



Delayed Realization of Enhanced Caregiver Burden in Gastroparesis Patients

Austin L. Chiang¹

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Gastroparesis is a complex condition encompassing delayed gastric emptying due to numerous etiologies including diabetes mellitus, medications, post-surgical, infectious, neurologic, and autoimmune disorders. Quality-of-life is significantly impaired in patients with gastroparesis, who most often attribute this effect to nausea, upper abdominal pain, or early satiety [1]. The degree of upper abdominal pain has also been associated with increased severity of depression, anxiety, and somatization [2]. Even in the development of the Gastroparesis Cardinal Symptom Index (GCSI), an instrument developed in 2004 to assess the symptom severity of gastroparesis, the authors noted significant associations between the GCSI score and restricted activity, and bed disability days [3]. On the other hand, gastroesophageal reflux disease (GERD) is a common disease affecting up to a quarter of the population in North America [4]. GERD has also been associated with reduced work productivity and quality-of-life.

In gastroenterology, caregiver burden has been measured for a variety of chronic conditions ranging from cirrhosis to pancreatic cancer [5–7]. These studies have also demonstrated how psychosocial interventions such as group therapy sessions could potentially reduce caregiver burden as reflected by improved Zarit Burden Interview (ZBI) values. Until now, caregiver burden had not been investigated for patients with gastroparesis or gastroesophageal reflux disease (GERD), with particular regard to its correlation with disease symptoms. In this issue of *Digestive Diseases and Sciences*, Jehangir and colleagues aim to assess the caregiver burden of patients with gastroparesis and GERD and correlate this burden with symptom severity, patient and caregiver work productivity, and healthcare utilization [8]. In addition

to healthy volunteers (HV), the authors opted to use GERD patients as a comparison group given its widespread nature and the perception that GERD causes substantial caregiver burden and incurs significant healthcare costs. In a prospective trial, 31 patients with gastroparesis, 16 patients with GERD, and one patient with both conditions along with their caregivers were compared to 12 HV and their potential caregivers. Patients and healthy volunteers filled out questionnaires for Patient Assessment of Gastrointestinal Symptoms (PAGI-SYM) from which the Gastroparesis Cardinal Symptom Index (GCSI) could be calculated: Work Productivity and Activity Impairment (WPAI), and healthcare utilization. Caregivers and potential caregivers filled out the Zarit Burden Interview (ZBI) and WPAI questionnaires. Caregivers of patients with gastroparesis reported higher burdens compared with those caring for patients with GERD or for HV, with the caregiver burden correlated with symptom severity as described by GCSI.

For baseline characteristics, the gastroparesis group was more likely to also suffer from other co-morbidities and diabetes. The gastroparesis group had significantly greater symptom severity scores, healthcare utilization, and greater work impairment than the GERD or HV groups. Caregivers of patients with gastroparesis also reported significantly greater caregiver burden as measured by ZBI. A strong correlation between caregiver burden and GCSI total score was noted. A diagnosis of gastroparesis, female patient gender, Caucasian patient race, and the presence of co-morbidities significantly predicted caregiver burden according to linear regression analysis.

While the study findings are not necessarily unexpected, how some subgroup analyses hint at potential strategies to reduce caregiver burden is notably interesting. The strong and moderate correlations described between caregiver burden and specific nausea/vomiting and early satiety subscores may provide potential targets to relieve caregiver burden for gastroparesis patients. Likewise, moderate correlations between physician visits and caregiver burden also

✉ Austin L. Chiang
austinelechiang@gmail.com

¹ Division of Gastroenterology and Hepatology, Thomas Jefferson University Hospital, 132 S 10th St, Philadelphia, PA 19107, USA

emphasize concrete ways to reduce caregiver burden. The utility of strategies such as mindfulness-based stress reduction therapy sessions as noted in a previous study on specific symptoms or in reducing in-person visits is not well understood 6.

As the authors acknowledged, the study is limited by small sample size and potential lack of generalizability, with only English-speaking patients from a single, tertiary care center studied. Furthermore, the authors mention the possibility of overlap syndromes with gastric scintigraphy results among patients with GERD, as well as a few patients who do not meet the strict definition of GERD as defined in the Lyon Consensus. The authors also recognize that the ZBI questionnaire was not designed to compare two different groups as was done in this study (patients with gastroparesis versus GERD).

Jehangir and colleagues should be commended for highlighting the greater caregiver burden among patients with gastroparesis, compared with patients with GERD or healthy volunteers. Nevertheless, optimal strategies to ameliorate caregiver burden in this population still remain unclear. Whether approaches targeting symptoms versus healthcare utilization are more effective in reducing caregiver burden is uncertain, and the degree to which caregiver burden is reduced by treating the patient's underlying condition also has yet to be ascertained in this patient population. Assigning a single solution may ultimately be ineffective at accounting for the widely variable needs of caregivers and the limited efficacy of available therapies for gastroparesis.

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