



ORIGINAL PAPER

QUALITY OF WOMEN'S LIFE WITH NAUSEA AND VOMITING DURING PREGNANCY

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Abstract

Aim: The pilot survey aimed at determining and describing the quality of life (QOL) of women who developed nausea and vomiting during the first trimester of their pregnancy (NVP). Another goal was to find out whether pregnant women's QOL is influenced by the severity of NVP, parity, duration of pregnancy, gynecologic history, age and marital status. *Methods:* The cohort comprised 179 women in the first trimester of their pregnancy suffering from NVP. Data were collected using two questionnaires: the specific Health-Related Quality of Life for Nausea and Vomiting during Pregnancy (NVPQOL) and the supplementary SF-12 health survey. *Results:* Lower than average QOL was found in 22% of women with NVP. Most frequently, physical symptoms and aggravating factors and fatigue were reported. The survey revealed an association between a lower QOL of pregnant women and the severity of NVP, parity, duration of pregnancy and marital status ($p < 0.01$). A better quality of life was found in primiparae, women pregnant for 10 or more weeks and, surprisingly, women without partners. *Conclusion:* Severe NVP decreases the quality of life of pregnant women and should therefore be monitored. Before further use of the NVPQOL questionnaire in the Czech Republic it is advisable to verify its psychometric properties for the Czech version.

Key words: quality of life, pregnancy, nausea and vomiting, NVPQOL questionnaire, SF-12.

Introduction

Pregnancy and childbirth are basic life events vital to the maintenance of humankind and thus are considered physiological processes (Čech, 2006, p. 179). Pregnancy, however, represents a burden on the female organism, resulting from the need to provide nourishment to the rapidly developing foetus. In the organism, numerous changes in physiological functions occur, triggered by both hormonal stimuli from the hypothalamus and stimuli from the fetoplacental unit. If these changes are qualitatively or quantitatively escalated, they may result in a pathology in the maternal organism (Binder et al., 2011, s. 29).

The most common complication affecting women in the first trimester is nausea and vomiting of pregnancy (NVP). Its cause remains unknown and factors associated with the occurrence of NVP are contradictory (Chan, 2010).

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NVP is experienced by the majority of women (85%). The symptoms appear normally between week 4 and 6 of gestation and peak between week 8 and 12. Most of the symptoms disappear by week 20 of gestation. A more severe form of NVP, called hyperemesis gravidarum (HG), can occur in 0.5% to 3% of pregnancies. HG is the most common reason for hospitalization in the first trimester of pregnancy (Lacasse, Bérard, 2008).

NVP can have a significant impact on family life, the ability to perform usual daily activities, social functioning and development of stress situations. Apart from these findings, the presence and severity of NVP have been shown to influence the overall quality of life (QOL) of pregnant women (Lacasse, Bérard, 2008). Munch et al. (2010, p. 10) added that women with NVP seem to have a lower QOL when compared with asymptomatic pregnant women.

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Measuring the specific QOL of pregnant women with NVP is important for several reasons. Assessment of particular patients with particular conditions is more likely to reveal small but clinically significant changes in the QOL of these women as the measurements are performed under specific conditions (Magee et al., 2002, p. 232).

In some women, NVP may be so severe that it requires a hospital stay. The symptoms may persist throughout the entire pregnancy. Women present with weight loss, further vomiting and dehydration. The condition is dangerous for both the mother and the baby (Lane et al., 2002, p. 4). Women suffering from NVP need individualized and adequate care. Support and counselling in both community and hospital settings are most important (McParlin, 2008, p. 281). Lacasse and Bérard (2008) pointed to the necessity and importance of early and optimum control of NVP and satisfying all needs of NVP sufferers.

For assessing the QOL of women with NVP, Magee et al. developed an NVP-specific QOL questionnaire in 2002. Factor analysis was used to select the final 30 items out of 195 items. An English version of the questionnaire was tested for psychometric properties and its reliability (Cronbach's alpha coefficient 0.98) and validity were confirmed (Lacasse, Bérard, 2008, p. 4). In the Czech Republic, a specific questionnaire for assessing the QOL of women with NVP has not been developed so far.

Aims

The survey aimed at determining the QOL of women who developed nausea and vomiting in the first trimester of pregnancy. Another objective was to find out whether the QOL of pregnant women was affected by severity of the condition, parity, duration of pregnancy, gynecologic history, age and marital status.

Methods

Empirical data were collected using two questionnaires: the Health-Related Quality of Life for Nausea and Vomiting during Pregnancy (NVPQOL) and the SF-12 health survey. Both questionnaires were translated into Czech and the translations were validated.

The NVPQOL questionnaire comprises 30 questions grouped into 4 domains (physical symptoms and aggravating factors, fatigue, emotions and limitations). For each item, 7-point Likert scale response options are used, ranging from 1 (none of the time) to 7 (all of the time). The questionnaire is

available from the University of Toronto research repository (<http://tspace.library.utoronto.ca>). The total score of the NVPQOL questionnaire is between 30 and 210 points, with lower scores meaning a lower QOL. The Czech version of the NVPQOL questionnaire has not yet been tested for psychometric qualities. Only pilot results are presented in this article.

The SF-12 questionnaire, used to assess the generic QOL, is an abridged version of the SF-36 tool (Ware et al., 1996). The questionnaire determining negative impacts on the QOL has already been standardized for the Czech population. It contains 12 questions assessing general health, pain, social factors and physical functions. The items are grouped into 8 domains. An 0–100 scoring algorithm is used, with fewer points suggesting a lower QOL.

The cohort comprised 179 pregnant women addressed in 5 gynecology centers based on inclusion criteria and purposeful sampling. The inclusion criteria were as follows: the first trimester of pregnancy, nausea and vomiting in the last week, and absence of other generalized diseases. The participants were informed about the anonymous nature of the survey.

The data were processed with the Microsoft Excel and OpenEpi software. Descriptive statistics was used to analyze the results (frequency, mean, standard deviation [SD], and range of variation). To assess differences in the QOL according to the studied parameters, the t-test and Spearman's rank correlation coefficient were used. The statistical tests were performed at a level of significance of 5%.

Results

Sociodemographic characteristics

The entire group comprised 179 women in the first trimester of pregnancy. Their sociodemographic characteristics are shown in Table 1.

Quality of life assessment with the SF-12 questionnaire

Table 2 shows the results of QOL assessment with the SF-12 questionnaire for individual domains. The lowest scores were for emotional health and energy (mean, 50.7); the highest scores were for pain (mean, 87.0). Statistically significant differences were found in the QOL with respect to parity ($p = 0.017$). Multiparous women awarded lower scores to the general QOL (mean: 68.1) than primiparae (mean: 75.2). There was also a statistically significant difference in the QOL with respect to the women's ages. Women over 29 years of age reported a lower

Table 1 Sociodemographic characteristics of the group (n = 179)

Characteristics	N	%	Characteristics	N	%
Age			Substance abuse		
< 20 years	4	2.2	alcohol	13	7.3
20 - 28 years	80	44.7	cigarettes	10	5.6
29 - 35 years	78	43.6	marihuana	2	1.1
≥ 36 years	17	9.5	none	154	86.0
Duration of pregnancy			Marital status		
< 6 weeks	5	2.8	single	65	36.3
6 - 8 weeks	37	20.7	married	108	60.3
9 - 10weeks	33	18.4	divorced	6	3.4
11 - 12 weeks	104	58.1	widow	0	0
Education			Parity		
elementary	6	3.4	gravida 1	88	49.2
secondary w/o final exam	32	17.9	gravida 2	54	30.2
secondary with final exam	41	22.9	gravida 3	25	14.0
grammar school	7	3.9	gravida 4	12	6.7
higher vocational	6	3.4			
tertiary	87	48.6			

QOL (mean: 67.2) than younger participants (mean: 75.3). No statistically significant differences in the QOL were found with respect to gynecologic history ($p = 0.513$), marital status ($p = 0.097$), highest achieved education level ($p = 0.939$) or duration of pregnancy ($p = 0.744$).

Quality of life assessment with the NVPQOL questionnaire

The mean total score for the NVPQOL questionnaire was 101.9 points (SD: 36.8; range of variation 35–196 points).

Based on the scores achieved, the QOL was classified into five groups: a much higher than average QOL (30–50 points), higher than average QOL (51–100 points), average QOL (101–140 points), lower than average QOL (141–190 points) and much lower than average (191–210 points). A (much) lower than

average QOL was found in 41 participants (23%). The results are shown in figure 1.

When subjectively rating their QOL, a vast majority of women claimed their QOL was very good or rather good (76%), as compared with good (20%) and rather bad or bad (4%).

Quality of life assessment with the NVPQOL in domains and individual items

The NVPQOL scores were assessed for individual items and domains. The domain scores ranged from 0 to 100. Individual items were rated using a 1–7 scale. The higher the score, the lower the QOL. The respondents gave the worst ratings to the domains “physical symptoms and aggravating factors” and “fatigue”. The best ratings were given to the domain “emotions”. The ratings for individual items and domains are shown in Table 3.

Table 2 Assessment of the quality of life of pregnant women with SF-12 in individual domains

SF-12 domains	No. of items	Mean*	Min.	Max.	SD
Social functioning	1	70.1	0	100	26.0
Pain	1	87.0	0	100	19.9
Physical health	3	77.1	0	100	26.9
General health	1	63.8	25	100	20.0
Emotional health	1	50.7	0	100	20.9
Role limitation due to physical reasons	2	69.0	0	100	46.3
Role limitation due to mental reasons	2	81.3	0	100	39.1
Energy	1	54.0	0	100	23.1

*domain score range 0–100, with higher scores meaning a better quality of life; SD – standard ; min. – minimum; max. – maximum

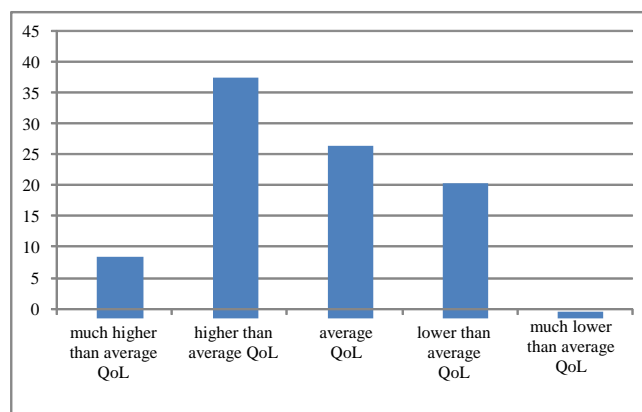


Figure 1 Overall quality of life assessment with the NVPQOL questionnaire (%)

Table 3 Quality of life assessment with the NVPQOL in domains and individual items

Domains Individual items	M	SD	Mod	N*(%)	Domains Individual items	M	SD	Mod	N (%)
Physical symptoms	68.1	31.9			Limitations	55.1	34.8		
Nausea	4.4	1.6	6	92 (51)	Accomplished less than she would like	3.5	1.5	3	56 (31)
Sick to her stomach	4.4	1.5	5	97 (54)	Took longer to get things done than usual	3.5	1.8	1	62 (35)
Vomiting	2.5	1.8	1	38 (21)	Difficulty maintaining her normal social activities	3.0	1.7	1	36 (20)
Dry heaves	4.2	1.6	6	82 (46)	Difficulty preparing or cooking meals	3.2	1.8	1	51 (28)
Poor appetite	3.9	1.6	5	79 (44)	Difficulty looking after home	3.1	1.6	3	44 (25)
Symptoms in the evening	3.2	1.9	1	49 (27)	Difficulty shopping for food	2.9	1.7	1	38 (21)
Not eaten for longer than she would like	3.4	1.7	4	49 (27)	Rely her partner to do things that she would normally do for family	3.0	1.7	1	25 (20)
Worse when exposed to certain smells	4.3	1.9	5	92 (51)	Took extra effort to perform work and other activities	3.5	1.6	3	54 (30)
Worse when exposed to certain foods	3.4	1.5	4	44 (25)	Everything is an effort	3.4	1.6	4	52 (29)
Emotions	53.6	29.3			Cut down on amount of time she spent at work	2.9	1.8	1	34 (19)
Frustrated	3.2	1.6	4	39 (22)	Fatigue	64.8	35.3		
Emotional	3.5	1.6	5	63 (35)	Fatigue	4.0	1.5	5	77 (43)
Downhearted or blue	3.5	1.7	5	60 (34)	Tired	3.1	1.7	1	
Less interested in sex	3.6	1.8	4	52 (29)	Lack of energy	3.8	1.6	5	70 (39)
Fed up with being sick	3.3	1.5	4	40 (22)	Exhausted	3.5	1.7	5	61 (34)
Reassured that the symptoms are part of normal pregnancy	2.0	1.3	1	8 (4)					
Can't enjoy her pregnancy	2.8	1.6	1	38 (21)					

M – mean; SD – standard deviation, *number of women who identified the item as problematic (i.e. with 5 – a good bit of the time, 6 – most of the time or 7 – all of the time)

Assessing the correlation between the severity of NVP and QOL

Based on scores for the first three NVPQOL questions (3–15 points), the respondents were classified into four categories reflecting the frequency of their NVP symptoms. Out of 179 women, 1% were asymptomatic (< 4 points), 33% had mild symptoms (4–6 points), 60% had moderate symptoms (7–12 points) and 5% had severe symptoms (13–15 points). There was a statistically significant difference ($p < 0.001$) in the QOL between women with no or mild symptoms (mean: 70.1 points; SD: 24.1) and those with moderate or severe symptoms (mean: 118.4 points; SD, 31.0).

Assessing the correlation between the QOL and selected factors

When comparing the mean NVPQOL scores with respect to parity, statistically significant differences in the QOL were found between primiparous and

multiparous mothers-to-be ($p < 0.001$), with primiparae having a better QOL.

There were no statistically significant differences ($p = 0.224$) in the QOL of women with various gynecologic histories (gynecologic complications before pregnancy).

In addition, the effects of age, marital status, education and duration of pregnancy on the QOL were studied. There were no statistically significant differences in the QOL with respect to either age ($p = 0.9507$) or education ($p = 0.961$). However, there were statistically significant differences related to the duration of pregnancy ($p < 0.001$), with pregnancies 10 weeks or longer than 10 weeks being associated with a better QOL. There was also a statistically significant difference in the QOL between single/divorced and married women ($p = 0.019$). Surprisingly, married women had a lower QOL (Table 4).

Table 4 Assessing the correlation between the quality of life of women with NVP and selected factors

Parity	NVPQOL (total score)					p-value
	N	Mean	SD	Min.	Max.	
primipara	88	88.1	32.4	35	150	p < 0.001
multipara	91	115.3	35.6	43	196	
Duration of pregnancy						p < 0.001
9 or fewer weeks	75	112.9	33.9	44	196	
10 or more weeks	104	94.0	36.6	35	167	
Marital status						p = 0.019
single/divorced	71	94.1	36.8	35	126	
married	108	107.1	35.7	40	131	

SD – standard deviation, min. – minimum, max. – maximum

Comparison of the SF-12 and NVPQOL questionnaires

Furthermore, the two questionnaires were compared to see if they provide identical QOL scores for individual participants with NVP. For that, regression and correlation analysis was used. Both Graph 2 and the correlation coefficient ($r = -0.25319$) suggest that there is no strong correlation between scores in the two questionnaires.

Discussion

The main objective of the study was to determine the QOL of women who developed symptoms of nausea and vomiting in the first trimester. The pilot survey utilized two questionnaires. The SF-12 questionnaire has already been standardized for the Czech population; the Czech version of the NVPQOL questionnaire has not yet been tested for

psychometric properties. Correlation analysis showed no association between the two questionnaires. In the SF-12 questionnaire, low scores were obtained for emotional health. The same domain, however, was perceived as the least problematic with the NVPQOL questionnaire. We recommend that this tool is tested for psychometric properties before its Czech version is used again.

The pilot survey results show that most women with NVP had a higher than average or average QOL. About one-fifth of the participants had a lower or much lower than average quality of life. This is not negligible. Similarly, Lacasse (2008) claimed that NVP has a negative impact on the QOL, stressing the need for optimal care for patients with NVP.

The NVPQOL is concerned in detail with four domains: physical symptoms and aggravating factors,

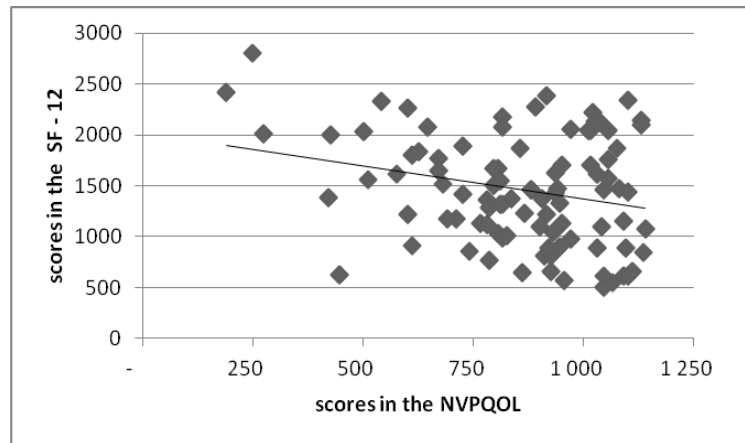


Figure 2 Correlation between quality of life scores in the SF-12 and NVPQOL questionnaires

fatigue, emotions and limitations. Each domain measures a specific area affecting the QOL. The participants gave the highest scores to emotions; the lowest scores were for physical symptoms and aggravating factors. In the latter domain, the items were nausea, vomiting, dry heaves, poor appetite, symptoms worse when exposed to certain smells, etc. In particular exposure to certain smells causes a lot of problems to pregnant women. They report it to be the most frequent factor associated with nausea and vomiting. According to a study by Davis (2004), exposure to smells, both cosmetic and their partners' smells, is a frequent trigger of NVP. Thus, women should avoid places with intense smells, such as buses, underground, around smokers, etc. Fatigue was the domain that received the second worst scores. Chou et al. (2003) studied how psychosocial factors influence NVP. They claimed that based on research, NVP is affected by fatigue. This was explained by the fact that an important trigger of nausea is stress. The most important source of stress is fatigue.

The impact of severity of NVP on the overall QOL was also analyzed. The presented survey found a lower QOL in women with more severe NVP. The association between severity of NVP and QOL of women with NVP was also studied by Lacasse and Bérard (2008). Their study of 288 women aimed at determining the effect of severity of NVP on their QOL. Consistently with our results, the authors found a correlation between more severe NVP and a lower QOL.

Another interesting finding in our survey was that primiparae with NVP had higher QOL scores than multiparae. Inconsistent findings have been published elsewhere. For instance, Zhou et al. (1999) studied factors affecting the severity of NVP and found that

vomiting was more frequent and more severe in primiparae whereas episodes of nausea were more frequently observed in multiparae. Davis (2004), on the other hand, claimed that nausea was more common in primiparae.

The presented survey also suggests that QOL of women with NVP is influenced by duration of their pregnancy. The QOL of women with NVP and pregnancies lasting for up to 9 weeks was lower than in those with pregnancies that lasted 10 or more weeks. Similarly, Lacasse and Bérard (2008) claimed older gestational age to be one of characteristics associated with a higher QOL.

Conclusion

The survey findings have confirmed the need for individualized approach to women suffering from NVP. Women found nausea to cause both physical and mental limitations, also limiting their social and family lives. Women suffering from NVP should be treated amiably and respectfully so that their QOL is not negatively influenced.

In their practice, midwives should focus on educating patients and explaining the causes of nausea and vomiting. In the outpatient setting, they should also introduce women to preventive options and subsequently elucidate factors that alleviate nausea.

Since the NVPQOL questionnaire has not yet been standardized for the Czech population we strongly recommend its validation for research purposes using a larger number of respondents before it is used for clinical practice. In further research, specific factors influencing NVP should also be determined. For that, qualitative studies could be used as well. It would be beneficial to focus on activities or factors improving the QOL.

Ethical aspects and conflict of interest

The authors declare that the study has no conflict of interest and has adhered to the ethical aspects of research. All respondents were informed about the survey objectives and consented to their enrollment in the cohort.

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