

Hyperemesis gravidarum is associated with increased rates of termination of pregnancy and suicidal ideation: results from a survey completed by >5000 participants

Authors

Melanie NANA, MBBCh (MRCP UK), London, United Kingdom, Department of Obstetric Medicine, Guy's and St Thomas' NHS Foundation Trust

Westminster Bridge Road, Bishop's, London, SE1 7EH

Florence TYDEMAN, Bachelor of Science, Glasgow, United Kingdom, Department of Mathematics and Statistics, University of Strathclyde

16 Richmond Street, Glasgow, G1 1XQ

Georgie BEVAN, Cambridge, United Kingdom, Senior Journalist, British Broadcasting Corporation; Mrs BBC East, Broadcasting House, Cambridge Business Park, Cambridge, CB4 0WZ

Harriet BOULDING, Doctor of Philosophy, London, United Kingdom, The Policy Institute, King's College London
The Policy Institute, King's College London, Virginia Woolf Building, 22 Kingsway, WC2B 6LE

Kimberley KAVANAGH, Doctor of Philosophy, Glasgow, United Kingdom, Department of Mathematics and Statistics, University of Strathclyde

16 Richmond Street, Glasgow, G1 1XQ

Caitlin DEAN, Master of Sciences in Clinical Research, Cornwall, United Kingdom, Charity Chairperson, Pregnancy Sickness Support

Pregnancy Sickness Support, 19G Normandy Way, Bodmin, Cornwall, PL31 1RB

Catherine WILLIAMSON, Professor of Women's Health, London, United Kingdom, Department of Life Course Sciences, King's College London

School of Life Course Sciences, Guy's site, King's College London, London, SE1 1UL

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Correspondence to:

C Williamson

School of Life Course Sciences, Guy's site, King's College London, London, SE1 1UL

+44 (0) 2078486350

catherine.williamson@kcl.ac.uk

or C Dean

Pregnancy Sickness Support, 19G Normandy Way, Bodmin, Cornwall, PL31 1RB

+44 (0) 7932082024

caitlin@pregnancysicknesssupport.org.uk

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Objective: Hyperemesis gravidarum (HG) has a detrimental effect on physical and mental health. Termination of pregnancy (TOP) is reported in approximately 10% (1) and qualitative research studies report an association with suicidal ideation (2). We aimed to determine the consequences of HG on TOP and suicidal ideation, with particular reference to disease severity, functional status and perception of care.

Study Design: This national cross-sectional study utilised a 14-item anonymous online survey distributed across the United Kingdom (UK), incorporating demographic details, self-reported disease severity, consequence on functional status, mental health, and details of the care experience. It was piloted by a patient advisory panel with feedback incorporated and distributed via a UK registered HG charity. Analysis utilised chi-squared or fisher's exact tests to evaluate relationships between outcomes. Odds ratios with 95% confidence intervals were calculated for binary outcomes using univariate logistic regression models. These data included missing responses and "Don't Know"/ "Not Applicable" responses which were handled using pairwise deletion. This is an all-available case analysis. All analyses were conducted using RStudio version 3.6.1.

Results: 5016 participants from 14 UK regions completed the survey. 74.1% (3715/5016) self-reported a diagnosis of HG, a further 8.8% (441/5016) experienced nausea and/or vomiting at least 20 times/day. 4.9% (249/4994) of participants terminated a pregnancy and 52.1% (2601/4994) considered termination due to HG. 25.5% (1264/4964) reported occasional suicidal ideation and 6.6% (331/4964) reported regular suicidal ideation due to severe sickness. TOP and suicidal ideation were associated with severity of sickness ($p < 0.001$), poor functional status ($p < 0.001$) and perception of quality of care both in primary (community family healthcare providers) and secondary (hospital) care ($p < 0.001$ and $p < 0.001$ respectively) (Table 1). Those reporting extremely poor perception of both primary and secondary care were less likely to have been offered medication compared to those reporting excellent care (OR 23.99, 95% CI 17.79 – 32.74 and OR 7.39, 95% CI 5.65 – 9.76).

Conclusion: This study has limitations that may limit its broader implication, e.g. online data collected from self-selected participants likely introduces bias and certain population groups may be underrepresented. Nonetheless, the data reflect lived experiences of women responding to the survey, and can be used to positively impact care and improve outcomes in HG. Some women in the pregnancy termination and/or

suicidal ideation groups were under-prescribed antiemetics. Practical solutions that can be integrated into clinical practice include ensuring clinicians are aware of safe and effective treatments for HG, and signposting those less familiar with treatments to reliable guidance (3, 4).

The observation that participants' perception of care was lower in the TOP and suicidal ideation groups highlights likely shortcomings in how practitioners screen and manage mental health problems. This is important as suicide is the second most common cause of direct maternal death in the UK (5). Practice standards should be improved by embedding mental health screening into clinical consultations with vigilance paid to 'red flag' features. Early mental health team involvement may improve quality of life and reduce maternal/fetal morbidity and mortality (3).

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Table 1: Features of patients' pregnancy/management and relationship to suicidal ideation and termination of pregnancy

	Suicidal Ideation				Termination of Pregnancy			
	Never % (number)	Occasional % (number)	Regular % (number)	Chi-Squared p-value	Confirmed % (number)	Considered % (number)	Never Considered % (number)	Chi-Squared p-value
Perceived Experience in Primary Care								
Excellent	74% (405)	20% (111)	6% (32)	p < 0.001	2% (13)	48% (265)	49% (270)	p < 0.001
Good	72% (760)	23% (249)	5% (53)		3% (31)	52% (553)	45% (485)	
Satisfactory	72% (891)	23% (283)	5% (59)		3% (43)	51% (639)	45% (561)	
Poor	65% (734)	29% (324)	7% (77)		6% (68)	55% (623)	40% (452)	
Extremely poor	55% (398)	33% (236)	12% (89)		10% (75)	58% (421)	31% (225)	
Perceived Experience in Secondary Care								
Excellent	74% (572)	20% (152)	6% (49)	p < 0.001	3% (24)	51% (396)	46% (356)	p < 0.001
Good	71% (840)	24% (281)	5% (62)		3% (37)	53% (628)	44% (520)	
Satisfactory	65% (694)	29% (313)	6% (66)		5% (49)	54% (586)	42% (453)	
Poor	62% (545)	30% (258)	8% (71)		8% (66)	55% (485)	37% (324)	
Extremely poor	54% (232)	33% (143)	13% (56)		12% (51)	57% (250)	31% (134)	
Impact on Functional Status								
Able to function most of the time	93% (164)	7% (12)	0% (0)	p < 0.001	0% (0)	10% (19)	90% (164)	p < 0.001
Able to function some of the time/needed extra support	81% (1156)	17% (244)	2% (23)		2% (26)	38% (542)	60% (861)	
	61% (2045)	30% (1006)	9% (308)		7% (223)	60% (2039)	33% (1115)	

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Bedridden most of the time/needed daily support			
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