. From those three themes, I formed two sub-themes within each: (a)
Descriptions and (b) Self-management Strategies to portray in an organized way the participants’ experiential wisdom they shared. Further, I identified four to five categories under Self-management Strategies that were evident across the themes: (a) Food-related, (b) Beverage-related, (c) Activity-related (d) Over-the-Counter (OTC) remedies; and for two of the themes (constipation and nausea and/or vomiting), added (e) Prescription medications, to adequately summarize the participants’ narratives (Figure 1).

Every theme and sub-theme are illustrated with exemplar quotations from the participants to explain them. Quotations from all the participants are used during the course of reporting the findings, in the range of 1-7 quotes from each woman. All participants have been well-represented in the quotations I selected as exemplars within the findings. This is illustrated in Table 7. The participants are referenced according to the order in which they were interviewed. To increase the ability to track individual participants, I assigned a pseudonym--in alphabetical order--to each participant and the names are used throughout the Results.

The majority of the participants reported using family, friends, applications on mobile device (e.g. app), internet searches and web logs (e.g., blog) to seek information confirming descriptions of GI discomforts of pregnancy and ideas on how to self-manage them. Through conversation, two participants mentioned asking their HCP, specifically their CNM, about characteristics of heartburn and information on using a psyllium fiber supplement to manage constipation.

I organized Chapter IV beginning with the sample demographics of the participants in my study (see Table 8). Following the demographic data, I explained the themes, sub-themes, and categories, providing examples of self-management strategies using the women’s perspectives.
Sample Demographics

The demographic information of the pregnant women who participated in the study are described according to two major topics. Those are: (a) age, race, and gestational age; and (b) education, marriage status and income. The latter data are summarized in Table 8. The age of the participants in my study ranged from 25-41 years ($M=31.59, SD=4.2$). All the participants were white and in the third trimester of pregnancy with a range of 27.29-40.0 weeks ($M=34.66, SD=3.7$).
Table 7

Women’s Coded Experiences of GI Discomforts of Pregnancy according to the Three Themes

<table>
<thead>
<tr>
<th>Participant (P) information</th>
<th>Heartburn N (%)</th>
<th>Constipation N (%)</th>
<th>Nausea &amp;/or Vomiting N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=22 (100%)</td>
<td>17 (77.3%)</td>
<td>16 (72.7%)</td>
<td>15 (68.2%)</td>
</tr>
<tr>
<td>P1  A Anne</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P2  B Beth</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P3  C Carol</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P4  D Dana</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>P5  E Erin</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P6  F Fran</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>P7  G Grace</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>P8  H Haley</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P9  I Irene</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>P10 J Jess</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>P11 K Kelly</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P12 L Laura</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P13 M Megan</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P14 N Nancy</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P15 O Opal</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P16 P Paige</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>P17 Q Quinn</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P18 R Ruth</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>P19 S Sarah</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>P20</td>
<td>T</td>
<td>Tara</td>
<td>X</td>
</tr>
<tr>
<td>P21</td>
<td>U</td>
<td>Uma</td>
<td></td>
</tr>
<tr>
<td>P22</td>
<td>V</td>
<td>Vicki</td>
<td>X</td>
</tr>
</tbody>
</table>
Table 8

Sample Demographics: Education, Marriage Status and Income

<table>
<thead>
<tr>
<th>Educational level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate degree</td>
<td>2 (14.29%)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>4 (28.57%)</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>5 (35.71%)</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>3 (21.43%)</td>
</tr>
<tr>
<td>Missing data</td>
<td>8 (36.4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marriage status</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>19 (86.3%)</td>
</tr>
<tr>
<td>Divorced</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>Never married</td>
<td>2 (9.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Incomea</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefer not to answer</td>
<td>1 (4.5%)</td>
</tr>
<tr>
<td>$0-$59,000</td>
<td>7 (31.7%)</td>
</tr>
<tr>
<td>$60-$99,000</td>
<td>7 (31.7%)</td>
</tr>
<tr>
<td>$&gt;100,000</td>
<td>7 (31.7%)</td>
</tr>
</tbody>
</table>

*Note: a Rounding error in category*
Figure 1
Themes, Subthemes, & Categories of GI Discomforts of Pregnancy

**Themes**
- Heartburn
- Constipation
- Nausea &/or Vomiting

**Subthemes:**
- Descriptions
- Self-management Strategies

**Categories with Examples**

**Food-related:**
- Change types eaten
- Use small, frequent snacks
- Popcorn, bananas
- Avoid spicy, acidic foods
- Ginger helps
- No grapes

**Beverage-related:**
- Milk settles
- Prune juice works

**Activity-related:**
- Stay upright
- Elevate head of bed
- Prop with pillows

**OTC remedies:**
- Tums
- Pepto
- Mylanta

**Food-related:**
- \( \uparrow \) fruits
- \( \uparrow \) vegetables

**Beverage-related:**
- Prune juice works
- Try some dairy if lactose intolerant
- \( \uparrow \) water
- Use coffee

**Activity-related:**
- \( \uparrow \) exercise
- Need longer time in bathroom
- Wait for time to resolve

**OTC remedies:**
- Docusate
- Miralax
- Colace
- Specialty herbal tea
- Gummy fiber supplement
- Fiber One (cereal)

**Prescription Medications:**
- Zofran
- Phenergan
- Bentyl

**Food-related:**
- Have smaller meals
- Use frequent snacks & keep handy
- \( \uparrow \) carbohydrates
- Avoid empty stomach in morning
- Ginger candies helped
- Use hard sour candies

**Beverage-related:**
- Water
- Diluted Gatorade with water
- Milk

**Activity-related:**
- \( \downarrow \) exercise
- Rest, nap more

**OTC remedies:**
- Vitamin B6
- Unisom-PD

**Prescription Medications:**
- Diclegis
- Zofran
- Phenergan
- Bentyl
Theme One: Heartburn

The first major theme, *Heartburn*, includes reflux, belching, and hiccups because they were interrelated in the interviews. This theme focuses on participant’s descriptions of this GI discomfort of pregnancy. Reflux is the medical term that describes stomach acids moving into the esophagus, causing throat and/or chest pain, which is referred to as heartburn. This process may cause an increased swallowing rate. More stomach acid is produced to breakdown foods higher in fats and sugar. Burping happens when swallowed air escapes from the upper GI track. Pregnant women may experience any or all of these discomforts and often use the term heartburn as an overarching description to encompass all the sensations. In my study, participants identified the discomfort of heartburn as the most frequently experienced GI symptom. Although few participants (*n* = 4, 18.2%) mentioned heartburn as the first GI discomfort of pregnancy they experienced, the majority (*n* = 17, 77.7%) of the participants reported experiencing it at some time during their pregnancies.

During the interviews, the participant shared the onset, location, duration, and personal interpretations of heartburn; factors that increased their reported occurrences of this GI discomfort; and self-management strategies they tried. Thus, I identified two sub-themes: (a) *Descriptions* and (b) *Self-management Strategies*, along with four categories under Self-management Strategies: (a) *Food-related*, (b) *Beverage-related*, (c) *Activity-related* and (d) *OTC remedies*. Examples of the participant’s statements that supported the two sub-themes and four categories are included.

**Sub-Theme 1: Women’s Descriptions – Heartburn**

Heartburn as a GI discomfort of pregnancy was often described by women enrolled in my study. For some participants this was a new experience, while others had encountered this previously when not pregnant. Irene shared when she felt her discomfort was different
compared to what she had read about, she would do an online search and follow-up with her HCP:

You can search by a key word, so I would put in acid reflux or whatever I can describe my symptoms as, and then I kind of see if other people have recently posted about the same types of things. I’m like, oh, if they’re kind of describing things or experiencing the same type of thing that makes me feel a lot less anxious about it. Then because my appointments were becoming more routine, I would just jot down notes for my CNM, like, I just started experiencing this, is this normal? And she’s like, yep, that’s normal… and likely within the next couple of weeks you might experience, X, Y or Z….she is very good at preparing you for what will come down the line to alleviate that worry.

The onset of heartburn was reported in all trimesters, two of the four participants specified heartburn starting in the second or third trimester. Quinn shared:

I’ve never had heartburn beforehand, so it gets super tight for me...and it kind of does feel like I’m just burning. You go to put the fire out somehow...but it really just like a tight feeling in my chest. A little bit in my throat....It doesn’t ever seem like after I swallow it changes much at all. Just that tight burning feeling.

In comparison Fran remarked, “So like, I would get acid reflux a little bit before pregnancy, not as consistent, just randomly here and there and laying on my left side definitely helps with that.”

Heartburn occurred any time during the day or evening and most participant were unable to identify a pattern to the heartburn. Kelly’s experience was atypical:

I definitely have heartburn. But it’s only during certain times, like I never have it during the day. I only have it around, I call it kind of like the witching hour and it’s usually between like three and six o’clock and I don’t know why.

The onset of heartburn was more gradual for Anne: “I feel like that’s the thing that creeps up the most though, as far as my discomfort and it’s been daily...I also feel like I’m getting a lot more in the afternoon than in the morning.”

Three participants shared their experience of being woken up by heartburn after going to bed for the night. Irene shared:
I’ll go to sleep and I’m fine and I wake up in the middle of the night. With, like that lump in my throat, but also like all of the acid coming up and I just had this overwhelming feeling like I’m going to throw up everywhere....It’s out of the blue, completely out of the blue....that kind of caught me by surprise because the very first time it happened I just kind of shot up out of bed and I was like, I’m not sure if I should even run to the bathroom because I might just throw up on my floor. It caught me off guard. Like, I mean, it was like that quick, like holy crap.”

The most common personal interpretations of the discomfort of heartburn were described as an intense burning feeling in the throat and/or chest, sometimes leading to coughing and belching. Beth described her heartburn in this manner, “I guess it feels like a burning in my throat or like right below my throat.” In comparison Carol stated, “It’s just like a burning sensation. It feels like it’s just bubbling up in my throat. Sometimes it leads to coughing.” Haley echoed, “Sometimes I would feel like I needed to cough....cause it just felt just so high not to throw up, I just felt like that pressure and burning really high on my throat as well as in my chest.” Jess described the discomfort as, “like a match on my throat...it comes up into my throat, yeah, it’s mostly in my esophagus.” Megan provided more details:

It’s very uncomfortable. But yeah, like starting in my chest, I just get that, it’s not like pressure, but I mean, it feels like it’s burning, like kind of starting off from my chest. Then you know it works its way up.

Tara added comments about burping to her description:

Like down my throat, into my chest a little bit. I would say with the nausea in the last two weeks, since it’s gotten worse, I’ve had a lot of belching. Which I didn’t have the whole time. So, that’s been an interesting change, just feeling like I’ve never really been a burping person. So just having this intense belching usually...as soon as I eat, I feel like I’m eating smaller portions in the last two weeks than I have been able to and then I just get this intense belching.

Laura, Nancy, and Sarah shared less common experiences of developing apnea, headaches, and shortness of breath with heartburn. Erin stated, “It’s like when you have to constantly...swallow something.... It feels like something’s back there. So, I feel like if I swallow it will go away. It’s like something stuck, has that burning sensation....”
Sub-Theme 2: Self-Management Strategies

Overall, the participants reported eating different types of food, drinking various beverages, and changing body position as the most frequent factors identified that intensified the discomforts of heartburn. This ranged from no specific food group to breads, dairy, and sugary foods. Some participants reported a decrease in the discomfort of heartburn when they ingested carbonated drinks, milk, and tea, but for others these were not strategies. Also associated with food intake were the experiences reported, especially immediately after eating, when assuming a flat positioning.

Almost 75% of the participants experienced the GI discomfort of heartburn--including reflux, burping and hiccups--and clearly articulated their familiarity with these unpleasant events. During the interview, many women in my study shared specific strategies they used to cope. These behaviors represent the second sub-theme, self-management strategies for GI discomforts of pregnancy-heartburn which includes four categories: (a) Food-related, (b) Beverage-related, (c) Activity-related, and (d) OTC remedies.

Self-Management Strategies-Category: Food-Related

A woman’s experience with GI discomforts may differ in the same pregnancy and/or between different pregnancies. Multidimensional factors (including physiologic and psychologic) may influence this reality and participants were challenged to develop creative strategies. The goal of a dynamic self-management strategy is to avert or delay the onset of the negative outcome; for a participant this may include changes in strategies throughout the pregnancy (Dodd et al., 2001). Participants in my study freely shared the changes they made in an attempt to decrease the discomfort of heartburn.

Participants consistently used the words burning or tightness to illustrate the discomforts of heartburn in the throat and chest area. The most frequent lifestyle adaptation
self-management strategy for heartburn described by women was adjusting their daily intake.

To implement this strategy, participants changed the type of foods they ate, limited spicy and/or acidic food, avoided fatty, greasy foods, ate smaller, more frequent meals, stopped eating after supper, increased the total servings of carbohydrates, tried bananas but avoided grapes, incorporated ginger into diet.

In an attempt to manage the discomfort of heartburn, Jess, Laura, and Nancy made decisions to delete or add specific foods into their diets. As Jess reported:

I take out really spicy or really acidic things, you know, things like pizza and spaghetti sauce or that type of thing that can usually at least make it not so severe. But even if I ate plain buttered noodles, I would still have heartburn at nighttime.

Three participants, Laura, Nancy, and Ruth respectively, tried the same strategy and commented:

I try not to eat, a lot of spicy stuff or acidic stuff because of the acid reflux. But that’s about it. Otherwise, I eat everything.

I thought it was my diet, so I did look up foods that you should eat for acid reflux or GERD or whatever. I tried to incorporate more of those foods like bananas and all that. But I found that no matter what I do, it will still get triggered.

I think the biggest thing with the heartburn too, is just trying to avoid certain fatty foods. Which is of course hard during pregnancy, I feel like that’s difficult sometimes because you know, fatty foods are delicious. Not that I’m the healthiest person in the world, but I recognize that sometimes if I’m not eating something healthy, is some super fatty or greasy. That’s typically when the heartburn kicks in……

Anne indicated she had previously used snacking to cope with another GI discomfort:

I just feel like probably every couple of hours, I … need something in my stomach, and I tend to want carbs. Just like crackers or something light. I think early on in pregnancy, it was more because I was nauseous and now it’s more because of the heartburn. Like for instance, at work, I just have a thing of trail mix in my desk that I just pull a handful out of and that seems to help…. I think during the day I can feel when it’s starting. So, I try to nip it in the bud before it gets bad.

Haley used the internet to search for foods that would decrease heartburn:

I actually did some good old fashion Googling and looked at different types of food that helped decrease heartburn and surprisingly one that worked really well for me was
popcorn. It wasn’t ever really flavored. It was pretty plain popcorn, but it was a really good snack that fills me up and actually helps with the constipation as well. It’s pretty bland, so didn’t cause a heartburn and then I avoided all grapes which caused really bad heartburn for me for some reason.

Another example of self-managing heartburn in the food-related category was identified by Haley:

The second trimester was actually really great. I didn’t feel like I was being affected quite so much, except for the heartburn. I guess as far as affecting me day-to-day the heartburn I could only eat. Unless I wanted to be in a lot of discomfort. I would stop eating by 5:00 PM. Otherwise, I’d just have terrible indigestion and laying down was just super uncomfortable.

Sarah discussed the use of ginger as a strategy for both heartburn and nausea and vomiting. This intersection between management strategies could be examined further to decrease GI discomfort.

I did feel like I almost like threw up a little bit in my mouth at work…it was probably after lunch that was weird. Cause I haven’t had anything like that too much. But again, just try to take some Tums or try to ignore it. I mean, I guess that’s been my biggest strategy because I know I’m not supposed to take, you know, like you’re only supposed to take a certain amount of times. So, that’s why I opt to do more ginger. Because I know I can eat however much of that.

Self-Management Strategies-Category: Beverage-Related

Just as some participants used food to decrease their discomfort with heartburn, others used beverage-related strategies to cope. Ruth shared her opinion on the benefit of drinking milk:

Starting in my third trimester, I have been having increased heartburn. I actually just saw my OB this last week and she offered to prescribe me some Pepcid. But I’ve been taking Tums and I find that helpful, but also just drinking a glass of milk, Sometimes I actually find the milk more helpful than the Tums actually to help with that....

Dana had a similar comment about drinking milk as a strategy to decrease heartburn:

I have every once in a while, in the evening, drink milk. I don’t know if it really actually helps. But it seems to like cool the pipes a little bit. I haven’t gone as far as like seeking out medication or anything like that. Because it hasn’t seemed at least I don’t think it’s a severe enough to need it...Something maybe like cool and creamy. If it is irritating me or I do need to feel like I need to settle it down. Again, tends to mostly be in the evening.
Erin shared an intersection in her experience on the discomfort of heartburn after she added prune juice in her diet for constipation:

I didn’t think the prune juice would have an effect on the heartburn, but it seems to help. I don’t take anything else for the heartburn and that’s the only thing that I’ve changed. I haven’t taken out spicy foods. I haven’t not drank carbonation, things that they tell you to avoid. I haven’t done that at all. I’ve just started drinking prune juice.

**Self-Management Strategies-Category: Activity-Related**

Changing body positions was the next most frequent strategy mentioned by participants to cope with heartburn. Participants shared that modifying their position was helpful during the day and when laying down to sleep. In general, the position changes involved women keeping their torso more upright or vertical. For example, three participants, Anne, Beth, and Dana respectively, explained their strategies:

I find myself having to adjust my posture a lot. Or even laying down a little bit, if it’s feeling like really uncomfortable…. I feel like I arch my back a lot so that the front of me is more elongated…so I will have like more room there.

I make sure I am not laying down, if I am laying down and I get the heartburn, I definitely stand up because I know that laying down can make it worse. So, I definitely stand up or sit, go sit in the kitchen and drink some water…

In the evening...it’s picking up toys or putting stuff away. Instead, of just bending over at the waist, remembering to maybe squat instead. So, I’m not inverting my upper half, and again letting gravity not help the heartburn symptoms be any worse than they need to be.

Fran also modified her positioning:

I’ll eat something like I was dipping veggie straws into horseradish yesterday and I’m fine with that. Something you would think would provoke acid reflux more than yogurt and it doesn’t at all... I just try to sit up more so that the acid can’t just go up my esophagus and that kind of helps.

Participants used pillows to help manage their position change when laying down. The pillows would be arranged to support an upright torso or side lying position. Jess stated, “I put another pillow on top of the wedge pillow if my heartburn is really bad.” Dana and Laura also used pillows to elevate the head of their beds. Sarah commented:
I know a lot about positioning. I definitely, at night, know that it puts less stress on my esophagus and everything if I’m on my left side because the stomach is tilted downward. I have tried when I take naps during the day ... to be more semi reclined and do it on the couch. Our couch is pretty comfortable, and I use extra pillows. I think I’m getting to the point where I need to do that in bed as well. Because even on the left side, I’ll wake up a little bit with some reflux here and there.

Laura went on to discuss how she has managed apnea associated with her heartburn.

I have had a lot of acid reflux...that started somewhere in the second trimester, and it’s just progressively gotten worse. So, I have to be really careful. I usually can’t eat like four or five hours before I go to bed at night or it’s still there. So that is my biggest treatment. That is trying to stop eating around 6:00 at night, so that it doesn’t bother me too much while I’m sleeping, but the acid reflux actually caused me to have some apnea as well...usually it happens the most after I eat lunch. I get kind of tired, and I go lay down for a minute and all of a sudden, I wake up gasping. They said that could have been to the acid reflux. It doesn’t seem to happen if I don’t have anything in my stomach. But yeah, I’ll wake up with kind of a gasp...so I really don’t take naps anymore cause it’s so annoying and it kinds of scares you.

Sarah contributed her observation of an intersection with pain and reflux that she experienced with another common GI discomfort, constipation:

I know, like when I’m super constipated and like I realized I haven’t gone in three or four days and I’m so tired and I have a ton of back pain. I’m like, ‘Oh, okay, that’s why.’ You know, I was like, it’s definitely more related to that. I definitely have way more reflux [as heartburn].

**Self-Management Strategies-Category: Over-the-Counter (OTC) Remedies**

Taking OTC medications to decrease the GI discomfort of heartburn was another self-management strategy identified by women in this study. Calcium Carbonate (Tums) was the most common medication mentioned by participants, followed by Famotidine (Pepcid) and Simethicone (Mylanta).

Related to Calcium Carbonate usage, the following two participants shared their ideas, per Ruth, “I just saw my OB last week and she offered to prescribe me some Famotidine, but I have been taking Calcium Carbonate and find that helpful.” As Sarah explained, “I’ve had to hit up the Calcium Carbonate a lot more though in the last three weeks. Especially like a quick one, I think I’ve had to take it at night once or twice.”
Two of the participants expressed that they were mindful of the Calcium Carbonate dose. Carol explained,

...Heartburn’s been a real constant most of the pregnancy. I just have bottles of Tums everywhere. I have one at work and in the kitchen and by my bed and I know like how much it’s safe to take a day during pregnancy. I don’t think there’s been a day that I haven’t had a single Tums in months, I would say.... It doesn’t always last very long. Like it may give me relief for 15-20 minutes and then I’ll take another one.

For Paige, she became aware of the Calcium Carbonate dose and its calcium content, “I take Calcium Carbonate right away, but I’m also taking calcium supplements, so I can only take so many Calcium Carbonate a day now that I’m on the calcium supplement.

Calcium Carbonate was the OTC solution for 12 participants. However, Nancy had tried using Calcium Carbonate but found she needed another strategy and compared several she tried.

I think, cause when I was taking Tums, cause that’s like the biggest thing they recommend you just take. I realized that that was not even touching the burning sensation or anything. So, I contacted my MD asking like what are some other better options that would help, and they gave me Mylanta and Pepcid.... I will say I probably use them at least three or four times a week.... Pepcid for sure will calm it down. Mylanta is kinda iffy if I have it really bad, I cannot take Mylanta. I have to go to Pepcid. But if I just have a start of it, I can take Mylanta and it usually gets better.

Beth shared her history of using OTC Famotidine:

The most debilitating or intense GI symptoms was heartburn. So, I had a lot of heartburn towards the end of my second trimester. I took Famotidine, Pepcid and that helps a lot. I took 20 milligrams of that a day. I started using it as I needed it, and then I started out or it ended up being like I needed it almost every day. So, I took it with my prenatal and then I still have heartburn and I’m 34 weeks on Monday. So right now, I’m 33 weeks and I still have heartburn almost every day. So, I’ve been taking that [Pepcid] regularly.

Participants in this study identified multiple self-management strategies for their experiences of heartburn. They made adjustments in their daily servings of specific foods and beverages, used pillows to change and support their body position during the day and night, and took OTC medications, such as Calcium Carbonate and or Famotidine. While some participants
commented on using a single strategy, others provided multiple strategies they used to manage their discomforts.

**Theme Two: Constipation**

The second most reported GI discomfort theme was constipation—including gas and bloating. Constipation is defined by difficult and infrequent bowel movements, abdominal pain, and hard stools. The theme of constipation includes two sub-themes: (a) *Descriptions* and (b) *Self-management Strategies*. Self-management strategies for GI discomforts of pregnancy-constipation includes five categories: (a) *Food-related*, (b) *Beverage-related*, (c) *Activity-related*, (d) *OTC remedies*, and (e) *Prescription medications*.

**Sub-Theme 1: Women’s Descriptions – Constipation**

Nearly three-fourths of the participants (72.7%), reported experiencing constipation, flatulence (gas), and/or bloating during the pregnancy with many stating the onset of this discomfort occurred in the first trimester. Similar to the rationale for the theme of heartburn including reflux, burping and hiccups, flatulence and bloating were grouped with constipation, although pregnant women may experience constipation with or without flatulence and bloating.

Beth described having “really bad constipation, mostly the first trimester.” That statement concurred with Laura’s “then also in the first three months developed constipation...” Megan stated, “I would say first trimester, very bloated... I was more constipated rather than the opposite.”

In comparison, two other participants reported mid-pregnancy onset. For Opal, “Constipation? I’d say probably about halfway, like the 20-week mark, it started getting much worse.” Similarly, for Ruth, “I’ve had issues with constipation. That probably started the beginning of the second trimester.”
Several participants were surprised by changes experienced during pregnancy with GI discomforts. For example, Haley expressed astonishment regarding the discomfort associated with bloating, "It was kind of shocking, I always heard about bloating, but it was really intense and really uncomfortable. Now that I’m remembering I would bloat so much that it would hurt to try to straighten my torso."

Some participants were concerned about changes with digestive gas. For one, speaking candidly, Erin shared that:

My farts have been probably throughout the whole pregnancy. Probably the same. They, I don’t know how to say this, they’re like warm and then really smelly. That has not changed based on diet, fiber, different foods, cooked vegetables. I tried everything; it doesn’t matter.

Echoing a similar concern, Laura reported:

I don’t know why I’m so gassy...so that’s not fun, because then if you know, you feel like you’re holding in gas a lot, especially if you’re out in public or something, then you get so bloated that it’s so uncomfortable, so I’m like, almost thinking about asking if I should be taking like a gas-x pill (Simethicone) or something. But then I always forget when I go in.

When sharing experiences with constipation, only Nancy explained the location of her discomfort, “It hurts, in my stomach region, you can just feel like you need to go, but you can’t go.”

The descriptions about the duration of constipation ranged from on and off to the entire pregnancy, with Sarah being very specific, “I know when I’m super constipated; I realized I haven’t gone in three or four days and I’m so tired and have a ton of back pain, oh okay, that’s why.”

Beth highlighted her result of having a hard stool when constipated:

Also, when I did have a bowel movement, they were usually like incredibly hard. So, I did have some bleeding, that wasn’t, and I don’t know that only lasted a couple of weeks, like two weeks...When it was really bad, I experienced bleeding when having bowel movements.

In symphony with descriptions of constipation, participants in this study described self-management strategies.
Sub-Theme 2: Self-Management Strategies – Constipation

Overall, pregnant participant’s personal interpretations of constipation, gas and/or bloating were rich with detail. The group of participants that shared descriptions of constipation was slightly larger than the group of participants that provided self-management strategies ($n = 14$ vs $n = 12$). More than half of the participants provided self-management strategies for constipation ($n = 12$ out of 22).

Self-Management Strategies-Category: Food-Related

Self-management strategies for the GI discomfort of constipation were the second sub-theme identified. In this study, many participants reported adjusting their daily food intake. Common examples included increasing daily servings of fruit and/or vegetables. Beth shared, “I tried to increase my vegetables and fruits, my fiber, but I honestly didn’t eat a lot during my first couple of months of pregnancy because of nausea.” Anne reported, “I’m trying to keep an eye on my fluid intake, and make sure, making sure I’m getting enough fiber.” Finally, Nancy stated:

For sure I’ve had constipation. That’s like the biggest thing. I guess I haven’t really done much for that. Because there’s not a lot of meds you can totally take for constipation while you’re pregnant. I just drink a lot of water and try to eat high fiber foods....I eat a lot of fruits...I eat dates.

Self-Management Strategies- Category: Beverage-Related

Erin shared her experience with adding prune juice to her daily intake and included an intersection by connecting a strategy that she found useful with another GI discomfort, heartburn:

Through various friends and other people that experience, like a Facebook group, I’ve been drinking a cup of warm prune juice every day and it doesn’t matter what time. I also notice getting indigestion at night. I’d say I’m getting heartburn in third trimester and that (prune juice) seems to help with that as well. So, after I drink that it takes about an hour, and I start feeling better and it doesn’t wake me up in the middle of the night.
The fact that a few participants found and described some interconnections to help manage multiple GI discomforts could be useful for streamlining some management strategies.

Tara discussed her creative dietary coping strategy:

I am lactose intolerant. So, I’ve kind of found a balance between if I feel like I’m getting more constipated, just incorporating a little more dairy into my diet and kind of balancing between the two of those extremes. So, to not be as constipated. That seems to have helped us to incorporate a little bit more dairy into my diet.

A time preference for changing fluid intake to self-manage the GI discomfort of constipation was reported by Fran:

I drink over a gallon of water a day and that just, I don’t want to say it doesn’t really impact me. But I can tell when I need more water....Then probably by the second trimester early in the second trimester I’ve started having just like a half a cup of coffee. That would also help me regulate my system more. You’re like against ...everything that you hear a rumor about, and you don’t necessarily do research. I didn’t do really any research about this, but I had heard that having coffee can increase your chance of miscarriage or it just wasn't good for you at all. So, I just wanted to make sure I could get through the first trimester with no issues. This is my first pregnancy.

**Self-Management Strategies-Category: Activity-Related**

Two participants suggested other lifestyle changes as strategies for relieving their constipation, specifically to change their activity levels. As Beth explained, “I did a lot of research on constipation remedies and...I just tried to exercise more, but because I was nauseous, I couldn’t exercise a lot.” Haley tried to manage bloating:

Movement just seemed to be the best antidote for bloating and kind of to help things get moving. But again, it was one of those things where it was like, no matter what you ate I just always would get really bloated.

Three participants described purposefully spending more time in the bathroom to address their constipation. Specifically, Erin shared:

When I do use the restroom, I have to block off a time. Like it doesn’t come easily as it did before, it’s probably like a 20- minute process. Okay, here we go, and I can’t like try and push it out. It’s too painful.
Similarly, Sarah reported:

I’ve approached going to the bathroom, I try not to force anything. Because I feel like if I would be really strained to bear down and push. In my thought that where I’d probably have issues with prolapsing bowels and stuff like that. So, I just sit for a minute, if nothing comes down, I’m like, all right, I guess I am not ready. You know? So, I haven’t had any hemorrhoids, I hope that stays the course.

**Self-Management Strategies - Category: OTC Remedies**

The use of OTC remedies was another self-management strategy. Almost half of the participants reported using an OTC for constipation, while no one reported using prescription medications. Docusate (Colace) \( n = 3 \) was the most frequently mentioned OTC medication taken, followed by MiraLAX (Polyethylene Glycol) \( n = 1 \), psyllium fiber (Metamucil) \( n = 1 \) gummy fiber supplements \( n = 1 \), and Herbal Tea \( n = 1 \). Fran shared, “I would start taking Colace or Fiber 1 because otherwise there was just no hope, and I was going to feel like a beached whale. Ruth revealed:

I do take a higher dose of it [Colace] that I’ve found to be more helpful. I take 250 milligrams versus the hundred and there was no real rhyme or reason why I did that the first time I was pregnant. I just saw that dosage at [a large store chain]. I was like, oh well, just try this and see if that helps. Sure enough, it has, so thankfully I’m regular….but I can definitely tell a difference if I forget my pill one day.

In comparison, Opal took an OTC medication less often, stating, “I probably have only taken MiraLAX twice this whole pregnancy. Mostly it’s because I don’t want to flip and then have the diarrhea.”

Grace shared an interesting intersection she found when doing an internet search after she failed the one-hour glucose tolerance test (GTT) and before she passed the three-hour GTT:

I just looked it up, that taking fiber might help women not get gestational diabetes. So, I didn’t think it would hurt to try [Metamucil] because I do tend to struggle a little more with constipation, so I just thought it might be helpful…. I mean, I did ask my CNM about it just to make sure she was okay with it.
**Self-Management Strategies-Category: Prescription Medications**

Haley discovered the indigestion medication she was taking was also causing constipation, and stated, “I tried to decrease that, so that [the indigestion medication] was like the last resort.” Vicki was the only woman who expressed she had received information about constipation management from a health care provider, “My doctor’s office had told me the prescription medication Zofran could cause constipation. So, by that time, I was already starting to wean myself from the Zofran to the Phenergan [also a prescription medication].”

In comparison, Laura’s strategy was rationalized this way:

“So, I’m like, I’ll just deal with it. I mean, I’m hoping all this ends in the next couple of weeks and that I can get back to normal.

Adjusting daily servings of food and drink were the most common self-management strategies reported by participant for the GI discomfort of constipation. Less often reported were an increase in activity, more time spent in the bathroom around bowel movements, and simply waiting for the constipation to resolve itself over time. Generally, the use of OTC medications was the least common strategy identified by the participants in this study.

**Theme Three: Nausea and/or Vomiting (NVP)**

The final theme identified in this study was NVP. Nausea, with or without vomiting, is commonly reported in pregnancy. Almost twice as many participants reported personal descriptions of nausea compared to vomiting (10 vs 6, respectively), with three participants describing both nausea and vomiting. I made the decision to combine the discomforts of nausea and vomiting into one theme because the literature and participants in this study associated these terms. NVP are how this discomfort is referred to through this chapter, with a total of 68.2% (n = 15) of the participants having reported it. This theme includes two sub-themes: (a) *Descriptions* and (b) *Self-management Strategies*.
Sub-Theme 1: Women’s Descriptions – NVP

Participant freely shared their descriptions and experiences of NVP. The first trimester was when the most \((n = 6)\) participants reported the onset of NVP. One participant reported NVP in the second trimester, with another who reported NVP in the third trimester. Three participants had similar experiences. As Beth shared:

Beginning in the start of my pregnancy I was incredibly nauseous, the whole first trimester I had really bad nausea, but I didn’t vomit at all, I had no episodes of throwing up. Like I had morning sickness, but I never was actually sick.

For Erin, “Towards the end of my first trimester, I started getting really nauseous in the morning.” Similarly, Sarah reported, “Since probably about eight weeks pregnant or so well, probably eight to maybe 13, 14 weeks, I had nausea but no vomiting. In contrast, Laura reported nearly continuous nausea, stating, “So, I have been nauseous all throughout my pregnancy, right from the beginning.”

Two other participants also described the duration of NVP as constant, mainly during the first trimester. As Beth explained, “It was like such a bizarre experience, but yeah, the nausea was like constant, and it was constant throughout.” Laura revealed, “For the first three months of my pregnancy, I’d say like the 12 weeks, I was nauseous…. It would start like almost around 11ish and then it would pretty much last all day long.” While Carol reported a varied pattern for NVP, focusing more on vomiting, by saying:

My nausea started probably right around five weeks and pretty immediately it included vomiting. I would say almost every day. It wasn’t really just at a certain time of the day. Sometimes it was all day. Sometimes it was just in the morning or just at night and it was pretty bad, weeks five through 15. I was throwing up often...there were days I would throw up like six, seven, eight times, but yeah, if I just throw up once, it was usually limited to that...if I threw up more than two times, then I was kinda doomed and it just turned into throwing up for the rest of the day.

Anne remembered and compared her vomiting in the current pregnancy with her previous experiences:
I did have some vomiting at the start of my pregnancy. Not every day, but probably multiple times a week ... in that first trimester. Way more than my previous pregnancies. I think I only vomited maybe once or twice with my previous pregnancies, but this one was much more frequent.

Haley explained her occurrences of vomiting becoming rarer by mid-pregnancy:

I did throw up in my first trimester, but I did have two incidents in my second trimester where I was eating breakfast and I was eating eggs. And I’ve no nausea at all and then it would all the sudden, just like that, just needed to get whatever I was eating right out. When describing NVP, in comparison to the other two themes, participants were more likely to mention the emotions they experienced. Participants shared different emotions they experienced. For example, according to Beth, Carol, and Tara respectively:

I guess the nausea kind of did impact real like relationships at the beginning just because I really didn’t like contact anyone. I didn’t really want to; I didn’t talk to anybody for months...made me a hermit.

It was just a lot of days of lying-in bed all day and feeling sad. I feel like it was definitely hard on my mental health...If I threw up more than two times, then I was kinda doomed and it just turned into throwing up the rest of the day.... There were definitely days that I would just write [in my journal] about how sick I was and how bad I felt. Before we had planned the pregnancy but before you get pregnant, like you never really totally know how it's going to be, and it can be different for each pregnancy. I was thinking to myself, if I knew it was this bad, I don’t know if I would have done this.

I should be able to just push through and not need meds (push through nausea). So, kind of being disappointed that I had to be on medication the whole time. But also, very thankful that they have medications that can help with that. Cause it caused like a lot of food aversions...I lost weight at the beginning of my pregnancy and quite a bit. So, then feeling guilty, like oh I hope he’s okay. I hope he’s getting enough then. Just trying to be more intentional with my eating and what I was willing to eat.

These behaviors represent the second sub-theme, self-management strategies for NVP as the GI discomfort which includes five categories: (a) Food-related, (b) Beverage-related, (c) Activity-related, (d) OTC remedies, and (e) Prescription medications.

Sub-Theme 2: Self-Management Strategies – NVP

While commonly accepted that the discomforts of NVP occur together in pregnancy, participants in the study who experienced nausea only, and no vomiting, usually expressed a sense of gratitude and relief. NVP are discomforts that may be experienced short-term in life
when not pregnant and one participant commented that her experience of NVP reminded her of having a hangover. Many different self-management strategies were shared by participants in my study, represented in the following five categories.

**Self-Management Strategies-Category: Food-Related**

The participants in this study reported adjusting their daily intake as the most common self-management strategy for NVP. Most of the participants discussed snacking and eating smaller meals as a strategy, specifically half of these participants ($n = 5$) described adding carbohydrates, such as crackers and toast into their diet. As Anne shared: “I just feel like probably every couple of hours, I feel like I need something in my stomach, and I tend to want carbs.” Erin shared a similar experience, avoiding an empty stomach, saying, “I try and eat right away in the morning because I noticed if I don’t eat then or have cream in my coffee, or some kind of calorie in the morning I do get sick quicker.”

Dana managed her NVP by being prepared every day, “I’m in my car a lot. So, I try to make sure I have something with me, like in the morning I’ll throw a granola bar or small bag of chips in my bag when I leave.” There were a couple participants who described using multiple food and drink strategies including an all-natural hard candy. As Carol reported,

Something that helped was if I ate a little something pretty much immediately after waking up just to get something in my stomach... like saltines or toast or just something really bland. I tried a lot, like everything that’s recommended, like ginger candy and I got these things called “Preggy Pops” off Amazon, they are like sour candies.... I feel like I tried everything that was recommended and didn’t really have a lot of luck. Along with the nausea and vomiting, there is just really bad, like smell and food aversions. I would say for that whole 10 weeks, like even just going into the kitchen or like opening the fridge would make me really nauseous. Even weird things like our Brita water pitcher filter. Like I had to have my husband dump it out and clean it and put it away cause I couldn’t look at it.... I drink a lot of water, but water did not sound good. Water made me nauseous and it’s weird to try and explain that to someone and sound believable. So, I would take smaller bottles of Gatorade and I would dump half of it out and fill it with water to just dilute it and get a little more water in my system.”
Tara also tried using candy:

At first, I was just trying crackers and like eating foods that I didn’t like that were more bland…. I tried like nausea tea and “Preggy Pop” drops. You can get them as a sucker or as a lozenge. Then I’ve used the ginger chews. I used those quite a bit at the beginning. Those did seem to help.

In contrast, Sara recounted the difficulty of eating:

There were some nights I was even just too exhausted then to eat, you know, like I knew I needed to eat. But I would just opt for like a quick snack and go to bed. Cause that just made more sense you know than anything else. I know I did lose weight in the first trimester from all that, I think I lost about 10 pounds…but I need those extra calories to just maintain my energy. It’s been all healthy options, grapes, carrots, it’s been things like that, Not really junk food, like I normally would.”

*Self-Management Strategies-Category: Beverage-Related*

The use of various beverages was the next category under self-management strategies.

Four participants found different beverages to be useful to manage NVP. Uma shared a unique strategy, “Before I got out of bed, I’d always have chocolate milk and that seemed to help in the morning.” Haley reported, “Carbonated water really helped me.” In comparison, Megan reported, “I drank a lot of ginger ale.” Finally, Tara stated, “My first trimester, I pretty much drank all of my meals as smoothies.”

Jess explained her personal preference to manage NVP with food and beverage adjustments but no medications of any type:

In the beginning, the only thing that really helped was buttered toast and Jasmine or Peppermint tea. That was the only thing I could get any kind of relief from. So, once that kind of got a little bit better I just stuck with the tea every day just to kinda keep the nausea at bay...like the things that I tried just didn’t really work that well. I decided not to try Zofran. My doctor did offer that, but that was just a personal decision. I was just a little bit concerned about some of the mixed research. So, I just decided not to try that, but the things that I did try didn’t really help that much, I could but a couple of extra hours or take the edge off a little bit, but I was never not sick.
**Self-Management Strategies-Category: Activity-Related**

The third category described by participant for self-management strategies of NVP referenced their activity. On the spectrum of activity levels, both extremes were identified.

Megan reported, “I slept a lot.” And Hayley shared:

I’m a pretty athletic person. I slowed down a little bit in the first trimester. I found that getting up, I would exercise in the morning. I would still go to the gym, but I’d be nauseous. I found that just slow walking on the treadmill actually really helped with my feelings of nausea and helped me actually get over that pretty easily.

**Self-Management Strategies-Category: OTC Remedies**

When examining the data, only one participant reported using OTCs for NVP relief. Carol shared her experience using two OTCs, Unisom, and Vitamin B6:

I had gotten, recently, like so many weeks without getting sick that I, so I stopped taking the B6 and Unisom at night. Just thinking I was doing better and if I don’t need to take more pills, like I don’t want to. I think it was like the second day that I had stopped doing that I threw up four times. This was a week or two ago. So, I started taking that again and I’ve been totally fine again. I don’t know if that was, it probably was because I stopped taking it, but it could have been obviously other things as well, but it was … very isolated. I haven’t thrown up in a long time.

Within the theme of NVP, more information was shared by participants about specific pharmacologic prescriptions they received for managing their discomforts.

**Self-Management Strategies-Category: Prescription Medications**

Tara described talking to her OB about prescription related issues:

So then when I went to my first OB appointment.... I believe it was eight weeks, she started me on Diclegis, so I’ve been taking that this whole time. You can take two pills at night at bedtime. Then you can take one in the morning and one at noon as you need to add those second two. I’ve pretty much only been doing the two tabs at night. When I’m extra nauseated, I’ll take an extra one in the morning. I didn’t want to do like Zofran long term because there were more side effects associated with that one. The Diclegis just had tiredness associated with it. I thought that would be okay because I’m taking it at night and that would help me sleep.

Uma reported trying multiple food choices, but eventually she spoke with her MD to seek relief for her vomiting:
I started by trying to just have small meals frequently. But by around four in the afternoon, it didn’t matter what I did or what I ate. I tried some like different drops, like pregnancy hard candies. So, I tried those, and Jolly Ranchers and they didn’t help. I did try ginger drops and ginger tea and that didn’t help.... Before I got out of bed, I’d always have chocolate milk and that seemed to help in the morning....So around the ninth week I talked to my doctor, and I got Unisom for sleeping at night. Then vitamin B6 I tried and that helped a little bit.... But around 10 weeks I was still throwing up most of the day so then I started on Phenergan and that was just as needed. I would take that at least it goes as needed every six hours, but for about a week I took that every six hour religiously. Otherwise, I’d be throwing up everything. With that, that really helped when I could eat and keep things down. Then I slowly was able to kind of stop using that. Not so often, mostly in the evenings and then around 16 weeks, that completely went away.

Similarly, Vicki described her experiences with NVP that included both food and medication strategies, reporting:

I typically wasn’t really eating breakfast, would get to work and throw up almost immediately. So, then I added that Dicyclomine (Bentyl), but continued to have nausea beginning week seven or eight. So, I contacted my doctor’s office, and I was first started on Zofran four milligrams, just oral tablets. That I was taking just as needed at first and continued to have pretty severe nausea....eat lunch and then get home for dinner. I wouldn’t be hungry. I would be nauseous again. I would typically take another Zofran and could maybe eat dinner, but with some nausea. In the beginning I would typically throw up and feel better and could eat a meal. It then got a little worse to the point where I was throwing up more consistently than not. So, I called in again and I was then given a prescription for Phenergan 25 milligrams rectal suppositories. That again I was just using as needed. That was then around 10 weeks of my pregnancy.

**Summary of Chapter IV**

The demographics revealed the homogeneity of the study participants: all white participant, in their third trimesters, aged from 25-41 years, most married or in stable partnerships, with some college education. The sample reflects the participants who expressed interest in describing their GI discomforts of pregnancy to another woman identified as a nurse during individual interviews. Although the sample lacked diversity, given restrictions prevalent during the COVID pandemic, the desired sample size was obtained through the use of virtual interviews.

I presented the three major themes in this chapter that best summarized the interview data on participant’s experiences of GI discomforts: (a) Heartburn, (b) Constipation, and (c) NVP. All themes had the same two sub-themes: (a) Descriptions of GI Discomforts and (b) Self-
management Strategies. All of the participants freely shared vivid memories, descriptions, feelings, emotions, influences, thoughts, experiences, and perceptions about their GI discomforts and coping strategies. This resulted in categories within the Self-management Strategies that could be clustered according to the following and reported as: (a) food-related, (b) beverage-related, (c) activity-related, (d) OTC remedies, and/or (e) prescription medications, with detailed examples provided of each from the participants’ wisdom.
Chapter V
DISCUSSION

Introduction

In Chapter IV, I presented the data analysis on participant’s experiences with GI discomforts of pregnancy and their self-management strategies. In Chapter V, I provided a summary of my study, discussion of the findings based on the identification of three themes; each with two sub-themes, and four to five categories; statement on implications for practice, recommendations for future research, and conclusions. In this chapter, I summarized the participants’ descriptions of heartburn, constipation, and NVP, and discussed their self-management strategies. The goal is to illustrate how this study’s findings extend the knowledge on GI discomforts of pregnancy.

There is a paucity of qualitative research about pregnant women’s experiences with GI discomforts. Although studies using quantitative instruments have been published, some have approached the GI discomforts of pregnancy from a more medical perspective, such as pharmaceutical treatments, particularly for NVP. I recruited 22 participants in their third trimester of pregnancy to explore and synthesize evidence of how they experienced and self-managed their GI discomforts throughout their pregnancies. In this chapter, the findings are discussed to highlight pertinent information. Suggestions for nursing education, practice and research are also discussed. This study used a feminist approach to truly hear and convey the women’s voices and insights on this subject.

Summary of the Study

The purpose of this qualitative exploratory-descriptive narrative study was to describe women’s experiences of GI discomforts during pregnancy. The study also sought to understand strategies participants used to cope with these antenatal GI discomforts. This research process
was guided by feminist values and philosophies in an effort to learn from women’s knowledge and experiences. Through a woman-centered lens, using iteration and interpretation, data emerged from participant’s narratives. Only pregnant women who had experienced GI discomforts and had developed coping strategies could provide this valuable insight. Constructivism was the theoretical framework used to assist me to better understand the actual life experiences of pregnant women and support the co-creation of the reality of GI discomforts during pregnancy.

Twenty-two women self-selected to participate in the study. They were referred from a CNM office, recruited via snowball sampling, or social media sites. A brief demographic survey was completed by each participant. The study included two qualitative research questions:

1. What are women’s experiences of GI discomforts during pregnancy?
2. What self-management strategies do women use to cope with their GI discomforts?

Data were obtained via in-depth, open-ended, individual interviews. In order to participate in this study, the pregnant women had to have access to a computer or smart phone using a QR code. This may have limited participation to those with this equipment and/or capability. Despite these limitations and that of the COVID-19 pandemic, the desired sample size was obtained through the use of virtual interviews in a period of five months. During the interviews, each participant was encouraged to share freely by asking her to “Please describe your GI discomforts during pregnancy and any strategies you may have used to cope with them. Your descriptions can include your feelings, thoughts, opinions, perceptions, experiences, memories, images, influences, and anything else you wish to share.”

Discussion of the Findings

In this section, I discussed how pregnant women answered each research question. More specifically, I summarized their descriptions of and self-management strategies for the
three main GI discomforts: heartburn, constipation, and NVP. In addition, I compared and contrasted the findings of my study to the existing literature. And finally, I discussed how the findings of my study could add to the knowledge about women’s experiences with, and self-management of, GI discomforts during pregnancy.

**Research Question One: What is women’s experience of GI discomforts during pregnancy?**

I derived three main themes of GI discomforts in pregnancy: heartburn, constipation, and NVP based on the numerous and repeated experiences of participants. Each participant’s experience with GI symptoms was unique and individualized, based on her interpretation of and involvement with life events, occurring alone or in clusters intermittently throughout pregnancy. Participants identified that it was less frustrating to deal with one versus multiple GI discomforts of pregnancy.

The participants shared that to better understand and normalize their experiences with pregnancy related GI discomforts, they talked with family and friends who had been pregnant, searched applications on their mobile devices, completed online searches, and/or read web logs. Some of the participants found comfort in reading posts from pregnant women they did not know, but who described a similar GI discomfort experience. Only three of the 22 participants (13.6%) specifically mentioned trying to confirm what they learned about their GI discomfort with their HCP.

Heartburn was the most frequently reported GI discomfort among study participants \( n = 17, \text{77.3} \%) and was experienced in all three trimesters of pregnancy. The reported incidence of antenatal heartburn varied within the published literature from 17-80% (Amasha & Heeba, 2013; Richter, 2003, 2005; Vazquez, 2010). The findings of this study suggest that the incidence of heartburn may be underreported, both in research and in clinical practice.
Although it has been suggested that heartburn symptoms are highly similar between pregnant and nonpregnant persons (Marrero et al., 1992; Richter, 2005), specific descriptions of the experience of antenatal heartburn are lacking. In this study, participants described the experience of heartburn as a burning sensation in the chest and throat that developed with no specific pattern. Some participants also reported that their heartburn was accompanied by the need to swallow repeatedly as if something was stuck in the back of throat; sudden awaking and gasping for air; and/or belching with or without hiccups. Heartburn was described as the most pervasive and disruptive GI discomfort interfering with both food choices and restorative sleep. These unique experiences may be useful to better inform antenatal education and anticipatory guidance.

Over half of the participants (n = 14, 63.6%) described constipation—including gas and bloating—as occurring at variable times throughout their pregnancy. Several participants who either had a pre-pregnancy history of constipation or those who were taking an iron supplement, reported an increase in their discomforts during pregnancy. A unique finding of this study is that some participants who experienced constipation also noted an increase in their experience of heartburn. Both of these GI discomforts are related to the effect of progesterone slowing GI motility. Only one participant mentioned being embarrassed expelling flatus in public. It has been reported that pregnant persons may be too embarrassed to discuss bowel habits even with their HCP during prenatal visits (Vazquez, 2010; Zielinski, et al., 2015). Therefore, HCPs could proactively solicit experiences of constipation and gas during antenatal visits, including any interrelationships between these GI discomforts.

The third most frequently reported GI discomfort in this study was NVP (n = 13, 59.1%). This is consistent with findings reported in the literature (Lee & Saha, 2011). Up to half of pregnant women who experience nausea also report vomiting (Heitmann et al., 2016). Similarly,
participant’s experiences of nausea and vomiting could not be viewed separately therefore they were combined into one theme. Many participants described that when they were nauseous, they also experienced significant smell and food aversions. Several participant descriptions of NVP included their experience of loneliness or sadness. This is consistent with other published literature where researchers reported pregnant women experiencing feelings of sadness and/or loneliness, higher rates of depression and lower quality of life (QOL) scores (associated with more missed workdays; increased feelings of stress, anxiety, and loneliness) related to the experience of NVP among participants (Heitmann et al., 2016; Locock et al., O’Brien et al., 2002). Normalization of the linkages between the experience of NVP and emotions may be reassuring to women who experience this discomfort.

**Research Question Two**: What self-management strategies do women use to cope with their GI discomforts?

Self-management strategies for the three GI discomfort themes identified in this study: heartburn, constipation, and NVP were further divided into five categories. These categories include (a) food-related, (b) beverage-related, (c) activity related, (d) over-the-counter remedies, and (e) prescription medications. The final category was only related to NVP. Next, the self-management strategies are discussed according to these categories and not subdivided by the individual GI discomfort.

**Self-Management Strategies-Category: Food-Related**

Participants shared examples of food related self-management strategies for all GI discomforts. For example, strategies women reported using to manage the discomforts of heartburn, constipation, as well as NVP included: eating small frequent meals starting with breakfast, using ginger flavored candies, avoiding spicy, acidic, or fatty foods, and eating carbohydrates, such as crackers or toast, before getting out of bed in the morning, as well as
increasing servings of fruits and vegetables throughout the day. In fact, some participants commented that coworkers bought and shared candies or lozenges that they had found decreased the discomfort of nausea.

Based on conversations with family and friends, participants described their efforts to increase daily consumption of fiber by eating more fruits and vegetables and using fiber supplements. Some also identified the challenge of increasing dietary fiber when suffering from the discomfort of nausea. Several participants with nausea used vegetable/fruit smoothies as an alternative to incorporate more fiber into their diet. This use of vegetable/fruit smoothies could be suggested as a strategy to provide antenatal nutrition and fiber when nausea is experienced. However, this strategy has not been studied scientifically.

**Self-Management Strategies-Category: Beverage-Related**

Milk was the only beverage that participants used as a self-management strategy for all three GI discomforts of pregnancy themes: heartburn, constipation, and NVP. Although research concerning the use of milk to manage GI discomforts is limited, authors of one study found that women from India and Pakistan used milk to relieve heartburn in the third trimester (Sharma et al., 2020). Although the experience of heartburn may increase with the ingestion of liquid, none of participants reported that milk increased their heartburn. While using dairy products may not be viable options for all lactose intolerant women, one lactose intolerant participant found improvement in her experience of constipation when she drank milk. Another participant indicated that before getting out of bed, she drank a glass of chocolate milk to decrease her NVP. These milk-related strategies were not identified in the existing literature. Research to examine the use of milk as a self-management strategy to decrease antenatal GI discomforts is warranted.
One participant drank prune juice to manage her constipation and her heartburn. Prunes and their juice contain both soluble and insoluble fiber which may also have a laxative effect (Attaluir et al., 2011; Menees et al., 2012). The use of prune juice to self-manage antenatal GI discomorts has not been studied scientifically.

Participants also reported using various herbal teas (jasmine, peppermint, senna smooth move) to successfully decrease the discomfort of NVP and constipation, but none reported using tea to manage heartburn. Ginger ale (carbonated soft drink flavored with ginger) was another beverage some participants used to self-manage NVP and heartburn. The use of these beverages as strategies to manage antenatal GI discomorts has not been scientifically studied.

An increase in daily plain water intake was used by participants to manage constipation. Carbonated water was used by participants to decrease the discomforts of heartburn and/or NVP. Based on the findings of a systematic review, the efficacy of increasing fluids to manage constipation is unknown (Vazquez, 2010). The use of plain or carbonated water to cope with heartburn and/or NVP has not been investigated.

**Self-Management Strategies-Category: Activity-Related**

Relief strategies used by participants related to activity included exercise, rest, and position change. While an increase in activity is often recommended for managing constipation (Shi et al., 2015), it is not commonly recommended for other GI discomorts. One participant who routinely exercised before pregnancy and experienced antenatal nausea and heartburn, discovered that walking on a treadmill decreased both discomorts. Several other participants found relief from constipation and heartburn with exercise. Exercise as an intervention for managing GI discomorts has not been studied.
Some participants indicated that they rested more often to decrease NVP. Working from home due to COVID facilitated periodic rest. Some participants had decreased energy for exercise and were less active. Therefore, GI discomfots may make it difficult for pregnant women to meet the American College of Obstetricians and Gynecologist recommendation that healthy pregnant women should exercise at least 30 minutes a day (ACOG, 2015).

Although the review of literature identified studies (Adlan, 2017; Rad, 2012; Sinha, 2011; Guskan, 2008; Mobarakabade, 2019; Steel, 2001; O’Brien, 1996) and a systemic review of 20 RCTs (Van den Heuvel et al., 2016), the evidence for the use of acupressure as a possible strategy for self-management of the GI discomfort of nausea is inconclusive. None of the study participants reported using acupressure or specific wrist bands on the point as a self-management strategy for nausea.

Many participants found relief from heartburn by use of upright postures after eating, refraining from eating up to five hours before going to bed, elevating the head of bed, and using pillows to support and prop the torso. These strategies are recommended in textbooks commonly used by certified nurse-midwives (Reedy et al., 2019). In a recent cross-sectional study with 400 Vietnamese participants, researchers confirmed that short meal to bedtime (less than two hours) was a risk factor for heartburn in pregnancy (Quach et al., 2021).

**Self-Management Strategies-Category: OTC Remedies**

The findings of two studies showed approximately half of all pregnant women use at least one OTC medication (Lupattelli et al., 2014; Mitchell et al., 2011). In this study, most participants used over-the-counter remedies for the discomforts of pregnancy (heartburn, constipation, and NVP) as last resorts, when their own self-management strategies were not successful. Most OTC medications are labeled to ask an HCP before use. Therefore, HCPs need to provide recommendations for which OTCs may be more safely used during pregnancy.
**Self-Management Strategies-Category: Prescription Medications**

Prescription medications were reported as a strategy only in relationship to participants' experiences of NVP. Similar to the findings related to OTC remedies, participants used prescription medications to decrease the discomforts of NVP when all other non-pharmacologic self-management strategies were unsuccessful. Perceptions of antenatal prescription medication use has been studied in a survey of 832 Swedish women (Wolgast et al., 2018). Women’s safety concerns were greatest in the first trimester and diminished slightly as pregnancy progressed. Prior to prescribing medication for GI discomforts, it is recommended that HCPs include the pregnant person in careful discussion of the risk benefits and alternatives (Lynch et al., 2018).

**Implications for Nursing Education**

Nurses play an important role in assessing pregnant women’s experiences of GI discomforts and offering various self-management strategies. The curriculum for nursing students includes learning the physiology that may impact the discomforts of pregnancy. Evidence-based management suggestions are critical additions to nursing education, however, systematic research into many of these is needed. Meanwhile, participants in this study shared the coping strategies they identified to manage their GI discomforts. These strategies were organized under five categories: (a) food-related, (b) beverage-related, (c) activity related, (d) over-the-counter remedies, and (e) prescription medications. Nursing education could be enhanced with a broader range of coping strategies identified by study participants. For example, under the category of food-related strategies for the discomfort of heartburn, participants shared that eating small frequent meals up until five hours before going to bed for the night and drinking a glass of milk were identified as food/beverage-related strategy. Changing upright positions during the day and using pillows to support their torso during the
night were activity related strategies. Participants reported using OTC and prescription medications as last resorts. Therefore, it is possible that nursing students can focus on the use of anticipatory guidance and suggest a variety of non-pharmacologic coping strategies to pregnant clients to help them meet their goals, while also explaining the ideas are based on clinical observations and suggestions from other pregnant women that had some utility for them, but they have not been scientifically tested.

Nursing curriculum teaching holistic and respectful care during pregnancy for individuals who identify as Lesbian, Gay, Bisexual, Transgender, Queer, Questioning, or Plus (LGBTQ+) need to expand. Although all the participants in my study identified as women or mothers in heterosexual relationships more than 11 million people (4.5% of US population) identify as LGBTQ+ (Newport, 2018); therefore, the number of nontraditional families experiencing pregnancy may be increasing.

**Implications for Nursing Practice**

It is important for pregnant women’s experience with GI discomforts to be clearly heard and rapidly assessed by any HCP in order to provide individualized anticipatory guidance and safe self-coping strategies. Only three participants described talking with their HCP to confirm coping strategies to manage GI discomforts that they had previously found online. The nine-item Antepartum Gastrointestinal Symptom Assessment (AP-GI-SA) (Hanson et al., 2020) is a valid and reliable tool that was developed for research purposes. A minimally revised 10-item AP-GI-SA is currently being used in a double-blind, randomized, placebo-controlled trial to determine the efficacy of probiotics to reduce antenatal Group B *Streptococcus* colonization (ClinicalTrials.gov identifier: NCT03696953). This tool could be used as an initial clinical assessment to open dialog on GI discomforts between pregnant women and their HCPs. Pregnant women could easily complete this tool to quickly provide the HCP with an
understanding of the experience and severity of their GI discomforts. The scores from this tool could be used by any HCP to tailor individual and specific self-management strategies for women experiencing GI discomforts of pregnancy. For example, HCPs may be able to identify reliable resources (e.g., evidence-based literature, books, or websites such as Babycenter) available for women with GI discomforts of pregnancy. More tailored information could promote more beneficial self-management strategies for GI discomforts of pregnancy.

The findings of this study made it clear that participants experienced significant symptoms and impacts related to GI discomforts of pregnancy. For example, heartburn was experienced by most participants in all three trimesters. Therefore, it is recommended that CNMs, other Advanced Practice Registered Nurses, and physicians could use an organized approach to data collection, such as the following (onset, location, duration, characteristics, associating factors, relieving factors, treatment, severity) that is based on the acronym OLDCARTS (Seidel, 2019) to complete a prenatal assessment of GI discomforts. The OLDCARTS framework may provide a systematic and comprehensive method for assessing GI discomforts of pregnancy without the use of leading questions. The use of OLDCARTS may help to identify heartburn during the first trimester, when otherwise this discomfort may not be discussed until later, as it has not been routinely identified in early pregnancy. The combined use of the AP-GI-SA tool (Hanson et al., 2009) and OLDCARTS (Ball et al., 2019) may help to enhance assessment and conversations between pregnant women and their HCPs about all GI discomforts experienced at any time during pregnancy.

**Implications for Nursing Research**

Nursing research based on theory is beneficial because it aids in advancing knowledge. The Theory of Unpleasant Symptoms (TOUS) by Lenz and colleagues (1997), is one that could be useful to guide future research on GI discomforts of pregnancy. The authors stated that
symptoms are multidimensional experiences, meaning that multiple factors can influence the perception of the symptoms. They also acknowledge that multiple symptoms may be experienced simultaneously. Pregnancy includes GI symptoms that women experience individually and/or in clusters. For example, feelings of concern, worry, or anxiety may impact pregnant women's experiences with GI discomorts. Only a few participants expressed related emotions; some voiced their concerns about not eating enough food to help their infants grow, while other participants were worried about the need for weight loss after delivery. These valid but infrequently expressed emotions deserve future study. Using TOUS could help nurse scientists better understand the variety of ways in which women experience, describe, and ultimately manage their individual reactions to multiple and overlapping GI symptoms of pregnancy.

During pregnancy, definition of body image may vary for women as they experience changes in body shape, body size and body functions (Hill et al., 2013). Participants in my study expressed body image concern related to an increased appetite during pregnancy, frequent need to burp and pass gas in public, and the sudden occurrence of diarrhea. These experiences were supported by themes identified in a systematic review of qualitative literature on body image during pregnancy; specifically, perceived expectations for limited weight gain during pregnancy, body image ideals across the perinatal period, and body dissatisfaction across the perinatal period (Watson et al., 2015). The Body Image in Pregnancy Scale (BIPS)(Watson et. al., 2017) was developed based on qualitative data exploring pregnant women’s body image experiences and validated to measure body image in pregnancy in order to guide research. Changes in body images during early pregnancy (Skouteris et al., 2005) and late pregnancy (Duncombe et al., 2008) have been linked to worsening of body dissatisfaction. Body image during pregnancy needs further exploration because both body satisfaction and body
dissatisfaction are reported (Hoskin, 2019; Loth et al., 2011; Skouteris et al., 2005). Future research designed for the combined use of the BIPS (Watson et al., 2017) and the AP-GI-SA (Hanson et al., 2009) and may help to better understand potential relationships between body image during pregnancy and GI symptoms of pregnancy and identify possible self-management strategies.

Further research is needed to investigate the GI discomforts of pregnancy, individually and in combination, to establish any patterns that could influence tailored management strategies. A few participants shared their experience with hunger, the perception of hypoglycemia and decreased concentration levels. Hunger and perception of low blood sugar have not been studied scientifically. As stated in Chapter IV, the discomforts of hypoglycemia were mentioned by a few study participants but not consistently; therefore, I identified these discomforts as outliers that were insufficient to form themes for this study. However, the outliers warrant more prospective investigation. Future research questions targeted to examine participants’ experiences of hunger and hypoglycemia/low blood sugar may be productive lines of inquiry using multiple methods. For example, more research on beverage-related self-management strategies, such as the use of milk and fiber rich foods as ingredients to include in a smoothie may provide nutritious options that could help to decrease the frequency of the hunger and help to maintain concentration levels. Future prospective research using a cross-sectional approach (Quach et al., 2021) at different time points could help elucidate more precise recommendations for non-pharmacologic self-management strategies.

In a systematic review, Lagadec et al. (2018) reviewed factors influencing the QOL of pregnant women. They found that the GI discomforts of heartburn and NVP, as well as related sleep problems, were the physical symptoms most associated with negative effects on QOL. Although QOL instruments have been used for the study of GI discomforts, the aims focused on
QOL and NVP only (Ebrahimi et al., 2002; Magee et al., 2002). Future studies could use the recently published AP-GI-SA tool (Hanson et al., 2020) for assessment of multiple GI symptoms in otherwise healthy women, by trimester for comparison over time, and/or be paired with a QOL instrument to gain a deeper understanding of women’s experiences with all GI discomforts of pregnancy and QOL.

**Study Strengths and Limitations**

Building on the implications for nursing education, practice, and research can provide more opportunities for improving women’s experiences of pregnancy. The findings of this study suggested that GI discomforts of pregnancy probably have been underreported; this is not surprising since the experiences of women have been undervalued and underrepresented in research (Bessett, 2010; Yakerson, 2019). This was a descriptive study with strengths and limitations.

**Strengths**

Using feminism as the guiding philosophy was a strength of this study because women were asked the questions and encouraged to share their stories. Descriptions of GI discomforts of pregnancy are in participants’ own voices. Pregnant women’s stories provide rich sources of data that increase understanding of their perspectives on their GI discomforts and how they coped with them.

Rigor was maintained throughout the study by establishing rapport prior to and during the interview, audio and videotaping interviews, constructing field notes, and reviewing each transcribed interview multiple times for accuracy. NVivo software was also used to assist with identifying codes in the data. The initial coding was reviewed and discussed with the dissertation chair and one committee member, who assisted in enhancing clarity in the organization of the data during multiple iterations leading to theme identification.
**Limitations**

This study had several limitations. All 22 participants were white high school graduates, most having some advanced education. All of the women were in relationships, 19 were married and 3 were in steady relationships. All participants had HCPs, but specific HCPs information was not collected on the demographic survey. More detailed information on HCPs was only provided when participants specifically stated CNM or obstetrician in their interview, therefore, future studies tracking specific HCP information may provide better insights into communication patterns. Also data on how the participants received information about the study would be helpful to obtain in order to learn the most efficient method to communicate with pregnant women about pregnancy research.

The sample lacked racial, ethnic, educational, and socio-economic diversity. All 22 participants in this study described themselves as female in heterosexual relationships. There were 15 eligible (white, n=14, Latino, n=1) participants unable to complete the interview because of scheduling conflicts. More than 11 million people (4.5% of US population) identify as LGBTQ+ (Newport, 2018) and 63% of LGBTQ+ millennials are considering expanding their families (Family Equality, 2019); the number of nontraditional families experiencing pregnancy may be increasing. Nurses need to be able to provide holistic care and self-management strategies for GI symptoms of discomfort to all pregnant persons (Garcia-Acosta et al., 2020; Griggs et al., 2021; Manley et al., 2018; McCann & Brown, 2018; Stewart & O’Reilly, 2017). In the future, recruitment using more gender-inclusive recruitment images and wording may promote the inclusion of more gender diversity in the sample. Recruitment from a larger variety of sources, e.g., community-based health centers and programs, such as a LGBTQ+ community, Resolve New England (RNE), CareNet Pregnancy Center, Healthy Start, and Women, Infants and Children’s (WIC) nutritional program, may lead to a more diverse sample.
Although a study inclusion criterion was for participants to be in the third trimester of pregnancy, this may have also presented a limitation. Participants were asked to recall GI discomforts experienced and coping strategies used in the first and second trimesters. Interviews were conducted online because of the COVID pandemic. The need for virtual interviews may have also reduced sample inclusivity and diversity since participation required access to a computer or smart phone as well as the internet. The COVID pandemic may have limited the number of prenatal visits that participants experienced. Therefore, participants' access to HCPs advice may have been more limited within this sample.

**Conclusions**

Experiences shared on the individual perspectives of GI discomforts of pregnancy and self-management strategies are rich sources of data. Heartburn, constipation, and NVP are the three main themes participants identified. Descriptions of these GI discomforts and self-management strategies to cope with them resulted in the sub-themes. The categories under the self-management strategies are: (a) Food-related, (b) Beverage-related, (c) Activity-related, (d) OTC remedies, and for two themes: constipation and NVP, (e) Prescription medications were added.

The findings of this study highlighted that there are more opportunities to individualize and/or tailored self-management strategies for GI discomforts of pregnancy. These opportunities may be increased with more communication between pregnant women and HCPs during each trimester. Numerous directions for future research have been presented with a focus on non-pharmacologic therapies that participants reported preferring. Feminist approaches to future research are recommended. There is more to be learned about women’s experiences of GI discomforts of pregnancy.
Bibliography


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Appendix A

PLEASE CONSIDER PARTICIPATING IN A RESEARCH STUDY ABOUT

The *not so glamorous...* GI Symptoms of Pregnancy

You may be eligible if you are:

- 26 wks pregnant or more
- healthy (you and your baby)
- an adult ≥ 18 years of age
- have access to a smart phone or computer
- willing to:
  - talk about your GI symptom experience
  - be audiotaped during the virtual interview

Study purpose:
To explore pregnant women’s descriptions about GI symptoms of pregnancy and how you deal with them.

Please scan the QR code to learn more about the study and determine your eligibility to participate in a virtual
interview. Upon completion of the interview, you will receive a $50 Target Gift card as a thank you.

Please participate!

Heidi Paquette PhD Candidate, MS, NNP-BC
heidi.paquette@marquette.edu | 262.366.8285
Study determined Exempt by MU IRB
Appendix B: Recruitment Letter to HCP

Heidi Paquette PhD Candidate, MS, NNP-BC
530 North 16th Street
Milwaukee WI, 53201-1181

Name of Health Care Provider
Address of Office
City, State Zip Code

July 9, 2020

Dear Health Care Provider,

I am a neonatal nurse practitioner, clinical nursing faculty and a doctoral student at Marquette University College of Nursing. My doctoral dissertation pertains to women’s experiences with gastrointestinal symptoms such as nausea, vomiting, constipation, and GERD during pregnancy. I am seeking participants who are willing to speak to me about their gastrointestinal symptoms during a single interview.

The online interview will be held at the participant’s convenience, using Microsoft TEAMS, at a time of their choosing. The participant will need access to a smart telephone or electronic device to participate.

I would greatly appreciate your assistance in identifying potential participants. Specifically, women who are at least 18 years old, self-identify as being healthy, experiencing or have experienced gastrointestinal symptoms such as nausea, vomiting, constipation and/or GERD and at least 26 weeks pregnant

Enclosed is a flyer regarding the study with a QR code, and my contact information. I would appreciate it if you would post this information on your professional website, in your office waiting room and exam rooms. Women interested in participating in the study will be directed to scan the QR code. After scanning the QR code, a link for the Qualtrics Pre-screening survey will automatically appear. The purpose of the Qualtrics survey is to determine women’s eligibility to participate in the study. Eligible women will have the opportunity to complete the demographics survey titled “mypregnancyGIsymptoms”. This survey will include a question asking women if they agree to receive emails and/or texts from the researcher, and then if they do, the women will be instructed to add their email address and/or telephone number into the survey. The researcher will email and/or text a potential participant to confirm a specific date and time for the individual virtual interview. An invitation link for the interview will be sent to the participant. At the start of the interview the researcher will share the purpose of the study, potential risks, and benefits of the study and that they can withdraw from the study at any time.

In addition, the participant’s confidentiality will be ensured, and their consent will be obtained prior to the interview. Please note that this research study has received IRB approval from Marquette University.

Thank you for your consideration.

Regards,

Heidi Paquette PhD Candidate, MS, NNP-BC
Appendix C: Recruitment Letter to Website

From: Heidi.paquette@marquette.edu
To:
Subject: Seeking to interview pregnant women about their experience with GI symptoms

Dear XXXX

I am a neonatal nurse practitioner, clinical nursing faculty and a doctoral student at Marquette University College of Nursing, Milwaukee WI. My doctoral dissertation pertains to women's experiences with gastrointestinal symptoms such as nausea, vomiting, constipation, and GERD during pregnancy. As a nurse researcher I am seeking participants who are willing to speak to me about their gastrointestinal symptoms during a single interview. I am asking for permission to link my study flyer to your website.

Enclosed is a flyer regarding the study with a QR code, and my contact information. I would appreciate it if you would post this information on your professional website. Women interested in participating in the study will be directed to scan the QR code. After scanning the QR code, a link for the Qualtrics Pre-screening survey will automatically appear. The purpose of the Qualtrics Pre-screening survey is to determine women’s eligibility to participate in the study. Eligible women will have the opportunity to complete the demographics survey titled “mypregnancyGIsymptoms.”

This survey will include a question asking women if they agree to receive emails and/or texts from the researcher, and then if they do, the women will be instructed to add their email address and/or telephone number into the survey. The researcher will email and/or text a potential participant to confirm a specific date and time for the individual virtual interview. An invitation link for the interview will be sent to the participant. At the start of the interview the researcher will share the purpose of the study, potential risks, and benefits of the study and that they can withdraw from the study at any time. The online interview will be held at the participant’s convenience, using Microsoft TEAMS, at a time of their choosing. The participant will need access to a smart telephone or electronic device to participate. I will offer a thank you Target electronic gift card of $50.00 to each participant after they complete the interview.

In addition, the participant’s confidentiality will be ensured, and their consent will be obtained prior to the interview. Please note that this research study has received IRB approval from Marquette University.

Thank you for your consideration.

Regards,

Heidi Paquette PhD Candidate, MS, NNP-BC
Appendix D: Consent for Exempt Study

MARQUETTE UNIVERSITY RESEARCH INFORMATION SHEET

Pregnant Women’s Experiences With Gastrointestinal Symptoms and Strategies They use to Cope With Their Symptoms

Heidi J Paquette PhD(c), MS, NNP-BC,
Nursing

You have been asked to participate in a research study. You must be age 18 or older to participate. If you decide to be a part of this study, I will ask you to share any stomach discomforts you have had. For example, have you been nauseated, vomiting, belching or constipated? I would like to hear about these and any other stomach issues you may have.

If you want to be a part of the study, scan the black QR code on the study flyer.

After scanning the QR code, a link for the Qualtrics Pre-screening Survey will appear. Click on the link, answer the seven questions, and another screen will open. Based on your answers to the screening questions you will either receive a thank you note or there will be a link to 16 item survey. If you get the mypregnancyGIsymptoms survey link, please click on it, and answer the questions.

The mypregnancyGIsymptoms survey will ask background questions (such as the year you were born and when the baby is due), as well as ask for an email address and/or telephone number and three convenient dates and times for the audio taped virtual interview. You will be audio recorded during the virtual interview to make sure I have your answers written down correctly. Before I review your comments, I will recheck to make sure any identifying information, like your name, and any other information that could link the responses to you is removed. No one will know the answers you gave.

If you agree to provide an email address and/or telephone number, I will contact you to determine a convenient date and time for the virtual interview. I will also email or text you a link for your personal Microsoft TEAMS invitation. On the date of the virtual interview, I will remind you that the interview will be audio taped, the purpose of the study, potential risks and benefits of the study, restate that you can withdraw from the study at any time and ask you to tell me that you want to be a part of the study.

The interview will last take as long as you would like it to, but generally is done in less than two hours. The interview will start with the following question: “Please describe your GI discomforts during pregnancy and any strategies you may have used to cope with them. Your descriptions can include your feelings, thoughts, opinions, perceptions, experiences, memories,
images, influences, and anything else you wish to share.” I may encourage you to talk more about these symptoms by asking you to “tell me more about that,” or to “explain that further.”

The risks associated with this study are minimal and there are no direct benefits to you. Collection of survey responses using the internet involves the same risks that a person would encounter in everyday use of the internet, such as hacking, or information unintentionally being seen by others. A number rather than your name will be linked to you. All audio recordings will be deleted after I have checked them for accuracy. Your name and other identifying information, including email address and/or telephone number will be collected and stored in a password protected electronic file. Only I will have access to the data in an office at my residence.

If the report is published, I will include direct quotes; however, I will not include any information that would make it possible to identify you. The records may be used for future research purposes, such as further analysis for publication. Your research records may be inspected by the Marquette University Institutional Review Board or its designees, and (as allowable by law) state and federal agencies. Your participation is completely voluntary, and you may withdraw drop out from the study at any time.

You will receive a $50.00 electronic Target gift card to thank you for your time after the interview is done. I will email or text you the gift card, based on your preference.

If you have any questions about this study, you can contact Heidi Paquette at 262-366-8285 or at heidi.paquette@marquette.edu, or her dissertation Chair Dr. Lisa Hanson 414-288-3841. If you have questions or concerns about your rights as a research participant, you can contact Marquette University’s Office of Research Compliance at (414) 288-7570.

Thank you for your participation.
Appendix E: Resources for Pregnant Women

Stress in pregnancy


General pregnancy Information

https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo

https://www.bcm.edu/research/labs-and-centers/research-centers/center-for-research-on-women-with-disabilities/a-to-z-directory/reproductive-health/pregnancy-and-delivery/lgbtq-pregnancy
Start of Block: Do you qualify for this survey

Q11
Welcome to the PRE-SCREENING SURVEY for the research study: Pregnant Women's Experiences with Gastrointestinal Symptoms and Strategies They use to Cope with Their Symptoms

I am a neonatal nurse practitioner, clinical nursing faculty and doctoral student at Marquette University College of Nursing. My doctoral dissertation pertains to women’s experiences with gastrointestinal symptoms such as nausea, vomiting, constipation, and GERD during pregnancy.

I am seeking participants who are willing to speak to me about their gastrointestinal symptoms during a single virtual interview.

The PRE-SCREENING SURVEY should take you less than 5 minutes to complete.

The purpose of the PRE-SCREENING SURVEY is to determine your eligibility to participate in the study. Your participation in this research is voluntary. You have the right to withdraw at any point during the study.

The final question on the PRE-SCREENING SURVEY asks if you would be willing to provide an email address and/or telephone number. The purpose of the email address or telephone number is for the researcher Heidi Paquette PhD(c), MS, NNP-BC, to personally contact eligible participants to set up a convenient date and time for the online interview via Microsoft TEAMS. You will need access to a smart telephone, computer or electronic device to participate.

After completion of the PRE-SCREENING SURVEY, eligibility for participation in the virtual interview will be determined. If eligibility is not confirmed, the survey will end and a screen with a thank you message will appear. None of your information will be shared, stored or saved. If eligibility is confirmed, you will automatically be redirected to the Welcome to the research study: Pregnant Women's Experiences with Gastrointestinal Symptoms and Strategies They use to Cope with Their Symptoms page.

Please complete the demographic questions and provide an email address and/or telephone number, convenient dates and times for the virtual interview. Heidi Paquette PhD(c), MS, NNP-
BC, the researcher will contact you to confirm the date and time of the personal online interview.

After the interview has been completed, a $50.00 Target gift card will be emailed or texted to you.

Thank you for your time!

The Principal Investigator of this study Heidi Paquette PhD(c), MS, NNP-BC can be contacted at heidi.paquette@marquette.edu or her dissertation chairperson Dr. Lisa Hanson, PhD, CNM can be contacted at 414-288-3841.

Q2 Are you at least 18 years old and consider yourself as being healthy?

- Yes (1)
- No (2)

Q5 Are you able to speak and read English?

- Yes (1)
- No (2)

Q3 As of today, are you more than 26 weeks (or 6 1/2 months) pregnant?

- Yes (1)
- No (2)
Q4 Are you currently experiencing, or have you experienced in this pregnancy any gastrointestinal (GI) symptoms such as nausea, vomiting, heartburn or constipation?

- Yes (1)
- No (2)

Q6 Are you willing to be interviewed and audio taped virtually? (Note: The researcher will be interviewing you once from a distance using a smart phone or computer.)

- Yes (1)
- No (2)

Q7 Do you have access to an electronic device such as a smart phone or computer that is able to access the internet to conduct a virtual interview?

- Yes (1)
- No (2)
Q8 Are you willing to provide an email address and/or telephone number to receive the link from the researcher for the one-time virtual interview?

○ Yes (1)

○ No (2)

End of Block: Do you qualify for this survey
Appendix G: mypregnancyGIsymptoms Survey

mypregnancyGIsymptoms

Start of Block: Informed Consent

Q1
Welcome to the research study: Pregnant Women's Experiences with Gastrointestinal Symptoms and Strategies They use to Cope with Their Symptoms

I am a neonatal nurse practitioner, clinical nursing faculty and doctoral student at Marquette University College of Nursing. My doctoral dissertation pertains to women’s experiences with gastrointestinal symptoms such as nausea, vomiting, constipation, and GERD during pregnancy.

I am seeking participants who are willing to speak to me about their gastrointestinal symptoms during a single interview.

The mypregnancyGIsymptoms survey should take you around 10 minutes to complete.

The purpose of the mypregnancyGIsymptoms survey is to collect basic demographic information as well as an email address or telephone number in order for Heidi Paquette PhD(c), MS, NNP-BC the researcher to contact you. Your participation in this research is voluntary. You have the right to withdraw at any point during the study.

The final question on the mypregnancyGIsymptoms survey will ask you to provide an email address or telephone number. The purpose of the email or telephone number is for the researcher to personally contact you to set up a convenient date and time for the online interview via Microsoft TEAMS. You will need access to a smart telephone or electronic device to participate.

After the interview has been completed, a $50.00 Target gift card will be emailed or texted to you.

The Principal Investigator of this study Heidi Paquette PhD(c), MS, NNP-BC can be contacted at heidi.paquette@marquette.edu or her dissertation chairperson Dr. Lisa Hanson, PhD, CNM can be contacted at lisa.hanson@marquette.edu.
I consent, begin the study (1)

I do not consent, I do not wish to participate (2)

Q21 MARQUETTE UNIVERSITY RESEARCH INFORMATION SHEET  Pregnant Women’s Experiences With Gastrointestinal Symptoms and Strategies They use to Cope With Their Symptoms Heidi J Paquette PhD(c), MS, NNP-BC, Nursing  You have been asked to participate in a research study. You must be age 18 or older to participate. If you decide to be a part of this study, I will ask you to share any stomach discomforts you have had. For example, have you been nauseated, vomiting, belching or constipated? I would like to hear about these and any other stomach issues you may have. If you want to be a part of the study, scan the black QR code on the study flyer. After scanning the QR code, a link for the Qualtrics Pre-screening Survey will appear. Click on the link, answer the seven questions, and another screen will open. Based on your answers to the screening questions you will either receive a thank you note or there will be a link to 16 item survey. If you get the mypregnancyGIsymptoms survey link, please click on it, and answer the questions. The mypregnancyGIsymptoms survey will ask background questions (such as the year you were born and when the baby is due), as well as ask for an email address and/or telephone number and three convenient dates and times for the audio taped virtual interview. You will be audio recorded during the virtual interview to make sure I have your answers written down correctly. Before I review your comments, I will recheck to make sure any identifying information, like your name, and any other information that could link the responses to you is removed. No one will know the answers you gave. If you agree to provide an email address and/or telephone number, I will contact you to determine a convenient date and time for the virtual interview. I will also email or text you a link for your personal Microsoft TEAMS invitation. On the date of the virtual interview, I will remind you that the interview will be audio taped, the purpose of the study, potential risks and benefits of the study, restate that you can withdraw from the study at any time and ask you to tell me that you want to be a part of the study. The interview will last take as long as you would like it to, but generally is done in less than two hours. The interview will start with the following question: “Please describe your GI discomforts during pregnancy and any strategies you may have used to cope with them. Your descriptions can include your feelings, thoughts, opinions, perceptions, experiences, memories, images, influences, and anything else you wish to share.” I may encourage you to talk more about these symptoms by asking you to “tell me more about that,” or to “explain that further.” The risks associated with this study are minimal and there are no direct benefits to you. Collection of survey responses using the internet involves the same risks that a person would encounter in everyday use of the internet, such as hacking, or information unintentionally being seen by others. A number rather than your name will be linked to you. All audio recordings will be deleted after I have checked them for accuracy. Your name and other
identifying information, including email address and/or telephone number will be collected and stored in a password protected electronic file. Only I will have access to the data in an office at my residence. If the report is published, I will include direct quotes; however, I will not include any information that would make it possible to identify you. The records may be used for future research purposes, such as further analysis for publication. Your research records may be inspected by the Marquette University Institutional Review Board or its designees, and (as allowable by law) state and federal agencies. Your participation is completely voluntary, and you may withdraw from the study at any time. You will receive a $50.00 electronic Target gift card to thank you for your time after the interview is done. I will email or text you the gift card, based on your preference. If you have any questions about this study, you can contact Heidi Paquette at 262-366-8285 or at heidi.paquette@marquette.edu., or Dr. Lisa Hanson at lisa.hanson@marquette.edu. If you have questions or concerns about your rights as a research participant, you can contact Marquette University's Office of Research Compliance at (414) 288-7570. Thank you for your participation.

Q23 What is today's date?

Q5 What is the month of your birthday?

▼ January (1) ... December (12)

Q22 What year were you born?
Q24 Are you currently or have you previously in this pregnancy experience any gastrointestinal symptoms? For example, but not limited to: nausea, loss of appetite, vomiting, belching, heartburn, diarrhea or constipation.

☐ Yes (1)

☐ No (2)

Q24 When is your due date?
Q7 What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree (1)
- High school graduate (high school diploma or equivalent including GED) (2)
- Some college but no degree (3)
- Associate degree in college (2-year) (4)
- Bachelor's degree in college (4-year) (5)
- Master's degree (6)
- Doctoral degree (7)
- Professional degree (JD, MD) (8)
- Prefer not to answer (9)
Q19 Are you Spanish, Hispanic, or Latino?

- Spanish (1)
- Hispanic (2)
- Latino (3)
- none of the above (4)

Q11 Choose one or more races that you consider yourself to be:

- White (1)
- Black or African American (2)
- American Indian or Alaska Native (3)
- Asian (4)
- Native Hawaiian or Pacific Islander (5)
- Other (6) ________________________________________________
Q15 What is your ZIP code? 

Q17 Are you now married, widowed, divorced, separated or never married?

- Married (1)
- Widowed (2)
- Divorced (3)
- Separated (4)
- Never Married (5)
- Prefer not to answer (6)
Q21 Please indicate your occupation:

- Management, professional, and related (1)
- Service (2)
- Sales and office (3)
- Farming, fishing, and forestry (4)
- Construction, extraction, and maintenance (5)
- Production, transportation, and material moving (6)
- Government (7)
- Retired (8)
- Unemployed (9)
- Prefer not to answer (10)
Q19 Which statement best describes your current employment status?

- Working (paid employee) (1)
- Working (self-employed) (2)
- Not working (temporary layoff from a job) (3)
- Not working (looking for work) (4)
- Not working (retired) (5)
- Not working (disabled) (6)
- Not working (other) (7) ________________________________
- Prefer not to answer (8)

Q13 Information about income is very important to understand. Please give your best guess. Indicate the answer that includes your entire household income in (previous year) before taxes.

- Less than $10,000 (1)
- $10,000 to $19,999 (2)
- $20,000 to $29,999 (3)
- $30,000 to $39,999 (4)
Q18 If you are interested in participating in a **private one time online interview** with Heidi Paquette, PhD(c), MS, NNP-BC, a doctoral student at Marquette University College of Nursing an email address or telephone number will need to be provided.

The purpose of the email address or telephone number is for the researcher to personally contact you to set up a convenient date and time for the online interview via Microsoft Teams.

After the interview has been completed, a $50.00 Target gift card will be emailed or texted to you.
Please provide an email address and/or telephone number.

- Email address (3) ________________________________

- Telephone number (4) ________________________________

Q20 Please list your top 3 dates and general time of day that would be convenient for you to participate in the online interview. For example, Sept 1, 2020 between noon and 5:00.

- First choice (1) ________________________________

- Second choice (2) ________________________________

- Third choice (3) ________________________________

Q19 Please indicate.

End of Block: Informed Consent