

Nurse staffing and the quality of life and outcomes of patients with pulmonary arterial hypertension: The Pulmonary Hypertension Association Registry

Archer-Chicko CL¹, Al-Naamani N¹, Benza RL², Feldman JP², Berman Rosenzweig EB², Horn E², Sager JS², Presberg KW², Shlobin OA², Mathai SC², McConnell JW², Burger CD², Frantz RP², Klinger JR², Ventutuolo C², Eggert M², Zamanian RT², Robinson J², Lammi MR², De Marco T², Allen R², Elwing JM², Bull TM², Badesch DB², Williamson TL², Ramani G², Thenappan T², Ford HJ², White RJ², Runo JR², Simon M², Bartolome S², Hemnes A², Grinnan D², Chakinala MM², Zwicke D², Foley R², Cadaret L², Kennedy JL², Kawut SM¹

¹University of Pennsylvania, Philadelphia, PA

²The Pulmonary Hypertension Association Registry Investigators

Background: Introduction:

Lower levels of nurse staffing in centers caring for PAH patients could lead to less satisfaction with care, worse QoL and an increased risk of hospitalizations. We hypothesized that patients cared for at high patient-to-nurse ratio (PNR) centers would have worse QoL and higher odds of hospitalizations.

Methods: Methods:

We performed a retrospective cohort study of incident patients with PAH using data from the Pulmonary Hypertension Care Center (PHCC) initial accreditation and the PHAR. We stratified PHCCs into high PNR (upper quartile, > 180 patients per nursing FTE) and low PNR (< 180). We used t-tests and Fisher's exact tests to compare the baseline characteristics and linear regression models to examine the association between PNR and QoL measures (Emphasis-10 and SF-12) at 6 months. We adjusted these models for age, sex, race/ethnicity, diagnosis and six-minute walk distance (6MWD). We then used Poisson regression to assess difference in number of hospitalizations between patients treated at high PNR compared to low PNR centers.

Results: Results:

There were 92 patients from high PNR centers and 246 patients from low PNR centers. Patients from a high PNR were older and more likely to be Non-Hispanic white as compared to patients from low PNR; however, there were no differences between sex, diagnosis, WHO functional class, body mass index or 6MWD. At six months follow-up, there was no statistically significant difference between Emphasis-10 and SF-12 physical scores between high and low PNR centers; however high PNR patients had higher SF-12 mental scores indicating better QoL as compared to low PNR patients (51 IQR(47-56) vs 49 IQR(42-54), p<0.01). Even after multivariate adjustment, high PNR patients had 2.88 higher points on their SF-12 mental score (p =0.04) as compared to low PNR patients. There were a total of 179 hospitalizations. Patients at high PNR centers had 55% less hospitalizations than patients at low PNR centers after adjustment for age, sex, race/ethnicity, diagnosis, 6MWD and treatment with continuous infusion prostacyclin (RR 0.45 95%CI (0.25-0.82), p <0.001).

Conclusions: Conclusions:

Contrary to our hypothesis, PH programs with high PNR had patients reporting better mental QoL on SF-12 scores and lower odds of hospitalization. These results lead to more questions requiring further investigation into whether these centers have additional resources, such as patient support groups which may positively impact mental health or whether they have more experience managing PH patients and reducing hospitalizations. Further research into optimizing PH nursing efficiency for better patient outcomes is warranted.

