International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Jha SK et al. Int J Reprod Contracept Obstet Gynecol. 2023 Mar;12(3):528-532
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20230517

Original Research Article

Prevalence of hyperemesis gravidarum using the 24-hour pregnancy unique quantification of emesis scale scoring-a descriptive study

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Received: 06 February 2023
Accepted: 21 February 2023

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ABSTRACT

Background: Nausea and vomiting occur in 80% of all pregnancies that do not require treatment however; hyperemesis gravidarum (HG), a potentially life-threatening condition affecting 0.3% to 2% of pregnancies, which is characterized by protracted vomiting, retching, severe dehydration, and weight loss (>5% of pre-pregnancy weight) require hospitalization.
Methods: This was a hospital based cross-sectional descriptive study done at Kathmandu medical college over duration of 18 months from 1st January 2018 to 30th June 2019. Pregnant women ≤22nd weeks of gestation admitted with nausea and vomiting were taken as study group. Data collection was done with the questionnaire (modified 24 hours pregnancy unique quantification of emesis (PUQE) scoring system) on a structured proforma covering the relevant subjects of the study. Data were analyzed comparing difference in percentages of categorical variables chi-square test.
Results: Hundred and forty-nine women were enrolled in this study with nausea vomiting in pregnancy (NVP) among 692 patients of all obstetric admission within 22 weeks of pregnancy. The prevalence of NVP during the study period was 21.67%. Most of the women in the study group belonged to age group of 20-30 years. Only 12% of cases admitted with severe NVP. Mean duration of hospital stay was found to be 2.95±1.86 days. The incidence of the disease was maximum between 7-9 weeks of gestation.
Conclusions: There was no significant relation seen in severity of NVP and age, gravidity, education, occupation and BMI of women. Treatment with regular hydration and antiemetic had favourable outcome with early recovery.

Keywords: Antiemetics, HG, NVP

INTRODUCTION

Nausea and vomiting occur in up to 80% of all pregnancies, however; HG, affecting 0.3% to 2% of pregnancies, which is characterized by protracted vomiting, retching, severe dehydration, and weight loss (>5% of pre-pregnancy weight) requiring hospitalization.[1]

In the international classification of diseases (ICD-10) the diagnosis O21.1 is HG with metabolic disturbance occurring before 22nd weeks of pregnancy.[1] The etiology of HG is not fully understood.[2] It typically starts between the fourth and seventh weeks of gestation, peaks in approximately the ninth week and resolves by the 20th week in 90% of women. However, 10% to 20% of affected women experience symptoms throughout pregnancy and in 10% symptoms may even persist in postpartum period.[3,4] It a diagnosis of exclusion wherein other causes of severe vomiting are excluded.[5] The PUQE-24 appears to be a reliable tool for assessing the prevalence of severity of NVP symptoms.

The aim of this study was to determine the grade of nausea, vomiting in pregnancy using PUQE-24 scoring system in Kathmandu medical college public limited. Attempts to quantify nausea, vomiting in pregnancy (NVP) symptoms

originated with the Rhodes scale, which was designed for the assessment of nausea and vomiting in patients receiving chemotherapy for cancer.[6-8] NVP is more common in younger women, primigravidas, uneducated, non-smoker and obese women.[9,10] This study will be boon for hyperemesis patient reducing the rate of hospitalization, decrease financial burden and upgrade the quality of life.[11-13]

METHODS

This study was a hospital based cross-sectional descriptive study conducted on pregnant women ≤ 22nd weeks of gestation admitted with nausea and vomiting to gynaecology ward at Kathmandu medical college public Limited, Sinamangal, Kathmandu, during the period of 18 months (from first January 2018 to 30th June 2019) and meeting the inclusion criteria. The study was started after ethical clearance from the institutional ethical review committee. The exclusion criteria include nausea and vomiting due to medical and surgical cause like urinary tract infection, pylonephritis, appendicitis, peptic ulcer disease, gestational trophoblastic tumor and multifetal gestation.

Data collection was done with the questionnaire (modified 24 hours PUQE scoring system) on a structured proforma covering the relevant subjects of the study. It was pretested prior to the actual study period. A detailed orientation of the study and enrolment system was given to all doctor colleagues and nursing staffs.

Sample size

Sample size calculation was done as:

Sample size (n) $=Z^2pq/d^2$

Where, Z score=1.96 at 95% Confidence interval

P=prevalence (10.64%),[14]

q=1-p=0.894

d=margin of error at 5% of prevalence (0.05)

Sample size (n) ~149

Sample technique

Convenient simple random technique was used in the current study.

The PUQE score includes questions on the number of daily vomiting episodes, the length of nausea per day in hours and the number of retching episodes, with a minimum score of three and maximum score of fifteen. A PUQE score between four and six is considered mild NVP, a score between seven and twelve is considered moderate NVP, and a score that exceeds thirteen represents the severe NVP.

Table 1: 24 hours PUQE and nausea.[1]

PUQE				
On average in a day, for how long have you felt nauseated/sick to your stomach?				
>6 hours	4-6 hours	2-3 hours	≤1 hour	Not at all
5 points	4 points	3 points	2 points	1 point
On average in a day, how many times do you vomit or throw up?				
≥7 times	5-6 times	3-4 times	1-2 times	Not at all
5 points	4 points	3 points	2 points	1 point
On average in a day, how many times have you had retching/dry heaves without bringing anything up?				
≥7 times	5-6 times	3-4 times	1-2 times	Not at all
5 points	4 points	3 points	2 points	1 point

A detailed history was taken; clinical examination and investigations were done as per Proforma. Period of gestation was calculated from the last menstrual period or first trimester ultrasound scan whichever available. Patients were managed as per routine hospital protocol which included keeping patient nil per orally (NPO) for first 24 hours, administrating antiemetics 8 hourly, H2 receptor antagonist ranitidine iv 8 hourly, intravenous B-complex containing thiamine and folic acid and intravenous hydration therapy (that included 1 litre of normal soline, 1 litre of ringer lactate and 1litre of 10% dextrose-after giving intravenous B-complex containing Thiamine) till they start taking oral normal food.

PUQE scores were recorded everyday till she was admitted in the hospital. Data was entered in a master chart using Microsoft excel 2007. Data was analyzed using statistical package for social science (SPSS) version 21. Comparing difference in percentages of categorical variables chi-square test was used. A p value less than 0.05 was taken as statistically significant. The values have been expressed as mean ± SD.

RESULTS

During study period, 692 patients were admitted in gynecology ward with 22 weeks of pregnancy. Out of which 179 cases were admitted for NVP. Among them 30 cases were excluded from the study as 8 of them had urinary tract infection,2 had acute peptic disease,2 had gestational trophoblastic tumor, 1 patient had multifetal gestation,12 of them were readmitted and 5 women did not give consent to be enrolled in the study. Therefore, at the end, only 149 women fulfilled the criteria to be enrolled in the study.

The prevalence of NVP during the study period was 21.53% (Table 2).

Table 2: Baseline characteristics of patients admitted with NVP, (n=149).

Baseline characteristics (Mean/ median)		N	Percent (%)
Age, (Years) (n=149)	<19	7	4.7
	20-30	126	84.6
	>30	16	10.7
Gravidity, (n=149)	Primigravida	92	61.4
	Multigravida	57	38.6
Occupation, (n=149)	Homemaker	112	75.2
	Student	8	5.4
	Business	10	6.7
	Service	18	12
	Others	1	0.7
Education, (n=149)	Illiterate	3	2
	Literate	146	98
BMI (kg/m^2), (n=149)	<18.5	10	6.7
	18.5-25	118	79.2
	>25	21	14.1
Previous history of hyperemesis, (n=57)		42	73.68
Family history of hyperemesis in mother/sisters		77	52

Table 3: NVP showing admission criteria.

Variables	N	Percent (%)
Unable to hold food/water	149	100
Ketonuria	130	87.2
Weight loss (≥2.25 kg of pre-pregnant weight)	26	17.4
Severity of nausea vomiting using PUQUE scoring system		
Mild	13	8.7
Moderate	118	79.3
Severe	18	12

Fourteen patients (9.3%) had deranged liver function tests in which 10 of them had more than 2-fold rise in serum alanine transaminase and aspartate transferase, 2 (1.3%) of them had deranged renal function test, 9 (6%) had sub-clinical hypothyroidism and 11 (7.3%) had hyperthyroidism (Table 4).

Table 4: NVP with treatment modality and outcome.

Variables		N	Percent (%)
Weight parameters (Kg)	Gain≤3	89	59.7
	No change	56	37.5
	Loss ≥3	4	2.6
Duration of IV fluids (Hours)	≤24	78	52.3
	24-48	59	39.5
	>48	12	8
Induced abortion due to hyperemesis		3	2
Readmission		12	8

Patients were admitted according to their clinical condition and PUQUE scoring system (Table 3).

Nearly 4/5th of patients stayed for 2-3 days in hospital. Mean duration of hospital stay was found to be 2.95±1.86 is illustrated in Figure 1.

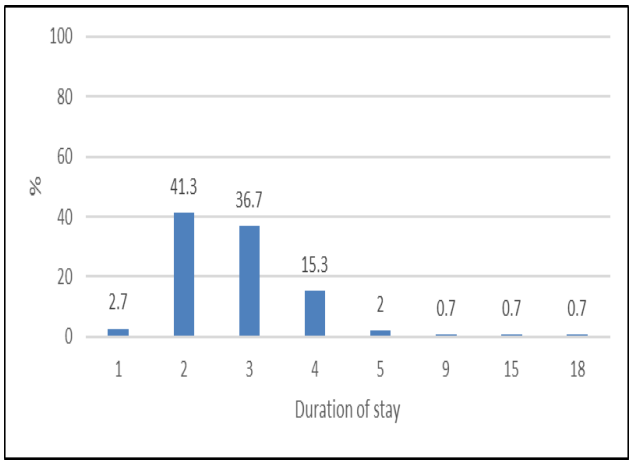

Figure 1: NVP showing duration of hospital stay.

Weeks of gestation

The incidence of the disease was maximum between 7-9 weeks of gestation. It shows a declining trend from 16 weeks onward. It shows it is more common in early pregnancy (Figure 2).

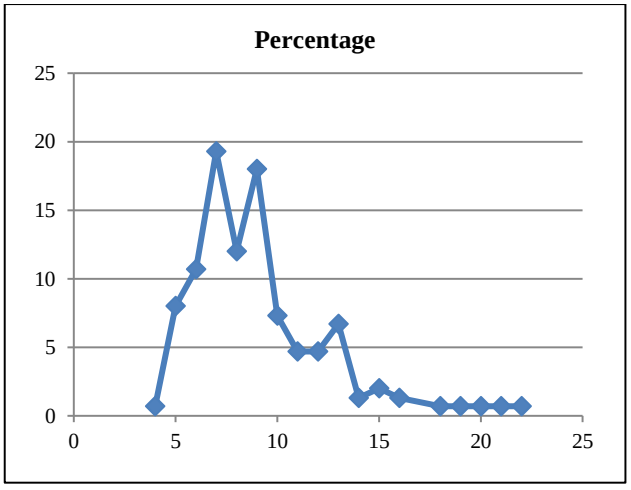

Figure 2: NVP showing incidence of event in early pregnancy.

DISCUSSION

NVP affects up to 80% of pregnant women in early pregnancy but HG which is the severe form of NVP affects approximately 0.3-3.6% of pregnancies, with potential life-threatening complications. It is the commonest indication for admission to hospital in the first half of pregnancy and is second only to preterm labour as a cause of hospitalization during pregnancy. The prevalence of NVP in our study was 21.67%, which was higher

prevalence when compared with Chhetry et al (10.64%), Fazari et al (13%).[14,15] Similar result seen with Kramer et al where the prevalence of NVP was 63.3%. [17]

Out of the 149 patients enrolled in this study, 89.3% were with maternal age less than 30 years while only 10.7% were of age more than 30 years. Similar result was seen in study of Chhetry et al with 91% of patients being <30 years in a population study of 68 women.[14] In a study including 1270 patients by Dodds et al 76.9% of patients were in age group of less than 30 years while 23.2% were of age >30 years.[18] Similar findings was seen in the study including 1301 patients by Fell et al where 76.63% were of >30 years age.[20]

In this study, 61.3% of enrolled patients were pregnant were primigravida. In a similar study done by Giri et al (61.5%) and Heitmann et al (62.8%) similar finding were observed.[4,8] In another study conducted by Chhetry et al 51% of patients were primigravida.[14] Also in study conducted by Dodds et al 48.7% of the enrolled patients with HG were primigravida which is similar as in this study.[18]

In our study, 98% women were literate, similar to findings in study done by Fejzo et al where 100% women were literate.[19]

Nausea and vomiting usually appears by 4th to 6th weeks of pregnancy and a peak is observed between 9th and 12th week and decline by 16 weeks onward. In a study done by Fejzo et al on HG the mean gestational age at hospital admission was found to be 8.6 weeks.[19] In this study also the mean period of gestation (in weeks) of the enrolled patients at the time of admission was 9.04±3.30 which is comparative. Similar result was seen in Birkeland et al where mean period of gestation was 9.7 weeks and Konilkoff et al where the mean period of gestation (in weeks) was 9.3±4.8.[1,16] In the study done by Chhetry et al the mean period of gestation was 8.93±2.33 weeks.[14] In another study done in Nepal by Giri et al the condition was seen at gestational age of 5-7 weeks in 50% of the patients which is lower in comparision to our study findings.[4]

In our study, 43 (74.3%) multigravida had history of hyperemesis in their previous pregnancy. However, in the study conducted by Chhetry et al found that previous history of HG was 16 (24%).[14] In a study done by Fell et al the risk of admission for hyperemesis was 29 times higher (95% CI 22.4-36.8) if the previous pregnancy also had an antepartum admission for hyperemesis.[20] Similarly, a study done in Norway by Feijo et al found the risk of HG in a woman's second pregnancy to be 15.2% if hyperemesis occurred in first pregnancy.[19]

In our study 52% had history of HG in mother or sisters. In a study done by Fejzo et al 28% of patients had a family history of severe nausea or hyperemesis in their mothers and 19% in their sisters.[19] In the study done by Chhetry et al 31% had family history of NVP in mother or sister.[14] This could be due to similar environmental risk factors, though none have been identified due to genetic factors.

In our study, most patients suffered from moderate disease at presentation with mean PUQE scores being 11.04±1.83 and the mean duration of hospital stay was 2.95±1.86 days similar to mean PUQE scores 12.29±1.5 in study done by Chhetry et al and mean hospital stay in their study was 3.2±1.48.[14] In another study, done by Birkeland et al mean PUQE scores at the time of presentation was 13, which is comparable to our study.[1] In study done by Giri et al the mean hospital stay was 2.26 days and the range being 1-10 days.[4] The mean number of hospital stay in the study done by Konikoff et al was 2.24±2.2. [16] In a large cohort study done on elective termination of pregnancy done by Poursharif et al 123 women (15.2%) reported at least one elective termination of pregnancy due to HG.[21] In our study, three women (2 %) opted for pregnancy termination due to persistent symptoms of HG despite of our optimal treatment as per our hospital protocol.

The sample size of the study was only 149. Sample size should have large to know much about the characteristic and risk factor of the study population. Hyper salivation, a frequent and disturbing symptom of HG falsely explained as nausea/vomiting by patients use to assess the severity of NVP. Patient's status and reliability of history during admission could have helpful in categorization of scoring system and management differs accordingly.

CONCLUSION

Based upon the findings of the study, women fulfilling the criteria of severe NVP should only be admitted in ward, milder and moderate form of NVP would have treated on OPD basis and day care basis. That could have lessened the unnecessary financial burden to the patient and decrease the duration of hospital stay which should be based on condition of patient. Treatment of dehydration status, antiemetic and multivitamins supplementation (especially Thiamine and folic acid) had favourable outcome with early recovery.

ACKNOWLEDGEMENTS

Author would like to express my deepest appreciation to all my colleagues, juniors and my teachers, and Meena Thapa mam for supporting and guiding me in my research.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Birkeland E, Stokke G, Tangvik RJ, Torkildsen EA, Boateng J, Wollen AL et al. Norwegian PUQE (Pregnancy-Unique Quantification of Emesis and nausea) identifies patients with hyperemesis

gravidarum and poor nutritional intake: a prospective cohort validation study. PloS One. 2015;10(4).
2. Lee NM, Saha S. Nausea and vomiting of pregnancy. Gastroenterol clin N. 2011;40(2):309-34.
3. Castillo MJ, Phillippi JC. Hyperemesis gravidarum: a holistic overview and approach to clinical assessment and management. J Perinat Neonat Nur. 2015;29(1):12-22.
4. Giri A, Tuladhar AS, Tuladhar H. Hyperemesis gravidarum and obstetric outcome. Nepal J Obstet Gynecol. 2012;6(2):24-6.
5. Colvin L, Gill A, Slack-Smith L, Stanley F, Bower C. Off-Label Use of Ondansetron in Pregnancy in Western Australia. Biomed Res Int. 2013;2013:1-8.
6. Ebrahimi N, Maltepe C, Bournissen F, Koren G. Nausea and Vomiting of Pregnancy: Using the 24-hour Pregnancy-Unique Quantification of Emesis (PUQE-24) Scale. J Obstet Gynaecol Can. 2009;31(9):803-7.
7. Maina A, Todros T. A novel approach to hyperemesis gravidarum: evaluation by a visual analogue scale score and treatment with transdermal clonidine. Obstet Med. 2011;4(4):156-9.
8. Heitmann K, Nordeng H, Havnen GC, Solheimsnes A, Holst L. The burden of nausea and vomiting during pregnancy: severe impacts on quality of life, daily life functioning and willingness to become pregnant again–results from a cross-sectional study. BMC Pregnancy Childbirth. 2017;17(1):75-87.
9. Lacasse A, Rey E, Ferreira E, Morin C, Berard A. Nausea and vomiting of pregnancy: what about quality of life? BJOG. 2008;115(12):1484-93.
10. Munch S, Korst LM, Hernandez GD, Romero R, Goodwin TM. Health-related quality of life in women with nausea and vomiting of pregnancy: the importance of psychosocial context. J Perinatol. 2011;31(1):10-20.
11. Ebrahimi N, Maltepe C, Einarson A. Optimal management of nausea and vomiting of pregnancy. Int J Women Health. 2010;2:241-8.
12. Madjunkova S, Maltepe C, Koren G. The delayed-release combination of doxylamine and pyridoxine (Diclegis®/Diclectin®) for the treatment of nausea and vomiting of pregnancy. Pediatric Drugs. 2014;16(3):199-211.
13. Niebyl JR. Nausea and vomiting in pregnancy. N Engl J Med. 2010;363(16):1544-50.
14. Chhetry M, Thakur A, Uprety DK, Basnet P, Joshi R. Hyperemesis Gravidarum in a Tertiary Care Centre in Eastern Nepal: A Prospective Observational Study. J Ayub Med Coll. 2016;28(1):18-21.
15. Fazari AB, Ahmed HZ, Eltayeb R, Ali MH, Elmusharaf K. Management and outcome of hyperemesis gravidarum at tertiary obstetric facility, Khartoum-Sudan. J Obstet Gynecol. 2016;6(11):630-6.
16. Konikoff T, Avraham T, Ophir E, Bornstein J. Hyperemesis gravidarum in northern Israel: a retrospective epidemiological study. Isr J Health Policy Res. 2016;5(1):39.
17. Kramer J, Bowen A, Stewart N, Muhajarine N. Nausea and vomiting of pregnancy: prevalence, severity and relation to psychosocial health. Am J Matern Chil. 2013;38(1):21-7.
18. Dodds L, Fell DB, Joseph KS, Allen VM, Butler B. Outcomes of pregnancies complicated by hyperemesis gravidarum. Obstet Gynecol. 2006;107(2):285-92.
19. Fejzo MS, Ingles SA, Wilson M, Wang W, MacGibbon K, Romero R et al. High prevalence of severe nausea and vomiting of pregnancy and hyperemesis gravidarum among relatives of affected individuals. Eur J Obstet Gynecol Reprod Biol. 2008;141(1):13-7.
20. Fell DB, Dodds L, Joseph KS, Allen VM, Butler B. Risk factors for hyperemesis gravidarum requiring hospital admission during pregnancy. Obstet Gynecol. 2006;107(2):277-84.
21. Poursharif B, Korst LM, MacGibbon KW, Fejzo MS, Romero R, Goodwin TM. Elective pregnancy termination in a large cohort of women with hyperemesis gravidarum. Contraception. 2007;76(6):451-5.

Cite this article as: Jha SK, Shrivastava VR. Prevalence of hyperemesis gravidarum using the 24-hour pregnancy unique quantification of emesis scale scoring-a descriptive study. Int J Reprod Contracept Obstet Gynecol 2023;12:528-32.