

Research article

Discordance between physical symptoms versus perception of severity by women with nausea and vomiting in pregnancy (NVP)

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Published: 1 August 2002

Received: 11 April 2002

BMC Pregnancy and Childbirth 2002, **2**:5

Accepted: 1 August 2002

This article is available from: <http://www.biomedcentral.com/1471-2393/2/5>

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Abstract

Background: Nausea and vomiting in pregnancy (NVP) is a multifaceted condition that affects more than half of pregnant women and can range in severity from mild nausea to severe dehydration. Presently physicians evaluate mostly physical symptoms of NVP in trying to assess the severity of the condition. The objective of this study was to investigate how factors, other than the physical morbidity of nausea and vomiting, influence self-perception of NVP by affected women.

Methods: Five hundred women with NVP calling a 1-800 NVP Healthline were asked to rate their NVP severity and report their nausea duration and number of vomiting/retching episodes.

Results: Nausea and vomiting/retching correlated significantly but very poorly with self-assessment of NVP severity. There was also a correlation between nausea duration and vomiting/retching frequency however the correlations were weak and overall physical symptoms could only explain 14% of the variability of women's feelings and perceptions through multivariate analysis.

Conclusions: Physical symptoms weakly correlate with self-assessment of NVP severity. Other aspects of this condition, most probably psychosocial, influence women's perception of NVP severity.

Introduction

Descriptions of nausea and vomiting of pregnancy (NVP) date back to writings from the second century AD [1]. NVP affects up to 80% of pregnant women to greater or lesser degrees [2]. Approximately 50% of women have nausea and vomiting, whereas approximately 30% have only nausea [2]. Symptoms are usually self-limited in duration (i.e. to 7-12 weeks gestation), although 9% of women continue to have symptoms beyond 20 weeks [2]. Fewer than 1% of pregnant women develop hyperemesis gravidarum (HG) characterized by severe physical symptoms

and/or medical complications (e.g. dehydration, electrolyte imbalance) requiring admission to hospital [2]. Even when the condition is less severe, symptoms can cause considerable distress and temporary disability. In a study that assessed the quality of life of women with NVP, nearly 50% of employed women reported that work efficiency was reduced by this problem, and as many as 25% required time off from work [3].

NVP has a spectrum of severity that can range from mild, occasional nausea to constant nausea with frequent vom-

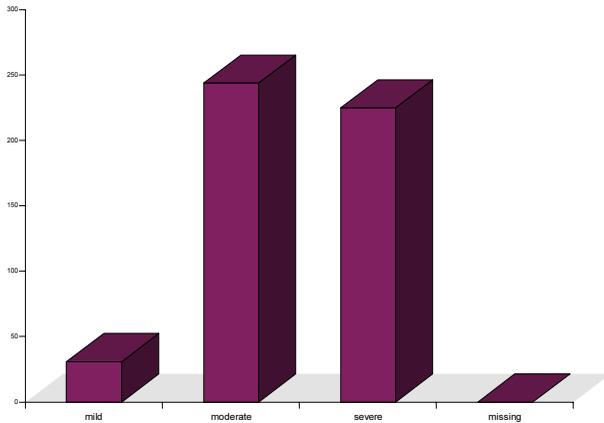


Figure 1
NVP severity self-assessment of 500 women Five hundred women rated their perception of severity of their nausea and vomiting in pregnancy (NVP) during the past week on a scale of mild, moderate or severe.

iting. Traditionally, health care providers tended to manage the physical symptoms of NVP, however it has become evident recently that the impact of NVP on the quality of life of the woman and her family far exceeds the extent of physical morbidity [4]. It is a multifaceted condition and its severity can be aggravated by other domains even when physical symptoms are mild. Other components may include emotional, psychosocial, environmental, nutritional and occupational disabilities [4]. Presently it is not known to what extent physical symptoms determine (or fail to do so) women's overall perception of severity of their condition.

The objective of this investigation was to assess whether severity of physical symptoms of NVP correlates with the woman's overall perception of the severity of her condition.

Methods

Women calling the NVP Helpline at the Motherisk Program in Toronto, were asked to undergo a structured interview to develop a health-related quality of life instrument for this condition. Women were included in the study if they had NVP, called within the first 20 weeks of gestation, understood English and were able to speak on the phone.

Women were excluded if they had medical conditions that may have affected their NVP symptoms such as hyperthyroidism, diabetes, lupus, heart and kidney diseases and gastro-intestinal problems, were greater than 20 weeks gestation or did not consent to participate in the study.

Using the questionnaire women were asked to rate their overall perception of severity of NVP as mild, moderate or severe. In addition, they were asked to report their daily nausea duration and vomiting/retching frequency for the past week. Recent data from our group has shown very high recall within a week. As shown by us and others, the duration of daily nausea and frequency of vomiting/retching are the most predictive values for overall physical severity of NVP [5]. The protocol was approved by our hospital's research ethics board and verbal consent was obtained from the participants.

Five hundred women were eligible and consented. The mean age of the participants was 31.1 ± 4.5 years while the mean gestational age was 9.5 ± 2.6 weeks. Eighty one percent (407) were Caucasian, 95 % (477) were married, 67% (335) had a college/university degree, 71% (357) were full-time workers and 98% (485) were non-smokers. Forty four percent (218) used anti-emetic drug therapy and one third (162) used non-drug treatment with the two modalities not mutually exclusive.

Baseline information was also collected about maternal demographics, medical and obstetric histories, as well as exposure to other medications, chemicals, cigarettes and/or recreational alcohol or drugs.

The correlation between women's perception of NVP severity and nausea duration or vomiting/retching frequency was studied by least square linear regression. The correlation between nausea duration and vomiting/retch-

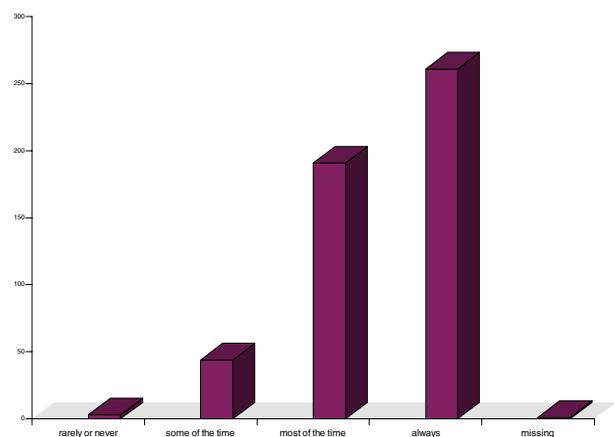


Figure 2
Nausea duration of 500 women Five hundred women reported their daily duration of nausea in pregnancy during the past week on the following scale: having nausea always, most of the time, some of the time or rarely or never.

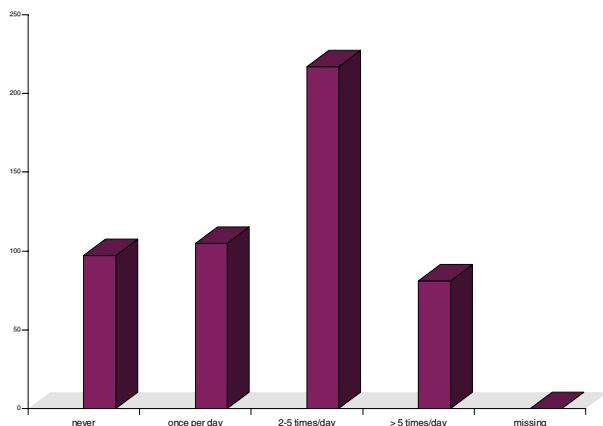


Figure 3
Vomiting/retching frequency of 500 women Five hundred women reported their daily frequency of vomiting/retching in pregnancy during the past week on the following scale: having vomiting/retching greater than 5 episodes per day, 2–5 episodes per day, one episode per day or no episode of vomiting/retching.

ing frequency was studied in a similar way. A multivariate analysis was also employed in this study whereby nausea duration and vomiting/retching frequency were independent variables and NVP severity was the dependent variable.

Results

Forty five percent (225) of women rated themselves as experiencing severe NVP, while 49% (244) classified themselves as suffering from moderate and 6.2% (31) suffering from mild NVP (figure 1). Figures 2 and 3 show the distribution of severity of nausea duration and vomiting/retching frequency. As illustrated the majority of women reported having nausea 'always' and vomiting/retching '2–5 times a day'. The proportions of women who rated their NVP severity and reported their duration of nausea and frequency of vomiting/retching are shown in table 1.

The correlation coefficients of NVP severity with nausea duration and with vomiting/retching frequency were statistically significant, but weak. The duration of nausea contributed only 6.25% ($r^2 = 0.0625$) of the variability of women's perception of severity, whereas the frequency of vomiting/retching contributed only 9% ($r^2 = 0.09$) to women's perception. The correlation between nausea duration and vomiting/retching frequency was 0.140. These are shown in table 2.

Because the relationship between nausea duration and vomiting/retching frequency was significant, but poorly

correlated, a multiple regression analysis was employed in this study. Multi-linear regression analysis revealed that both nausea and vomiting/retching independently predicted women's perception of severity ($p < 0.001$ for each). The regression analysis of nausea and vomiting/retching contributed only 14.2% ($r^2 = 0.142$) of the variability of women's perception of NVP severity (table 3).

Discussion

The present study introduces quantitative evidence to previous impressions, that the physical symptoms of NVP cannot, by themselves, describe and qualify the severity of the condition as felt by the woman.

In this study, 500 women rated their perception of severity of NVP while separately also reporting their physical symptoms including duration of nausea and episodes of vomiting/retching. The perception of NVP severity was significantly but very weakly correlated with both physical symptoms of nausea and vomiting/retching. The physical symptoms attributed only 14% to the variability of women's perception. This indicates that physical symptoms are weak predictors of NVP severity as perceived by the pregnant woman herself.

Psychosocial and emotional morbidity are evident in NVP and have been reported by us, among NVP patients [4]. Women commonly reported on depression, isolation and despair [4]. Women also reported that support and validation of their NVP by family members and physicians had a positive effect on symptoms and they felt reassured by their partner and friends.

Nutritional status can also influence the perception of severity. Women who eat frequent, small meals reported feeling much better than women who did not [6]. An

Table 1: Proportions of self-assessment of NVP severity, frequency of vomiting/retching and duration of nausea of 500 women

Self-assessment of NVP severity	<i>mild</i>	31	6.2%
	<i>moderate</i>	244	48.8
	<i>severe</i>	225	45.0
	<i>missing</i>	0	0.0
	<i>never</i>	97	19.4
Frequency of Vomiting/retching	<i>once per day</i>	105	21.0
	<i>2–5 times/day</i>	217	43.4
	<i>> 5 times/day</i>	81	16.2
	<i>missing</i>	0	0.0
	<i>rarely or never</i>	3	0.6
Duration of Nausea	<i>some of the time</i>	44	8.8
	<i>most of the time</i>	191	38.2
	<i>always</i>	261	52.2
	<i>missing</i>	1	0.2

Table 2: Correlations between self-assessment of NVP severity, duration of nausea and frequency of vomiting/retching

Variable 1	Variable 2	R	P-value
self-assessment of NVP severity	duration of nausea	0.261	3.17*10E-9
self-assessment of NVP severity	frequency of vomiting/retching	0.304	3.47*10E-12
Duration of nausea	frequency of vomiting/retching	0.140	1.74*10E-3

Table 3: Multiple linear regression

Dependent Variable	Independent Variables	R	P-value
self-assessment of NVP severity	duration of nausea and frequency of vomiting/retching	0.377	< 0.001

empty stomach tends to aggravate symptoms and as a result affect perception of symptoms. Environmental stimuli such as exposure to sights, smells and sounds that can trigger NVP symptoms can also influence perception even when the exposure is short term [6].

We have shown in the present study that rating the severity of NVP physical symptoms does not address well women's own perception of the severity of their condition. Further research is needed to investigate this matter, as presently health professionals relate mainly to physical symptoms of NVP when assessing pregnant women.

NVP is a multifaceted condition that encompasses a lot more than just physical morbidity. Women will tend to perceive their symptom severity according to how they are feeling overall and how other aspects of their life are affected. This has potential serious implications in terms of management of NVP. Any therapeutic strategy that addresses only physical symptoms, i.e. anti-emetic medications, but disregards the psychosocial morbidity and need for emotional support, is likely to be sub-optimal and possibly futile.

Competing interests

None declared.

Acknowledgements

We gratefully acknowledge the annual educational grant provided by Duchesnay, Ltd., Laval, Quebec to the Motherisk Program, Hospital for Sick Children, Toronto, Canada. Gideon Koren is a senior scientist of the Canadian Institutes for Health Research and holder of the Research Leadership in Better Pharmacotherapy during Pregnancy and Lactation.

We also thank Caroline Maltepe, BA and Yvette Navioz for their dedication to the project and the women in the study who dedicated their time.

References

1. Vartan CK: *Med Press* 1954, **231**:322
2. Gadsby R, Barnie-Ashead AM, Jagger C: **A prospective study of nausea and vomiting during pregnancy.** *Br J Gen Prac* 1993, **43**:245-8
3. Vellacott D, Cooke EJA, James CE: **Nausea and vomiting in early pregnancy.** *Int J Gyn Obst* 1988, **27**:57-62
4. Mazzotta P, Stewart D, Atanackovic G, Koren G, Magee L: **Psychosocial morbidity among women with nausea and vomiting of pregnancy: prevalence and association with anti-emetic therapy.** *J Psychosomatic Obst Gyn* 2000, 129-136
5. Koren G, Boskovic R, Hard M, et al: **Motherisk-PUQE (pregnancy-unique quantification of emesis and nausea) scoring system for nausea and vomiting of pregnancy.** *Am J Obst Gyn* 2002, **185**(5 Suppl):S228-31
6. Chandra K: *Thesis: Development of a health-related quality of life instrument for nausea and vomiting of pregnancy*, 2000

Pre-publication history

The pre-publication history for this paper can be accessed here:

<http://www.biomedcentral.com/1471-2393/2/5/prepub>

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