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Severity of Hyperemesis Gravidarum and Associated Maternal factors

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ABSTRACT

Background: Hyperemesis gravidarum is the most severe form of nausea and vomiting in pregnancy. It is one of the most common cause of early pregnancy admissions and associated with various maternal risk factors. Very few studies have been conducted among Nepalese women with hyperemesis gravidarum. This study aims to identify various maternal risk factors among Nepalese women and its severity using pregnancy unique quantification of emesis scoring.

Methods: This is a cross sectional observational study conducted at Paropakar Maternity and Women's Hospital. Total duration of the study period was for one year from February 2018 to January 2019. A total of 144 patients meeting the inclusion criteria were included in the study. The severity of the hyperemesis gravidarum was assessed and classified using pregnancy unique quantification of emesis scoring. Various maternal demographic, obstetric and personal factors were studied in relation to the incidence and severity of hyperemesis gravidarum.

Results: Moderate (49.30%) to severe (50.69%) hyperemesis gravidarum were admitted in the hospital. Most women were nulliparous from 20-24 years age group. Among all categories of BMI, underweight had more severe hyperemesis gravidarum (63.63%) and overweight patient had increased incidence of moderate hyperemesis gravidarum (66.66%). Women with previous dysmenorrhea had severe hyperemesis gravidarum (54.05%) and non-smoker had severe hyperemesis gravidarum (52.03%) while smoker had moderate hyperemesis gravidarum (57.14%).

Conclusions: Pregnant women of age group of 20-24 years, nulliparity and underweight were associated with severe hyperemesis gravidarum.

Keywords: Hyperemesis gravidarum; maternal factors; pregnancy unique quantification of emesis.

INTRODUCTION

Hyperemesis gravidarum (HG) is defined as persistent and excessive vomiting starting before the end of the 22nd week of gestation and further subdivides the condition into mild and severe with severe being associated with metabolic disturbances such as carbohydrate depletion, dehydration or electrolyte imbalance.¹ Hyperemesis is the most common cause of admission to hospital in early pregnancy.² The severity of hyperemesis gravidarum can be assessed using pregnancy unique quantification of emesis and nausea (PUQE) scoring index.³ PUQE is a scoring system to quantify the severity of nausea and vomiting of pregnancy (NVP).⁴ Multiple studies have identified various risk factors associated with HG, i.e., non-modifiable risk factors like age, parity and modifiable risk factors like BMI, smoking status, occupation.^{5,6} This study is designed to study the severity and various maternal risk factors associated with HG.

METHODS

This cross-sectional study was carried out at Paropakar Maternity and Women's Hospital (PMWH), Thapathali, Kathmandu, between February 2018 to January 2019. Sample size was calculated based on the incidence of HG at PMWH. Data collection was started after obtaining an approval from the Institutional Review Board of NAMS. Diagnosis of HG was made by inability to hold food, presence of ketonuria, electrolyte imbalances or weight loss >2.25 kgs (if weight documented). All the pregnant ladies up to 22 WOG presenting in ER or OPD with HG meeting the inclusion criteria were enrolled in the study. Exclusion criteria were patient with renal failure, liver failure, diabetic ketoacidosis, migraine, labyrinthitis and Meniere's disease, cholecystitis, pancreatitis, hepatitis, pre-existing eating disorder, depression, molar and multiple pregnancy were excluded. A verbal along with a written informed consent was obtained from all participants. Period of gestation was calculated

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from last menstrual period or first trimester ultrasound whichever available. Patients weremanaged as per routine standardprotocol which included keeping patient nil per oral (NPO) for first 24 hours , administrating anti-emetic 8 hourly, H2 receptors antagonist ranitidine IV 8 hourly, thiamine, folic acid and intravenous hydration therapy.A structured interviewing sheet was designed to document age, parity, dysmenorrhea, smoking statusand body mass index(BMI). PUQE scoring questionnaire was used to assess the severity of the HG.Data entry and analysis was made with a help of the computer using Excel/SPSS software program and was depicted in tables as means and percentages.

Pregnancy Unique Quantification of Emesis (PUQE) scoring Questionnaire.

1. On an average day, for how long do you feelnauseated or sick to your stomach?

>6 hrs. (5 pts.)	4-6 hrs. (4 pts.)	2-3 hrs. (3 pts.)	≤ 1hrs (2 pts.)	Not at all (1 pts.)
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2. On an average day how many times do you vomit or throw up ?

7 or more (5 pts.)	5-6 (4 pts.)	3-4 (3 pts.)	1-2 (2 pts.)	None (1 pts.)
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3. On an average day how many times do you have retching or dry heaves without bringing anything up?

7 or more (5 pts.)	5-6 (4pts.)	3-4 (3 pts.)	1-2 (2 pts.)	None (1 pts.)
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Total score is sum of replies to each of the three questions. Nausea Score: Mild NVP = ≤6; Moderate NVP = 7-12; Severe NVP = ≥13.

RESULTS

Out of 144 participants, most of the patient had moderate to severe HG at time of admission (Table 1).

Table 1. PUQE scoring.

PUQE scoring	N	Percentage
Mild(<6)	0	0
Moderate(7-12)	71	49.30
Severe(>13)	73	50.69
Total	144	100

Among 20-24 year age group, highest incidence of moderate HG 34(46.57 %) and 39(53.42 %) severe cases were observed. However there were only24 cases in age group below 19 years and 13 cases in age group 30-34 (Table 2).

Table 2. Distribution of severity of HG among various maternal age group.

Age	Severity				Total
	Moderate		Severe		
	N	%	N	%	
<19	12	50	12	50	24
20-24	34	46.57	39	53.42	73
25-29	20	58.82	14	41.17	34
30-34	5	38.46	8	61.53	13
Total					144

Incidence of HG seems to decrease as parity increases. Among nulliparous patient incidence of moderate HG was 33(56.89%)and severe HG was25(43.10%)(Table-3).0

Table 3. Distribution of severity of HG among Parity.

Parity	Severity				Total
	Moderate		Severe		
	N	%	N	%	
P0	33	56.89	25	43.10	58
P1	24	46.15	28	53.84	52
>P2	14	41.11	20	58.82	34
					144

Among all categories of BMI, underweight and overweight patient had increased incidence of severe HG compared to moderate (Table 4).

Table 4. Distribution of severity of HG among Body Mass Index.

BMI	Severity				Total
	Moderate		Severe		
	N	%	N	%	
Underweight(<18.5)	4	36.63	7	63.63	11
Normal weight(18.5-24.99)	53	51.96	49	48.03	102
Overweight(25-29.99)	12	42.85	16	57.14	28
Obese(>30)	2	66.66	1	33.33	3
					144

Patient with dysmenorrhea had more severe HG group than moderate HG group(Table 5).

Table 5. Distribution of severity of HG among Dysmenorrhoea.

Dysmenorrhoea	Severity				Total
	Moderate		Severe		
	N	%	N	%	
Present	51	45.94	60	54.05	111
Absent	20	60.60	13	39.39	33
					144

Non smokers had more severe HG while smokers had more moderate HG (Table-6).

Table 6. Distribution of severity of HG among various Maternal Smoking status.

Smoking status	Severity				Total
	Moderate		Severe		
	N	%	N	%	
Non-smoker	59	47.96	64	52.03	123
Smoker	12	57.14	9	42.85	21
					144

DISCUSSION

In this study, severity of the HG was assessed by using PUQE score. Most of the cases were moderate to severe. 71(49.30%) were moderate cases where as 73(50.69%) were severe cases. No cases were admitted with mild HG probably mild nausea and vomiting wouldn't have hampered the day to day activities leading to the hospital admission. Mean PUQE value was 13.66. This finding is consistent with that of Chhetry M et al⁵ where they also observed most case were admitted with moderate to severe HG using PUQE scoring.

Among admitted cases of HG very few cases were below 19 years of age. This observation could be due to multiple reasons. Various health education programs conducted by government could have raised the awareness level or the catchment area of this hospital is of urban region so most of the teen age pregnancy present in the periphery could be missed. There were no cases of HG above 35 years. Thus the mean age was 24.43 years. This observational finding are similar to that observed by Chhetry et al,⁵ Ghadah et al,⁷ and Chou et al.⁸ But some other studies done by Bashiri et al,⁹ Bailiti et al,¹⁰ Power et al,¹¹ Roseboom et al,¹² Choi et al,¹³ Numri et al,¹⁴ and Matsuo et al¹⁵ observed that mean maternal age was higher than observed in this study. Their study had mean age of around 27-29 years, while Lee et al¹⁶ had observed more younger women with HG. Due to variable findings regarding maternal age and HG, Fan et al¹⁷ conducted a systemic review which concluded that maternal age is not consistently associated with an increased or decreased likelihood of developing HG.

In this study, it was observed that the overall incidence of HG has decreased with increasing parity with highest in nulliparous women(40.02%) with least in parity three (0.69%). This observation was similar to that of Chhetry M et al,⁵ Giri et al,⁶ Ghadah et al,⁷ Chou et al,⁸ Bashiri et al,⁹ Bailit et al,¹⁰ Power et al,¹¹ Roseboom et al,¹² Choi et al,¹³ Numri et al,¹⁴ Matsuo et al,¹⁵ Lee et al,¹⁶ kosu

A et al,¹⁸ and Dodds et al.¹⁹ Thus it can be concluded that increasing parity decreases the incidence of HG. But regarding the severity of HG data suggested that severity has increased with increasing parity. Nulliparous had 56.89 % moderate HG and 43.10 % severe HG while para two had 38.70 % moderate and 61.29 % severe HG

In this study 70.83 % had normal BMI of while 7.63 % were underweight and 19.44% were overweight. This finding corresponds with that of Numri et al¹⁴ where most of the cases belonged to normal BMI while Viakanes et al² observed that underweight and overweight cases were more than normal BMI. Since the study population of these studies are different, there are no uniformities in the BMI and incidence of HG.

In this study, 77.08 % women had dysmenorrhoea during their menses previously while remaining 22.91 % did not have any. Thus, dysmenorrhoea could be one risk factor for the development of HG. This observation was in accordance with that found by Enakpene et al.³

In this study 84.72 % were non smoker while 14.58 % were smokers. This was also observed in various studies done before regarding smoking and HG in Viakanes et al² and Choi et al.¹³ These studies showed that smoking was protective for development of HG. Smoking is not socially accepted in our society. Thus, some women might have concealed their smoking habit.

CONCLUSIONS

Majority of admissions are of moderate to severe cases of HG. Maternal age showed inconclusive results regarding incidence and severity. Both incidence and severity of the HG decreased with increasing parity. It was observed that both underweight and overweight patient had more severe HG. Women with dysmenorrhoea had more HG and severity of HG. Smokers had less severe form of HG than non smokers.

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