Experiences with Nausea and Vomiting During Pregnancy in Turkish Women Based on Roy Adaptation Model: A Content Analysis

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S U M M A R Y
Purpose: This qualitative study aimed to explore how Turkish women experience nausea and vomiting in pregnancy based on the Roy Adaptation Model.
Methods: To collect data, in-depth interviews were undertaken with 35 pregnant women who had nausea and vomiting. The sample of the study included pregnant women who were in their first 12 weeks of gestation, did not have medical problems and had nausea, retching and/or vomiting for at least the last 3 days. Data were collected in semi-structured interview form based on the Roy Adaptation Model and with a background data sheet. Data were analyzed using direct content analysis.
Results: Data were classified into four adaptive modes according to the Roy Adaptation Model. The behaviors in the physiological mode were nausea, vomiting, fatigue, changes in sleep patterns, inadequate nutrition, inguinal pain, burning sensation and irritation in the throat, ketosis, and urinary incontinence. The behaviors in the self-concept mode were feeling weak, crying, inadequate self-care, changes in sexual intercourse, and social isolation. The behaviors in the role function mode were being unable to fulfill the responsibilities at home and work. The behaviors in the interdependence mode were dissatisfaction with relationships.
Conclusion: The study findings help nursing staff detect the stimuli and the behaviors of pregnant women with nausea and vomiting. Further research may evaluate the impact of a counseling program prepared under the guidance of a nursing model on nausea and vomiting in pregnancy.

Introduction
Nausea and vomiting are the most common conditions of the first trimester, affecting between 40.1% and 78.5% of pregnant women (Lacasse, Rey, Ferreira, Morin, & Berard, 2009). They begin 4–6 weeks after delayed menstruation and continue approximately up to the 14th week of gestation (Lacroix, Eason, & Melzack, 2000). Although severity and emergence time vary according to individuals, it may differ in other pregnancies of the same individual (Gadsby, Barnie-Adshead, & Jagger, 1993). The etiology of nausea and vomiting in pregnancy (NVP) is not clear yet, and treatment approaches mostly do not focus on alleviating or eliminating the symptoms (Gadsby et al.; Goodwin, 2002; Jednak et al., 1999; Matthews, Dowswell, Haas, Doyle, & O’Mathúna, 2010). Usually, treatment approaches are used to alleviate or eliminate nausea and vomiting. However, sufficient evidence is unavailable to indicate that these approaches are effective (Matthews et al.). The causes of NVP are not clear yet (Gadsby et al., 1993; Goodwin, 2002). Different stimuli may affect the severity and duration of NVP. While observing pregnant women with NV at the antenatal care clinic, we noticed that the symptoms in every woman arose for different reasons, and that different stimuli led to the exacerbation of symptoms in different women. For example, the stress of someone who has an unplanned or unwanted pregnancy may increase her NVP. Similarly, a woman who has a history of infertility or repeated abortions may experience stress as she is focused on the health of the baby and feels an intense fear of losing her baby. This stress may also increase her NVP. In addition, it was observed that maladaptiveness to pregnancy could lead to NVP in some women while NVP could also lead to maladaptiveness in pregnancy in others. Therefore, this article focused on the behaviors of women with NVP and on determining the internal and external stimuli leading to adaptive and maladaptive behaviours according to the Roy Adaptation Model (RAM; Roy, 2009).
Various biopsychosocial factors have been suggested to cause NVP (Goodwin, 2002). Previous studies focused on either the stimuli leading to NVP, or the problems caused by NVP (Jednak et al., 1999; Locock, Alexander, & Rozmovits, 2008; O’Brien, Evans, & White-McDonald, 2002; Swallow, Lindow, Masson, & Hay, 2005). It is quite difficult to explain this complex process in which the cause and the result are interrelated. Therefore, a model was used in this study in order to explain the experiences of women with NVP systematically and to obtain a meaningful whole from the pieces by establishing a relationship between the concepts. RAM was preferred as it addressed the individuals biopsychosocially and focused on the relationship between environmental stimuli and responses of the individuals to these stimuli (Perrett, 2007).

Factors that cause nausea and vomiting

It is thought that biopsychosocial stimuli are effective in NVP. Biological factors including allergic, endocrinal, gastrointestinal, vestibular, and olfactory factors have been proposed. It is assumed that some women are sensitive to hormones secreted by the corpus luteum, semen from the father or the new antigenic system which arose during pregnancy, and respond with nausea and vomiting (Goodwin, 2002).

Increased secretion of estrogen, progesterone and β-human chorionic gonadotropin in more than the normal amount during pregnancy were also thought to cause NVP (Goodwin, 2002). Also, Jednak et al. (1999) proposed that the effects of changes in hormone levels on thyroid functions and reduced gastric emptying might cause NVP. In addition, others also proposed that the increase in olfactory sensitivity in pregnant women with nausea and vomiting might be due to increased levels of estrogen (Swallow et al., 2005). Lastly, some researchers (Chou, Avant, Kuo, & Fetzer, 2008; Chou, Kuo, & Wang, 2008) determined that psychosocial factors affecting NVP are the high levels of perceived stress, lack of social support, poor maternal psychosocial adaptation and unplanned pregnancy.

Effects of NVP on pregnant women

NVP might have adverse physiological and psychological effects on pregnant women. Because of NV, women tend to have inadequate food consumption, preferring foods lacking protein but rich in carbohydrates. It has been found that such a diet increases NVP, but does not have a significant effect on maternal and fetal weights (Jednak et al., 1999; Latva-Pukkila, Isolauri, & Laitinen, 2010).

Women with NVP were noted to show more fatigue during the first trimester than those who do not have it, and that there is a positive correlation between the severity of NVP and fatigue (Chou, Kuo, et al., 2008). In addition, it has also been found that NVP reduces the quality of antenatal life in a pregnant woman, and adversely affects her relationships in the family and at work, her role at home, at work and in social life (Lacasse, Ray, Ferreira, Morin, & Berard, 2008; Locock et al., 2008). Women who experience NVP are socially isolated and more prone to anxiety. NVP also causes women to develop a sense of guilt, which may adversely affect the baby’s health (McCormack, Scott-Heyes, & McCusker, 2011; O’Brien et al., 2002).

Conceptual framework

In this article, RAM was used to holistically assess the individual’s behaviors and the stimuli leading to these behaviors. Roy (2009) described the human being as the holistic adaptive system interacting with the environment. According to Roy, a human being is greater than the sum of his parts and shows diversity. Therefore, to understand human beings, determining their individuality is of great importance in nursing care. Stimuli play an important role in human behaviors (Roy).

Stimuli might arise from the individual’s internal or external environment. Roy puts environmental stimuli into three classes: focal, contextual and residual. Focal stimulus is the one which is confronted immediately by the individual and which affects the individual most. All the other stimuli that contribute to the effects of focal stimuli are contextual stimuli. Residual stimuli are the ones which are present in the environment but whose impact on behavior has yet to be explained.

Roy (2009) states that the effectiveness of the stimuli on the individual and the effectiveness of the mechanisms used by the individuals to cope with these stimuli could be seen in the behaviors of the individual. Roy gathered all emotions, thoughts and behaviors of the individual in a “behavior” concept. Therefore all responses will be defined as “behavior” in this study. In RAM model, behaviors in each mode are assessed as adaptive or nonadaptive. Adaptive behaviors aim to protect the human’s system so that it can survive, grow, reproduce and dominate (Roy).

Roy (2009) defines four adaptive modes in which she evaluates individuals’ behaviors, physiological mode, self-concept mode, role function mode and interdependence mode. Behaviors in the physiological mode are the results of the activities of cells, tissues, organs and systems in the human body. Behaviors in the self-concept mode are the results of individuals’ beliefs, feelings and perceptions. The self-concept mode has two subgroups in the model: physical self and personal self. Physical self contains physical traits, appearance, perception of sexuality, status of health and disease. Physical self has two components, body sensation and body image. Personal self has three components, self-consistency, self-ideal, and moral-ethical-spiritual self (Roy).

The role function mode, the third one of the adaptive modes, includes an individual’s roles in a society and his/her capability to carry out these roles. The last one, the interdependence mode, focuses on interactions related to the giving and receiving of love, respect and values. In the interdependence mode, an individual’s interactions with other individuals whom he/she considers the most important in his/her life and with support systems are assessed. Roy (2009) indicates that these four adaptive modes interact with each other and any change in one mode can affect the others.

Purpose

This qualitative study aimed to explore how Turkish women experience NVP based on RAM. We aimed to answer the question of how well RAM described women’s experiences of NVP in Turkish women.

Methods

Study design

This study is the first step of an experimental study conducted to determine the effect of consultation on women with NVP. Exploring the experiences of women with NVP was our aim in the first part of the research. In the second part of the research (experimental part) a RAM-based consultation will be prepared under the light of the data; the influence of consultation on NVP will be investigated. In this part of the study, a qualitative exploratory design, as described by Speziale and Carpenter (2007), incorporating in-depth interviews, was used to show the experiences with NVP in Turkish women.
**Setting and sample**

This study was conducted with 35 pregnant women with NVP who presented at the antenatal care outpatient clinic at a university hospital in Turkey. It is proposed that sampling should continue until the data again has been reached in qualitative research (Holloway & Wheeler, 2002). The sample taking was continued until the data saturation. The sample of the study included pregnant women who were: (a) in their 1st week after the interviews, the aims of the research was explained and they were invited to participate. Data were collected using in-depth face-to-face interviews. Interviews were conducted individually in private rooms by the corresponding author. They lasted for approximately 45–90 minutes, and were tape-recorded.

**Data analysis**

Data from in-depth interviews were transcribed verbatim and analyzed by content analysis using RAM as a guide for initial data interpretation. Directed content analysis method was used in this study. Directed content analysis is a deductive approach developed by Elo and Kyngas (2007). Data were presented based on a theory or concept in directed content analysis. In this approach, key concepts or variables as initial coding categories were determined according to the preferred category. Open-ended questions that would be used for data collection may be prepared according to the prespecified categories. Prespecified categories may also be used for data analysis (Hsieh & Shannon, 2005).

In this study, RAM was used as the theory. Modes that lead to the behaviors, and stimuli that cause these behaviors are defined in RAM. In this study, modes of RAM were prespecified as the main categories. RAM-based prespecified main categories were used when preparing open-ended questions. After data collection, by reading the text of each interview as a whole, an interpretive summary was developed. The analyses examined every statement of the interview text that was relevant to the question asked by researcher in this study. The analyses also only focused on the data that supported the conceptual constructs of RAM. Data were analyzed and grouped using RAM-based prespecified categories.

Additionally, all interviews were conducted in Turkish. Data were translated and back-translated by the bilingual researchers to ensure accuracy. The final English version was checked for accuracy by a native English speaker.

**Results**

Adaptation modes of RAM were used as the main category in this study. In the following paragraphs, participant quotes, which include the behaviors of women with NVP and the stimuli leading to these behaviors, are provided. The behaviors of participants are categorized in accordance with the four adaptive modes of RAM.

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**Table 1 Sociodemographic Features and Pregnancy Features of Participants (N = 35)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
<th>M ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td></td>
<td>28.03 ± 4.10</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>6 (17.2)</td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>13 (37.1)</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>16 (45.7)</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primiparous</td>
<td>19 (54.2)</td>
<td></td>
</tr>
<tr>
<td>Multiparous</td>
<td>16 (45.8)</td>
<td></td>
</tr>
<tr>
<td>Gestational age (weeks)</td>
<td></td>
<td>8.70 ± 1.24</td>
</tr>
</tbody>
</table>

**Table 2 Semi-Structured Interview Questions**

<table>
<thead>
<tr>
<th>Question</th>
</tr>
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<tbody>
<tr>
<td>Physiological mode</td>
</tr>
<tr>
<td>1. Could you talk about the changes occurring in your body since you became pregnant? What do you think could be the reasons for them?</td>
</tr>
<tr>
<td>2. Which factors increase or decrease your NV?</td>
</tr>
<tr>
<td>Self-concept mode</td>
</tr>
<tr>
<td>3. How do you feel yourself physically since NV started?</td>
</tr>
<tr>
<td>4. How do you feel yourself emotionally since NV started?</td>
</tr>
<tr>
<td>Role function mode</td>
</tr>
<tr>
<td>5. How have your responsibilities at home and workplace been affected since NV started?</td>
</tr>
<tr>
<td>6. How have you been affected by this situation?</td>
</tr>
<tr>
<td>Interdependence mode</td>
</tr>
<tr>
<td>7. How have your relationships with the people around been affected by NV?</td>
</tr>
</tbody>
</table>

**Note.** NV = nausea and vomiting.
**Physiological mode**

All participants had nausea, vomiting and retching. The stimuli triggering these responses were pregnancy, smell, image, diet and life style, inappropriate environmental conditions such as noise, hot air, an airless and dirty environment and some psychological stimuli. We found that other responses were triggered by nausea and vomiting in the physiological mode. For example, we found that participants with NVP had weakness and fatigue, changes in sleep patterns, inadequate and unbalanced nutrition, weight loss, inguinal pain, burning sensation and irritation in the throat, ketones in urine, and urinary incontinence (Participants 10, 12, & 22) (Figure 1).

Behavior: nausea and vomiting; focal stimulus: pregnancy; contextual stimulus: movement.

I have nausea and vomiting all day, I vomit 7–8 times a day. I vomit everything I eat. I constantly vomit bile. If I lie down, I can stay 1–2 hours without vomiting. If not, I immediately vomit. Even turning from one side to the other in bed nauseates me, and I vomit. (Participant 15)

Behavior: nausea, retching, vomiting; focal stimulus: pregnancy; contextual stimulus: smell and images.

For the last 2–3 days, I have become more sensitive especially to smells: the smell of onions, oil, cooked food. They cause retching and nausea. (Participant 12)

The smell of perfume and the smell of sweat from other people bother me a lot when I am on a public bus. Sometimes I get off the bus, but still I vomit. (Participant 35)

I feel nauseous when I see something. For example, when I see an eyelash or hair in the sink, I vomit. In addition, when I see the food I dislike, I vomit too. (Participant 33)

Behavior: nausea, vomiting; focal stimulus: pregnancy; contextual stimuli: fatigue and stress.

If I get tired more on weekdays, I have nausea and vomiting more. Especially when fatigue is accompanied with stress, I become even worse. For example, if something puts me under stress, my nausea increases within 1–2 hours, and then I vomit. (Participant 31)

Behavior: poor nutrition; focal stimuli: nausea; contextual stimulus: hunger.

I have only one meal. I cannot say I never eat, but I can only eat something at breakfast, because I don’t feel like eating the food served at lunch. I do not want anything to eat at all when I have nausea. (Participant 12)

Behavior: weakness, fatigue; focal stimuli: nausea, vomiting; contextual stimuli: one or more of the contextual stimuli of NV.

I am terribly tired because of nausea and vomiting. Sometimes I do not feel like getting out of bed at all. I am completely exhausted. My legs do not carry me. (Participant 12)

Behavior: changes in sleep pattern; focal stimulus: nausea and vomiting; contextual stimulus: movement.

Yesterday it was the worst. It continued from morning until night with no interruption. I vomited four times. It occurs even while I am sleeping. For example, even when I wake up at night and turn to my other side, it occurs. My sleep pattern has turned upside down. I wake up a lot of times because of nausea. (Participant 22)

**Self-concept mode**

Behaviors in the self-concept mode are the results of individuals’ beliefs, feelings and perceptions (Roy, 2008). NV was the stimulus of each nonadaptive response in the self-concept mode in this study. Because of NV, participants felt weak and tired, did not fulfill self-care activities, and had decreased sexual desires. In addition, women were worried that NV would damage their own health and

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**STIMULI**

- Pregnancy
- Nausea, vomiting, retching
- Smell
- Image
- Movement
- Life & diet style
- Environmental condition
- Psychological stimuli
- Insomnia
- Forcing herself by stimulating the constrictor muscle located in the back of the throat with a finger
- Coping style
- Stress
- Weakness-fatigue
- Loss of control
- Fear of losing her own health & baby’s health
- Unplanned & unwanted pregnancy
- Inadequate social support
- Religious beliefs
- Reduction in quality of life
- Unable to adapt to pregnancy
- Unable to fulfill any roles
- Disruption of relationships with important individuals in her life

**BEHAVIORS**

**PHYSIOLOGICAL MODE**

- Nausea, vomiting, retching
- Weakness & fatigue
- Changes in sleep patterns
- Inadequate & unbalanced nutrition
- Weight loss
- Inguinal pain
- Burning sensation & irritation in the throat
- Ketones in urine
- Urinary incontinence

**SELF-CONCEPT MODE**

- Feeling ill, weak & tired
- Inadequate self-care
- Changes in sexual intercourse
- Depressed mood
- Willing to terminate the pregnancy but not being able to due to religious beliefs
- Anxiety, anger
- Crying
- Social isolation
- Loss of control
- Unable to adapt to pregnancy

**ROLE FUNCTION MODE**

- Unable to fulfill the responsibilities at home
  - Child care
  - Cleaning
  - Cooking
  - Shopping
- Unable to fulfill the responsibilities at workplace
  - Decrease work performance
  - Not able to go to work place

**INTERDEPENDENCE MODE**

- Disatisfaction with the relationships with important individuals in her life
  - Husband
  - Mother
  - Health care providers
  - Relatives
  - Neighbors
- Disruption of interaction with the social environment

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Figure 1. Women’s stimuli and behaviors when experiencing nausea and vomiting in pregnancy based on Roy Adaptation Model.
the health of their babies. They also experienced loss of control, crying, anxiety, anger and social isolation. NVP was found to negatively affect the adaptation of many women to pregnancy. In fact, one woman wanted to terminate her pregnancy (Figure 1).

Behavior: feeling like a patient, weak and tired; focal stimulus: inability to perform self-care; contextual stimuli: nausea, vomiting, fatigue and weakness.

I do not feel well. My face looks very pale. Have you noticed that? I am not well at all. I am not well physically either. I cannot do anything. Sometimes, I even cannot wear my clothes. Dryness on my lips. I feel depressed. I do not even feel like looking at myself in the mirror. I am so exhausted that I cannot brush my hair. (Participant 10)

Behavior: lack of sexual desire; focal stimulus: pregnancy, nausea and vomiting; contextual stimuli: weakness, fatigue and increased body irritability.

I can say that my sexual desire has decreased. I hate being touched. Anything, even water, touching my skin, my body irritates me. Before I became pregnant, we had sexual intercourse 3—5 times a week. However, now, maybe once, or maybe none at all. (Participant 35)

Behavior: worrying about her baby’s health; focal stimuli: nausea and vomiting; contextual stimulus: poor nutrition

When I suffer from severe nausea and vomiting, I worry about my baby. I think I do not eat enough and neither does my baby. (Participant 33)

Behavior: social isolation; focal stimulus: pregnancy; contextual stimuli: nausea and vomiting.

I feel nauseous now and therefore I am very uncomfortable. I want to isolate myself from the environment, from other people. I want to be alone. (Participant 1)

Behavior: loss of control and crying; focal stimuli: nausea, vomiting; contextual stimulus: failure to cope with nausea and vomiting.

Essentially, I am a strong person. But I cannot cope with nausea and vomiting. There have been times I have cried about why I could not cope with nausea and vomiting. (Participant 10)

Behavior: desire to terminate her pregnancy; focal stimulus: unplanned, unwanted pregnancy; contextual stimulus: nausea, vomiting and beliefs.

This pregnancy is an unplanned and unwanted one. What’s more, this nausea and vomiting infuriated me. I considered having the baby aborted but I couldn’t, because of my beliefs. I said to myself, I have other children, if something happens, if one of them becomes ill, I will always blame myself. I will always relate it to the abortion. Because of my religious beliefs, I didn’t do it. (Participant 15)

Role function mode

NV was the most important stimulus in the role function mode. Because of NV, participants were unable to fulfill responsibilities at home and work (Figure 1).

Behavior: not being able to look after the child, not cooking; focal stimulus: nausea; contextual stimulus: feeling like a patient.

After nausea starts, I cannot cook. I am trying to look after my daughter, but this situation affected her adversely too. How much can a person who constantly lies down help her children? I can only help her with the lessons she cannot handle. (Participant 10)

Behavior: difficulty doing cleaning; focal stimuli: nausea and vomiting; contextual stimulus: smell.

The smells of cleaning products make me nauseous. I cover my mouth and face with something, and then try to do the cleaning. How would you do the cleaning without using bleach or anything else? I cannot help cleaning or disinfecting the house. (Participant 11)

Behavior: decrease in work performance; focal stimulus: nausea; contextual stimuli: fatigue.

Standing up increases my nausea. Therefore, I cannot stand up. Sometimes, I have to sit in patient rooms. I cannot take care of my patients. (Participant 22, nurse)

Interdependence mode

Nausea and vomiting was the most important stimulus in interdependence mode. Because of NV, participants had dissatisfaction with their relationships with the important individuals in their lives and the sources of support, as well as disruption of their interaction with the social environment (Figure 1).

Behavior: nervous with her husband; focal stimuli: nausea and vomiting; contextual stimulus: her husband misunderstanding her.

I cannot share my distress related to nausea with my husband. He goes to work, comes back home, and asks if the dinner is ready. I cannot cook. He cannot understand this because he is a man. (Participant 29)

Behavior: sleeping in separate beds; focal stimulus: nausea; contextual stimulus: smell.

We sleep in separate beds. My husband goes to a café. When he comes back from the café, the smell of cigarette smoke bothers me a lot. When I tell him this, he takes a shower. However this time the smell of his shampoo bothers me. That’s why we sleep in separate beds. (Participant 11)

Discussion

Experiences with nausea and vomiting during pregnancy in Turkish women have been presented here as guided by RAM. Although the authors have published a review article on NPV and RAM (Isbir & Mete, 2010), this is the first time that NVP and RAM were studied.

The data obtained from the study are discussed in two parts, the literature dealing with RAM and the literature dealing with NVP. The data obtained from this study have largely contributed to the model. Roy (2009) states in her model that “Behavior in the physiologic mode can have an effect on or act as a stimulus for one or all of the other modes” (Roy, p. 45). This proposition is confirmed with the results of this study. For example, while the NV behavior in the physiologic mode stimulated the anxiety behavior in the self-concept mode, the anxiety behavior in the self-concept mode stimulated the NV behavior in the physiological mode. For the first time, it has been shown that a behavior in one mode might be a stimulus for another behavior in the same mode in this study. For example, NV in the physiological mode stimulated the weakness and fatigue in the same mode. For this reason, the dynamic of each mode should also be assessed on its own.
In the second section, data are presented regarding NV. When we studied the behavior and stimuli in the physiological mode, we noticed that our findings were generally similar to the findings of other studies carried out on NV (Jednak et al., 1999; Swallow et al., 2005). Unlike other studies, it was found that women with NVP had symptoms of inguinal pain, urinary incontinence, burning sensation and irritation in the throat.

Behaviors in the self-concept mode were similar to the findings in the literature (Locock et al., 2008; McCormack et al., 2011; Meighan & Wood, 2005; O'Brien et al., 2002). Behaviors such as feeling physically unwell, lack of self-care, loss of control, social isolation and sense of guilt were revealed in this study. The women who felt unwell physically had experiences such as depression and anxiety. This situation affected the women's adaptation to pregnancy adversely. In addition, it was found that the women with NVP mostly displayed the nonadaptive "loss of control" behavior. Meighan and Wood discovered that women with NVP experienced "loss of control" in their study, and that when the symptoms decreased or disappeared, they regained their control. In this study, it was also found that women who failed to perform their roles displayed loss of control behavior. The residual stimulus for this behavior might be lack of social support.

Another behavior commonly observed is "social isolation" in the self-concept mode. Several studies have found that women with NVP isolate themselves emotionally and socially (Meighan & Wood, 2005; O'Brien et al., 2002). Social isolation led to the emergence of the "disruption of interaction with the social environment" behavior in the interdependence mode in this study.

Some women with NVP thought that this process might adversely affect their baby and they experienced a sense of guilt and maternal attachment (McCormack et al., 2011; Meighan & Wood, 2005). Some of them could not cope with NVP and wanted to terminate the pregnancy (Meighan & Wood). Similar to Meighan & Wood study, one woman wanted to terminate the pregnancy because of NV in this study, although she did not do it because she considered such an attempt a sin. This finding shows that women's beliefs affect their health behaviors.

Roy (2009) suggests that all the roles of an individual necessary for social integrity should be dealt with in the role function mode. Similar to the findings of other studies in the literature, the findings of this study revealed that NV negatively affected the women's roles at home and work place (Lacasse et al., 2008; Locock et al., 2008). NV influences a woman's performance when she tries to accomplish her roles at home and in the work place. Failing to maintain their children's care has a negative impact on women in particular. For nonadaptive behaviors in this mode, while the focal stimulus was NV in the physiological mode, contextual stimuli were nonadaptive behaviors in the self-concept mode and the interdependence mode.

Finally, in the interdependence mode, we found that NV adversely affected a woman's relationships with other individuals. Women in this study stated that sources of social support included the husband, mothers, health professionals, relatives and neighbors. While the focal stimulus was NV, contextual stimuli were social isolation and the woman's sources of social support not understanding her. In the Turkish society, pregnancy is valued. Pregnant women are generally supported by sources of social support. NVP is often regarded as a normal process of pregnancy in Turkey. Therefore, the difficulties experienced by women with NVP may not be perceived by other people. The women can perceive this situation as a lack of social support. O'Brien et al. (2002) reported that NV had a negative impact on the relationships with the sources of social support. Chou, Avant, et al. (2008) studied the relationship between NV and social support, and reported that women's relationships with the sources of social support were adversely affected. They also reported that women receiving social support were able to cope with NV in a better way.

Limitations

Our study was based only on perspectives in Turkish women. Therefore, our research cannot be generalized to other populations of women with NVP in other countries. The behaviors of women with NVP and the stimuli leading to these behaviors can vary from culture to culture. Another limitation of the research is that our data were collected from a very specific population. When the socio-demographic characteristics of the sample were analyzed, we found that the mean age of participants in our study is greater than the mean age for others in their first pregnancy in Turkey (TNSA, 2008). In addition, the education status in our sample is higher than that of the national average in Turkey. The reason for this might be that this study was conducted in a developed city of Turkey. The results of the study might differ if the study was conducted in pregnant women whose educational status is lower and at a younger age.

Conclusion

NV is experienced by many pregnant women and is a condition affecting the quality of their lives. In the present study, we found that the stimuli causing NVP differed for each individual, and that the same stimulus caused different behaviors in different individuals. Therefore, women with NVP should be analyzed specifically on the basis of their behaviors and the stimuli leading to these behaviors. Nursing care must be tailored to each individual. Nurses may use a debriefing method in order to determine the behaviors and the stimuli of the individual. This method would enable the patient to express herself in detail during data collection. Being listened to and cared for by the nurse may be perceived as significant social support for the patient. Nurses may provide counseling towards the needs of the patient after they identified their patients’ needs through a debriefing method. In addition, nurses should monitor the level of nausea and/or vomiting as well as hydration and weight loss. If nausea and vomiting becomes severe and leads to inadequate fluid intake, women can be supported with intravenous fluids at hospitals. Further research may evaluate the impact of a counseling program prepared under the guidance of a nursing model on NVP.

Conflict of interest

The authors have no conflict of interest to declare.

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