

Harnessing electronic patient-reported outcomes data to identify distinct experiences of two symptom clusters across six diverse health systems



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Background

- Interventions targeting symptom clusters may be more efficient than those targeting individual symptoms.
- Patients at risk for severe symptom clusters are not readily identified at the point of care.
- Using data reported in eSyM, an electronic health record-integrated symptom monitoring tool deployed across six large, diverse health systems [1], we previously identified two symptom clusters:
 - Nausea / vomiting
 - Pain / fatigue / anxiety
- The objectives of this study were (1) to identify subgroups (latent classes) of patients according to symptom cluster severity, and (2) identify demographic and clinical characteristics associated with membership in the subgroups with the worst symptom cluster severity.

Methods

- Adults starting chemotherapy to treat thoracic, gastrointestinal, and gynecologic cancers reported symptoms on the second day of the first cycle of chemotherapy.
- We performed latent class analyses to identify subgroups of patients according to “nausea / vomiting” and “pain / fatigue / anxiety” symptom cluster severity.
- We selected the number of subgroups (latent classes) according to Akaike and Bayesian Information Criteria.
- We named each subgroup according to its probability of reporting PRO-CTCAE-derived composite symptom grades of 0 (minimal) through 3 (severe) [2, 3].
- We compared clinical and demographic characteristics across subgroups using t-tests, chi-square tests, and Fisher's exact tests using a significance level of $p < 0.05$.

Objectives

- Identify subgroups (latent classes) of patients according to “nausea / vomiting” and “pain / fatigue / anxiety” symptom cluster severity
- Identify demographic and clinical characteristics associated with membership in subgroups with the worst symptom cluster severity

Key Takeaways

- 58% of patients experienced “moderate” or “severe” pain / fatigue / anxiety.
- 15% of patients experienced “moderate” nausea / vomiting.
- Risk factors for membership in the subgroup with “severe” pain / fatigue / anxiety included younger age, being disabled or unemployed, receiving palliative chemotherapy, and living in a rural setting.
- The only risk factor for membership in the subgroup with moderate nausea / vomiting was younger age.
- Interventions to intensify symptom management for high-risk groups and dynamically respond to high symptom cluster burden are warranted.

Characteristic	n	%
Mean age (SD)	65.5	(11.2)
Female sex	1923	58.8
White race	2840	86.9
Black race	316	9.7
Employed	780	25.8
Curative treatment goal	929	28.4
Rural residence	289	8.8
Cancer site		
Gastrointestinal	1551	47.4
Thoracic	990	30.3
Gynecologic	729	22.3

Table 1. Selected patient characteristics

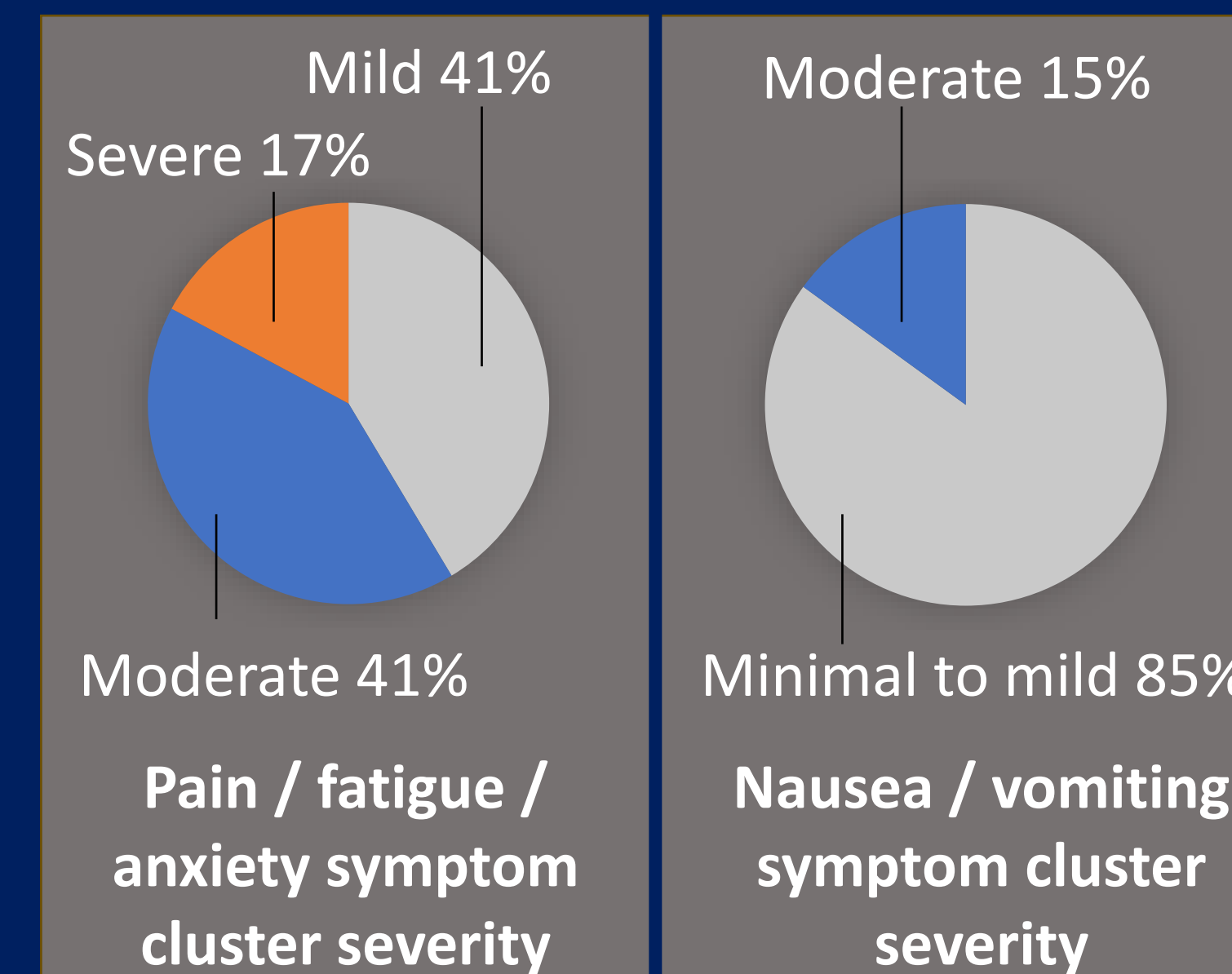


Figure 1. Percent of patients in symptom cluster severity subgroups (latent classes)

Results

- Our analytic sample comprised 3,270 patients (Table 1).
- We identified subgroups of patients with “minimal to mild” and “moderate” nausea / vomiting (Fig. 1).
- We identified subgroups of patients with “mild,” “moderate,” and “severe” experiences of pain / fatigue / anxiety (Fig. 1).
- Compared with older adults, younger adults were at higher risk of experiencing moderate nausea / vomiting and severe pain / fatigue / anxiety.
- Patients who were disabled or unemployed, receiving palliative chemotherapy, or living in a rural setting were at higher risk of experiencing severe pain / fatigue / anxiety, compared with those who were working, receiving curative treatment, or living in a non-rural setting.

Conclusions and Future Directions

- We used electronic health record data to identify subgroups of patients at risk for distinct constellations of symptoms.
- Given that 58% of patients experienced “moderate” or “severe” pain / fatigue / anxiety, interventions to intensify symptom management for high-risk groups and dynamically respond to symptom burden are warranted.

References

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