Purpose/Objective(s): Cancer patients have a multitude of symptoms which may or may not be interrelated. The co-occurrence of symptoms have been studied using various statistical methodology, however no agreement regarding which method is most optimal in identifying symptom clusters. The primary objective is to compare symptom clusters in a cohort of advanced cancer patients using three statistical methods.

Materials/Methods: A retrospective review of a prospective database included 1296 patients with advanced cancer who completed the Edmonton Symptom Assessment System (ESAS) prior to radiotherapy (RT). Follow up ESAS was completed at weeks 2, 4, 8 and 12. Principal component analysis (PCA), exploratory factor analysis (EFA), and hierarchical cluster analysis (HCA) were used to identify clusters at baseline and each follow up visit. In addition Cronbach’s alpha was used to describe cohesivity of each cluster identified. HCA groups similar entities together into a cluster and separates this cluster from other clusters, using a computer algorithm.

Results: Prior to RT, two clusters were identified using PCA and HCA and none were identified using EFA. Both clusters had the same symptoms. At week 2, three, two and two clusters were identified using PCA, EFA and HCA respectively. One cluster from PCA and HCA comprised of the same symptoms, while the remaining clusters had different symptoms. At week 4, one cluster was identified using PCA, and two for both EFA and HCA. The cluster(s) identified were very similar. At week 8, two clusters were identified using all three methods. The clusters were again very similar, but not identical. At week 12, two clusters were identified for PCA and EFA and three for HCA. One cluster remained the same between PCA and HCA while the other clusters were comprised of very different symptoms. Cronbach’s alpha showed strong internal consistency in the identified clusters.

Conclusions: Different clusters were identified using the three statistical methods, with each cluster exhibiting varying levels of consistency at follow up. Although EFA has been the favored method by some investigators for analyzing symptom clusters, there needs to be a consensus regarding which method or combination of methods should be utilized for the analysis of symptom clusters so as to allow comparisons across studies and advancement of research in this area.