

Psychosocial Effects of Hyperemesis Gravidarum: A Systematic Literature Review

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Abstract

Objective: Hyperemesis gravidarum (HG) is a severe form of nausea and vomiting during pregnancy that can have significant physical consequences for the pregnant individual. However, studying affected patients often reveals an additional dimension of impact—specifically, the psychosocial effects on their quality of life.

Materials and methods: This literature review was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Relevant articles were identified through a systematic search across three major databases on May 18, 2024: Google Scholar, Cochrane, and PubMed.

Results: 19 full-text articles met inclusion criteria. Across all studies, HG was consistently associated with poorer psychiatric health, strained social relationships, and broader psychosocial burdens.

Conclusion: This particular review highlights the importance of appropriately taking a psychosocial history with patients at obstetric appointments. In addition, it encourages the practicing physician to delve further into the psychosocial health of each of their patients during these visits. Lastly, this review provides definitive evidence from a number of sources that these patients are truly suffering and calls to action investigation into new treatments and treatment methodologies to provide benefits for these needy patients.

Keywords: Hyperemesis Gravidarum; Nausea and Vomiting; Pregnancy; Patient Centered Outcomes

Introduction

Hyperemesis Gravidarum (HG) is defined as severe nausea and vomiting of pregnancy (NVP). For the purpose of this review, both HG and severe NVP will be used interchangeably. While most women experience some degree of NVP, HG is a more

extreme condition that can result in hospitalization and serious psychosocial complications, such as depression and trauma. While the cause of HG is not fully known, it is thought to be multifactorial, influenced by psychiatry, hormones, and genetics. HG is commonly dismissed as morning sickness, however, not seeking treatment can be life threatening and can lead to malnutrition, dehydration, and psychological issues.

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HG as an extreme form of NVP occurs in about 0.3-3% of pregnancies and is the most common cause of hospitalization in the first half of pregnancy, and is second to preterm labor for pregnancy-related hospital admissions overall (1). HG can cause several comorbidities such as nutrient and vitamin deficiencies to the point of starvation, neurological symptoms such as Wernicke's encephalopathy caused by vitamin B1 deficiency, neonatal hemorrhage caused by vitamin K deficiency, as well as psychological and psychosocial impacts (1). However, diagnosing HG before it gets to this point can be difficult in some situations as there is no clear criteria at which a case of NVP becomes HG. Although 70% of pregnant women can experience nausea during pregnancy, very few reach the point of HG where dehydration and weight loss become issues (2).

The most common symptoms of HG are severe nausea, vomiting, and dehydration, which cause constipation, poor appetite, and reduced oral intake (2, 3). Treatment of these symptoms is focused on rehydration and antiemetics, but emotional support is also important for patients with HG (2). Emotional support is crucial because many patients experience trivialization of their symptoms from friends and family, thinking it is only morning sickness which exacerbates mental health comorbidities (2). If not treated properly, HG can cause both severe physical and emotional distress in pregnant individuals.

The cause of HG is still to be studied but it is believed to be multifactorial. Psychiatry, hormones, as well as genetics are all suspected to play a part in the pathogenesis of HG (1). It was once thought that depression was a cause of HG because there were studies that found an association between lifelong depression and HG. This is not thought to be a cause anymore however, because despite the association, most people with depression do not develop HG in pregnancy and the majority of people with HG do not have a history of depression (1). The increase of human chorionic gonadotropin, estrogen, and progesterone are all thought to increase the prevalence of HG but none of these hormones have proven to have a strong enough correlation with the condition to be the definite cause (1). Although associations between HG and psychiatric history or hormonal changes remain weak, maternal genetics show a strong link. Women with a family history are significantly more likely to develop HG, with those whose sisters required nasogastric feeding or parenteral nutrition facing a 25% risk, far higher than

the 0.3-3% risk in the general population (1).

While the physical aspects of HG are debilitating, the psychosocial impacts can be even more severe. Over 82% of women with HG experience psychosocial or economic consequences (4). Regarding the psychosocial adverse outcomes, the frequent and severe episodes of vomiting can cause trauma, defined in this case as feelings of suffocation that may cause fainting, fear of death, and helplessness (4). This leads to about 20% of women with HG developing posttraumatic stress disorder (4). Women with HG are also more likely to terminate pregnancies, with 15% of women with HG undergoing at least one termination and another 12% who considered termination because of HG (1). Not only are they more likely to terminate current pregnancies, but 76% of women who have had HG in the past choose to get pregnant less or not at all (4). In turn, it stands to reason that the termination and decrease of pregnancies, especially if these pregnancies were wanted prior to the emergence of HG, may cause stress in marital and romantic relationships, though the current literature does not appear to have examined this potential additional adverse outcome.

The negative psychosocial and economic outcomes of HG are not limited to the disease and its natural course either, but rather, additional negative outcomes can occur as a result of the management and treatment of the condition. Treatment during pregnancy may require multiple hospital visits to make sure the mother does not suffer from malnutrition and associated conditions, visits which can lead to significant costs incurred by the mother and/or family (5). Babies born from mothers with HG are also more likely to spend time in the neonatal intensive care unit (NICU) due to low birth weight, adding significant costs for hospitalization (5). Along with extra costs from medical care for both mother and child, it stands to reason that the condition of HG would make it significantly more difficult for those with the condition to work, limiting their ability to pay for these extra costs. These adverse psychosocial and financial outcomes -- stemming from medical bills and the mother's inability to work during pregnancy -- exacerbate the overall stress, compounding the physical and emotional toll of HG (4).

Despite the severity of HG, its symptoms are commonly minimized, resulting in a reduced rate of treatment seeking among affected individuals (4). This is an issue because when HG is left untreated, it can lead to life threatening complications such as

malnutrition, dehydration, sepsis resulting from organ rupture, and even suicide due to psychological distress from the condition (4). Given the significant physical and physiological burden of HG, as well as the common dismissal of its symptoms, it can be concluded that women affected with HG are at an increased risk for severe psychosocial issues such as depression, economic challenges, marital problems, and traumatic stress symptoms.

Materials and methods

This literature review was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines as defined by Moher et al. (6) on September 07, 2022, adhering to the specific guidelines utilized by Tremmel et al. (7) in their systematic literature review on obesity.

Relevant articles were identified through a systematic search across three major databases on May 18, 2024: Google Scholar, Cochrane, and PubMed. To ensure the reproducibility and transparency of data collection, the search parameters are detailed as follows.

Google Scholar: Results published from inception to May 18, 2024. Search terms were “Hyperemesis Gravidarum” AND “Psychosocial Effects”; or “Hyperemesis Gravidarum” AND “Psychosocial Outcomes.”

Cochrane: Results published from inception to May 18, 2024. Search terms were “Hyperemesis Gravidarum” AND “Psychosocial Effects”; or “Hyperemesis Gravidarum” AND “Psychosocial Outcomes.”

PubMed: Results published from inception to May 18, 2024. Search terms were “Hyperemesis Gravidarum” AND “Psychosocial Effects”; or “Hyperemesis Gravidarum” AND “Psychosocial Outcomes.”

Inclusion and Exclusion Criteria

To be included in this review, articles were assessed using the following criteria: (1) studies were assessing HG explicitly OR severe NVP as determined via full-text screen; (2) studies were clearly looking at psychosocial aspects of HG/NVP; (3) full-text copies of the studies were available via open-access or through library access via an affiliated organization; (4) research was found from an English-language peer-reviewed journal; (5) studies were written and published on or before May 18, 2024; (6) studies were in the format of a clinical trial, clinical study, case report, or other similar format.

Exclusion criteria included: (1) Studies that did not look at HG or NVP; (2) studies that analyzed HG and/or NVP but did not focus on psychosocial outcomes; (3) studies that only reviewed non-severe NVP, focusing on cases that reasonably could not be considered HG(4) articles that did not meet the formatting requirements and were published in a non-accepted format such as conference abstracts, letters to the editor, systematic/scoping/other review-type articles, books/book chapters, dissertations/theses, etc.; (5) articles not available in the English language.

Selection and Data Extraction

Initial screening involved two authors (A.V. and J.L.) independently forming lists of appropriate articles initially by removing duplicate articles and then comparing lists of remaining results. Next, a screening of the article abstracts was performed by both A.V. & J.L., and inclusion/exclusion decisions were made based on previously mentioned criteria, followed by a comparison of lists of remaining results. Both authors then did a full-text read of the remaining articles to narrow down to the final 19 articles. When discrepancies arose, the authors would discuss and involve a third author (T.C.V.) if a consensus could still not be reached.

Results

This was done until a single, agreed-upon list was developed into an Excel spreadsheet, with results visible in Table 1. Please find the PRISMA Flow chart below (8) labelled as Figure 1.

Discussion

In reviewing current literature, it was found that pregnant women who experience HG or severe NVP often experience negative psychosocial impacts. One of the most common adverse outcomes was that of depression, where it was common that women with HG self-reported feeling depressed, had high depression scores, as scored by the Edinburgh Postnatal Depression Scale (11, 13, 17, 20), or experienced greater postpartum depression than normal (10-13, 17, 18, 20, 22, 24). It was also common for these women to experience anxiety and psychological trauma during their pregnancy, some even experiencing PTSD symptoms either during the pregnancy or after (12, 15-17, 22, 23).

Not only were emotional distress symptoms common, but many women also experienced changes in attitude towards their families.

Table 1: Summary of Included Articles

Authors and Year	Name of Paper	Study Population	Results	Significant Conclusions	Study Limitations
E Caporaso, D Oliver, M Rusher. 2020 (9)	A Pregnant Woman with Hyperemesis Gravidarum Admitted to the Psychiatric Ward	1 with HG	Patient was diagnosed with “adjustment disorder with depressed mood” due to HG.	This case study found that the patient’s depression and suicidal tendencies improved after treatment of HG.	A case study of only one woman. No control and is not inclusive of all races, ages, and socioeconomic statuses experiencing HG.
Tian R, MacGibbon K, Martin B, Mullin P, Fejzo M. 2017 (10)	Analysis of pre- and post-pregnancy issues in women with hyperemesis gravidarum	449 with HG 459 unaffected	Post-pregnancy, women with HG reported more physical and psychosocial issues, including work absenteeism and negative mental health experiences.	Potential link between pre-existing conditions and the severity of HG, highlighting the need for further research into managing these conditions to possibly mitigate HG’s impact.	Subjects were predominantly white (88% for HG and 92% for control).
N Mitchell-Jones, K Lawson, S Bobdiwala, JA Farren 2020 (11)	Association between hyperemesis gravidarum and psychological symptoms, psychosocial outcomes and infant bonding: a two-point prospective case ...	106 with HG 108 unaffected	The HG group had higher depression scores. HG severity and symptom duration did not significantly affect EPDS scores or maternal-infant bonding.	Women with HG had higher depression levels as well as more socioeconomic burden due to more time off work during pregnancy than the control group.	Did not mention race or socioeconomic status.
K Nijsten, LM van der Minnen, C Dean 2022 (12)	Depression, anxiety, and post-traumatic stress disorder symptoms after hyperemesis gravidarum: a prospective cohort study	215 with HG 54/215 completed the HADS 73/215 completed follow-up questionnaire	Anxiety, depression, and PTSD symptoms are common in women who have been admitted for HG.	More severe cases of HG are at a greater risk for developing PTSD.	Small study and biased due to mainly severe cases completing the follow up questionnaire.
G Yang, A Hisada, M Yamamoto, A Kawanami 2023 (13)	Effect of nausea and vomiting during pregnancy on mother-to-infant bonding and the mediation effect of postpartum depression: the Japan Environment and ...	88,424 infants 87,658 mothers	NVP had a direct positive effect on mother to infant bonding but an indirect negative effect via postpartum depression.	While NVP/HG does not negatively impact mother to infant bonding, it increases the risk of postpartum depression which does negatively impact mother to infant bonding.	Done using hospital records in Japan. Most participants were likely Japanese.
Mazzotta P, Stewart DE, Koren G, Magee LA. 2001 (14)	Factors associated with elective termination of pregnancy among Canadian and American women with nausea and vomiting of pregnancy	3,201 with HG	Out of 3,201 pregnancies reported to the NVP Healthline, 108 (3.4%) involved termination due to NVP, 413 (12.9%) considered termination, and 2,609 (81.5%) did not consider termination.	Severe NVP was found to be a factor that contributed to termination of a pregnancy but many terminations were young women or unplanned pregnancies, making the decision multifactorial.	The study was done via a radio show by women calling in. This opens up the data to bias of listeners to the radio and women who are willing to talk about their experiences with NVP and possible termination of pregnancy.

Table 1: Summary of Included Articles (continue)

Authors and Year	Name of Paper	Study Population	Results	Significant Conclusions	Study Limitations
H Yuniastutiningsih, DL Nafi'ati. 2021 (15)	Obstetric And Psychological Care For Pregnant Woman With Hyperemesis Gravidarum With Moderate Anxiety	1 with HG	A mother who had previously experienced HG avoided pregnancy through abstinence for 8 years. Another unplanned pregnancy caused moderate anxiety.	A second pregnancy after the woman had experienced HG once caused more emotional distress (anxiety) than physical as she appeared mostly healthy.	A case study on only one woman. Only measured anxiety, not other psychosocial effects.
J Christodoulou-Smith, JI Gold, R Romero 2011 (16)	Posttraumatic stress symptoms following pregnancy complicated by hyperemesis gravidarum	377 with HG 233 unaffected	18% of the HG group fully qualified as having post-traumatic stress symptoms. Psychosocial, physical, and emotional wellbeing was significantly worse for the HG group than the control.	Study highlighted frequency of post traumatic stress as well as economic issues caused by HG, divorce, marital issues, and psychiatric problems. All were found to be issues in women with HG.	The study population was 92% Caucasian women and 96% were American.
A Elgathafi, F Elharary, M Al Shawbaki 2023 (17)	Prevalence & Risk Factors of Anxiety and Depression among Cases of Hyperemesis Gravidarum	89 with HG	Anxiety was present in 76.4% of HG cases. Depression was found in 82% of cases. 71.9% had both.	Higher than normal rates of both depression and anxiety were found in HG patients. Pregnancy planning was found to help with preventing anxiety.	90% of the study population was Libyan.
Mazzotta P, Stewart D, Atanackovic G, Koren G, Magee LA. 2000 (18)	Psychosocial morbidity among women with nausea and vomiting of pregnancy: prevalence and association with anti-emetic therapy	3,201 with HG	Feelings of depression, considering termination, fear, and marital issues were all more common in women with HG than the population.	Any level of NVP was found to have negative impacts on psychosocial factors.	Retrospective reporting. Recruitment based on call-ins. Did not use the official depression scale.
RGA El-Skaan, RM Abdelrahman 2023 (19)	Retrospective Analysis of Hyperemesis Gravidarum and Its Psychological Impact during Hospital Admission	29,999 total admissions, 109 with HG to be studied	Negative psychological symptoms were found in HG patients: crying (51.6%) and suicidal attempt (7.7%). As well as other symptoms	Found the % of HG cases to be 0.004%, much less than most studies.	Retrospective. Telephone based, self reporting.
CT Beck. 2023 (20)	Survivors' Experiences of Hyperemesis Gravidarum	33 HG blogs	Many women wrote about both physical and mental effects, some saying it was the “darkest” time of their lives. Depression came from both the symptoms and HG making them miss out on social events and family time.	Common struggles in the blog posts were contemplating abortion, feeling misunderstood by friends and family, and feeling guilty for not being attached to their unborn child.	Likely biased to extreme cases because it is based off of blog posts. Each post was from the blog “Hyperemesis Australia”. All cases were Australian women.
ER Beirne, LB Andrews, LP Murtagh, S Browne 2023 (21)	The far-reaching burden of Hyperemesis Gravidarum— an exploration of women's experiences and perceptions of healthcare support	6 pregnant with HG 5 postnatal with HG during pregnancy	”Overwhelming consensus that HG had a profound effect on a woman’s psychological health, wellbeing, and sense of self.”	It is common for HG patients to isolate themselves, worsening psychosocial symptoms. HG can also cause financial burdens and strain family dynamics.	Study done on a small cohort of women. Race and socioeconomic status are not given as demographics.

Table 1: Summary of Included Articles (continue)

Authors and Year	Name of Paper	Study Population	Results	Significant Conclusions	Study Limitations
B Poursharif, LM Korst, MS Fejzo 2008 (22)	The psychosocial burden of hyperemesis gravidarum	808 with HG	82.8% reported that HG caused negative psychosocial changes like socioeconomic changes, attitude changes around pregnancy, depression, or anxiety.	Insurance companies often don't take HG seriously, causing severe economic struggles. Many women develop fear of pregnancy or missing out on the joys of a "normal" pregnancy.	Self-reporting survey. Race and initial socioeconomic status are not mentioned.
C Şafak Öztürk, R Kaya Odabaş 2023 (23)	The Relationship between Nausea-Vomiting during Pregnancy and Attachment Styles, Marital Adjustment, and Ways of Coping	60 with HG/NVP 64 unaffected	No significant difference was found in attachment style between control and study group. HG was correlated with increased anxiety.	Social support can greatly help improve psychological symptoms caused by HG.	Cross-sectional study makes causal deductions difficult. Uses self reporting scales.
V Sharma. 2021 (24)	Treatment of depression in a patient with intractable hyperemesis gravidarum	1 with HG	Depression is a common morbidity with HG. Case study patient had HG and depression.	Treating depression can improve HG and treating HG can improve depression. The patient was treated for depression with Olanzapine which allowed her to sustain remission with HG.	Case study on only one patient.
L Laitinen, M Nurmi, N Kulovuori, M Koivisto, E Ojala 2022 (25)	Usability of Pregnancy-Unique Quantification of Emesis questionnaire in women hospitalised for hyperemesis gravidarum: a prospective cohort study	95 with HG	Decreased PUQE scores in patients strongly correlated with increased physical QoL scores.	Higher PUQE scores were associated with lower QoL scores. This was true when comparing scores at different times for the same patient and when comparing scores across all patients.	Study done in a hospital in Finland. Most patients were Finnish.
J Doherty, H McHale, SL Killeen, S Curran, M Bennett 2023 (26)	Women's experiences of Hyperemesis Gravidarum (HG) and of attending a dedicated multi-disciplinary hydration clinic	10 with HG	Women described the benefits of continuity of care and the positive impact of peer support.	Social support is an important component for the psychosocial aspects of HG. Having a dedicated clinic as well as continual care with the same staff provides this support.	Study was done in only one clinic in Ireland. Findings are limited to women who received care at a dedicated clinic.
Havnen GC, Truong MB, Do MH, Heitmann K, Holst L, Nordeng H. 2019 (27)	Women's perspectives on the management and consequences of hyperemesis gravidarum - a descriptive interview study	107 with HG	Most women with HG reported having significant psychosocial burdens, including terminations or considerations of terminations.	Many women reported pregnancy with HG to be one of their worst life experiences. Many women experienced lack of support from healthcare professionals.	Data collected retrospectively. Self reporting and cohort was self selected.

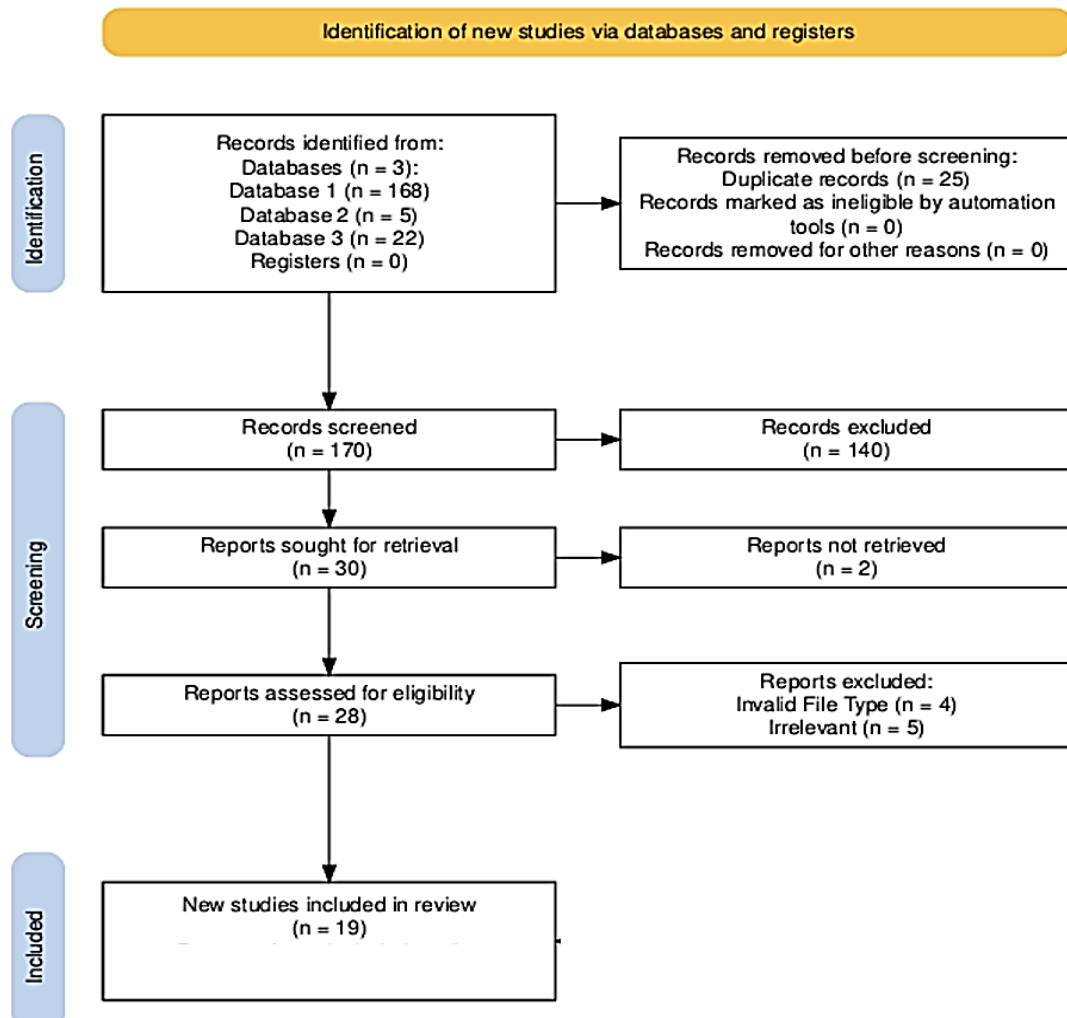


Figure 1: PRISMA Flow Chart

Several studies found that it is common for women who have experienced HG to lose their desire to have more children, consider termination of pregnancies, and/or actually terminate pregnancies (14, 15, 18, 20, 22, 27). Not only is it common for HG to affect women's desire to have more children, but it was also found to have a negative impact on existing relationships. Many studies also concluded that HG can cause strain in marital relationships and family dynamics (16, 18, 20). The last major psychosocial effect of HG is the economic burden. It was found that the physical symptoms of HG often force women to miss work, causing financial strain (10, 11, 16, 21, 22). Overall, HG is found to increase psychosocial outcomes such as depression, isolation, changes in attitudes towards pregnancy, anxiety, economic burdens, and marital strain.

This histogram (Figure 2) quantifies the number of studies that mention each major psychosocial

symptom of HG. These findings reveal that depression is the most common adverse effect studied, and that there is potential for more research on the family and marital effects of HG.

Future research can be focused on exploring psychosocial therapies for HG. Many studies found that psychosocial issues were correlated with the presence of HG. While it is logical that these psychosocial impacts arise from the physical symptoms, it is also possible that negative psychosocial states can worsen symptoms of HG. The study done by Doherty et al. (26) touched on this idea. This study was conducted at a clinic in Ireland dedicated to improving care for women with HG. The major components of this care included educating the public on how extreme the symptoms of HG can be, validation of symptoms, emotional support, financial relief, and developing a larger support team such as midwives, other women with HG, and dieticians.

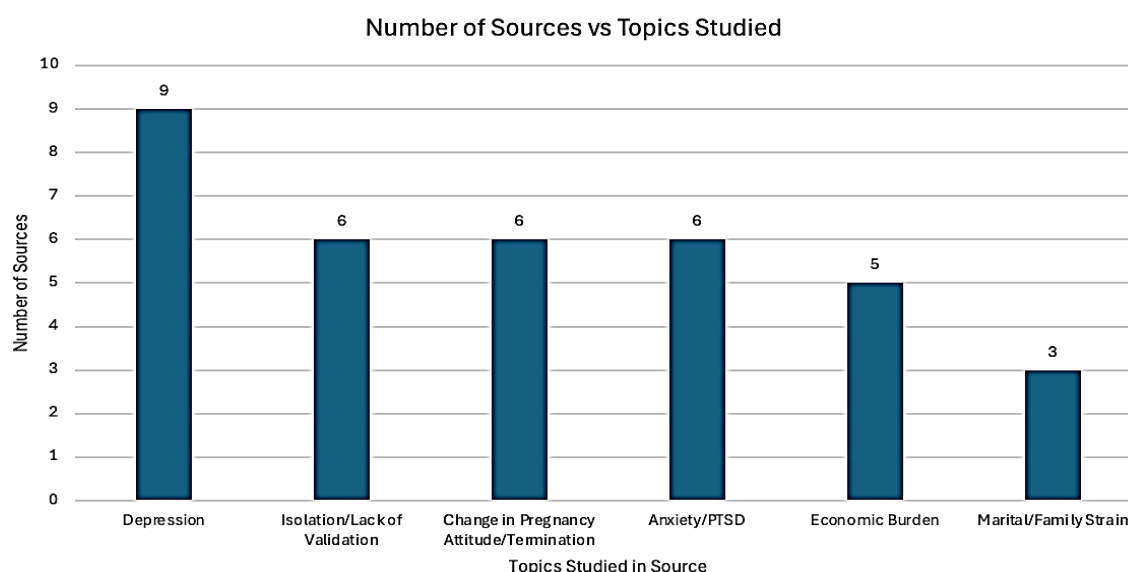


Figure 2: Psychosocial Effects of HG Reported in the Literature

This type of care, while not directly treating the symptoms of HG, was found to benefit the experiences of these women by reducing negative psychosocial outcomes that often result from HG. Women receiving this care were also less likely to require admission to the emergency department, suggesting that treating psychosocial conditions can improve physical outcomes. This study was limited due to its small treatment size, therefore, research dedicated to uncovering effective ways of accomplishing this type of care can be beneficial for patients dealing with HG.

A major concern for women with HG is that they felt isolated or misunderstood (20-22, 27). The lack of validation from peers and sometimes healthcare professionals for HG is a major cause of this (26). Family members, friends, and even physicians may be unaware of the extent of HG symptoms, leading women to isolate themselves from the people that they need support from the most. Constant nausea may also make women afraid or concerned to leave the house, forcing them to stay home more than they would like to. In a study done on blog posts of women experiencing HG, it was found that this isolation, along with the physical symptoms, was described as “the darkest time of their lives” by many patients, even leading to suicidal thoughts (20). While treatment is still working to improve the physical aspects of HG, it is just as important to mitigate the psychological symptoms. In the cross-sectional study by Şafak Öztürk et al., it was found that “the life quality of the woman can dramatically be improved

with sufficient treatment, care, and understanding.” Simply having the support and understanding from loved ones and care team members of the hardships that women with HG go through on a daily basis can greatly improve their experience with pregnancy (20, 23, 26). Establishing reliable support systems is crucial for women with HG, as they can determine whether pregnancy is endured with resilience or compounded by suffering. Without validation and assistance from loved ones and healthcare providers, isolation often deepens, amplifying the psychosocial toll of the disease.

Limitations: The first limitation of this review is that many of the studies were based on self-selected and self-reporting study populations (14, 18, 19, 22, 23, 27). This could result in a bias towards more extreme cases of HG due to more women with severe cases wanting to report on it. In addition to this, the presence and severity of symptoms was also self-reported in these studies, which could result in some error and bias.

Another limitation is that many studies did not have a control population to compare the psychosocial health of pregnant women without HG (9, 12-15, 17-21, 23-27). This is a limitation because the articles that were reviewed did not evaluate if there is truly an increased incidence and/or prevalence in psychosocial adverse outcomes in HG patients as opposed to pregnant women without, but rather, they solely explore the psychosocial effects that are often seen in HG patients.

Many studies were biased towards one race (usually

Caucasian) or socioeconomic status, or these factors were omitted altogether (10, 11, 13, 16, 17, 20-22, 25, 26). This may result in data that is only applicable to the demographic studied, leading to biased medical treatment when information is applied across all demographics that were not represented in the study.

Other issues include the lack of access to all papers on the topic. Only three major databases were used and it is possible that other databases contain papers that could change the conclusion of this paper. Another limitation was that only papers published in English or had an English translation available were used. While it is unlikely that there was a paper missed that could have changed the conclusions of this review, that is a possible risk. Another limitation of this review is the timeframe as papers were only included up to May 18, 2024. The last limitation is the search terms that were used. Choosing only specific search terms may have excluded relevant papers from this review. This was caused by the fact that this systematic literature review had a rigid set of rules for selecting papers for inclusion. These limitations and others have been described in other recent systematic literature reviews (28).

Conclusion

Through this systematic review, it was found that HG is correlated with negative psychosocial outcomes. The major comorbidities are depression, anxiety, increased pregnancy termination or consideration of termination, decreased desire for more pregnancies, marital and family strain, and socioeconomic challenges.

Future research should be dedicated to exploring the effectiveness and types of psychosocial therapies as part of the treatment for HG. Making this more accessible can greatly improve the quality of life for women suffering from HG.

The authors hope that this systematic review can help educate the general population as well as healthcare providers on the psychosocial impacts of HG.

Conflict of Interests

Authors declare no conflict of interests.

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None.

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