Electronic Health Records and Physician Stress in Office Based Practice?

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BACKGROUND:

The electronic health record (EHR) is increasingly prevalent in office based care. Anecdotal reports suggest that practice using the EHR can be a factor in provider reported levels of stress in office environments. We investigated the possible relationships between the presence of the number of EHR features and physician reported levels of stress.

METHODS:

We performed a secondary analysis on data from the MEMO study (Minimizing Error, Maximizing Outcomes), which involved 422 Internal Medicine and Family Medicine physicians in their offices in 5 areas of the United States. As part of this study, physicians and office managers completed questionnaires about their office practice, including specific EHR features the office used (yes/no), individual measures of stress, burnout, intent to leave and satisfaction (scale 1 (low) to 5 (high)). The analysis had two parts. First, using binary based latent class analysis, we sought to define classes of respondents based on the number of EHR features present. Second, we sought to define relationships between these classes and the respondents' reports of stress and related issues.

Figure 1: Question from MEMO study regarding specific electronic medical record functions.

13. If yes, which functions do your computers have? (Check YES	to all that apply.)
a) Electronic Medical Record	Yes No
b) Display lab results	Yes No
c) Display patient notes	Yes No
d) Display radiographic reports	Yes No
e) Prevention reminders	Yes No
f) Warnings about drug interactions	Yes No
g) Warnings about patient allergies	Yes No
h) Obtain treatment alternatives or guidelines	Yes No
i) Write prescriptions	Yes No
j) Exchange clinical data with other physicians	Yes No
k) Communicate about clinical issues with patients via e-mail	1 Yes No
1) Consultation notes from other services	Yes No
m) Medication list	Yes No
n) Problem list	Yes No
o) Test ordering	Yes No
p) Imaging ordering	Yes No

RESULTS:

We defined 3 classes of respondents based on level of EHR features present: low, moderate and high. The physician questionnaire had 15 separate features of an electronic medical record and respondents noted if each was present or absent in their practice. The best latent class analysis fit was a three class solution encompassing low, moderate and high amounts of EHR features. The analysis did not assign weights to any of the specific features.

EMR chaos table 1:

	High use cluster	Moderate use cluster	Low use cluster	Contrast high	Contrast high	Contrast moderate
Variable	(46 clinics, 207 physicians)	(22 clinics, 98 physicians)	(24 clinics, 74 physicians)	vs. moderate	vs. low use	vs. low use
	Adj mean (SE) [CI]	Adj mean (SE) [CI]	Adj mean (SE) [CI]	use cluster	cluster	cluster
Burnout (scale 1 low -5 high)	2.171 (0.068) [2.038, 2.304]	2.306 (0.078) [2.154, 2.458]	2.027 (0.092) [1.847, 2.207]	Z = -1.310, p = 0.19	Z = 1.263, p = 0.21	Z = 2.305, p = 0.02
Intent to leave (scale 1 low -5 high)	2.029 (0.090) [1.853, 2.205]	2.061 (0.096) [1.873, 2.249]	2.108 (0.132) [1.850, 2.366]	Z = -0.244, P = 0.81	Z = -0.496, P = 0.62	Z = -0.484, P = 0.63
Satisfaction (scale 1 low -5 high)	3.683 (0.054) [3.578, 3.788]	3.543 (0.071) [3.404, 3.682]	3.838 (0.114) [3.165, 4.061]	Z = 1.573, P = 0.11	Z = -1.230, P = 0.22	Z = -2.201, P = 0.03
Stress (scale 1 low -5 high)	3.282 (0.067) [3.151, 3.413]	3.491 (0.084) [3.327, 3.655]	3.112 (0.104) [2.909, 3.315]	Z = -2.049, P = 0.04	Z = 1.382, P = 0.17	Z = 2.849, P = 0.004

EMR chaos table 2:

	Physician Satisfaction	Physician Stress	Physician Burnout	Intent to Leave
WORKFLOW				
1. Time pressure for physical exams				
High use cluster	-0.003*	0.004*	0.004*	0.006*
Mod use cluster				
Low use cluster			0.007*	
2. Time pressure for routine follow-up visits				
High use cluster	-0.005*	0.005*	0.006*	0.010*
Mod use cluster				
Low use cluster				
JOB CHARACTERISTICS				
1. Control over the workplace				
High use cluster	0.635*	-0.511*	-0.441*	-0.758*
Mod use cluster	0.492*	-0.277*		
Low use cluster	0.840*	-0.868*	-0.904*	
ORGANIZATIONAL CULTURE				
1. Practice emphasis on quality				
High use cluster	0.511*		-0.440*	-0.716*
Mod use cluster	0.498*	-0.292*		
Low use cluster	0.582*	-0.640*	-0.578*	
2. Practice emphasis on communication & info				
High use cluster	0.373*		-0.332*	
Mod use cluster	0.314*	-0.270*		-0.495*
Low use cluster	0.528*	-0.561*	-0.517*	
3. Trust in the organization				
High use cluster	0.549*	-0.212*	-0.397*	-0.627*
Mod use cluster	0.423*	-0.287*		-0.529*
Low use cluster	0.664*	-0.531*	-0.595*	

RED = significant negative effects BLUE = significant positive effects WHITE = no significant e

DISCUSSION:

The level of EHR support was associated with reported level of stress, burnout, and satisfaction in a U shaped curve. We hypothesize that the offices in the 'moderate' class were either offices in transition to a full EHR or were those with an implemented EHR that did not have all electronic functions.

LIMITATIONS:

This study was a secondary analysis of MEMO data. While we used the extensive list of possible EHR functions from our original survey, this list may have omitted specific functions important to physician users. Second, we assumed that each of the choices had an equal 'weight; however some specific functionalities may have had a greater or lesser relative weight and this may have affected the results.

IMPLICATIONS:

Our findings have implications for EHR implementation, preparing all members of the office for potentially increased stressanddecreasedsatisfactionduringtheperiodoftransition. Similarly these findings can assist administrative leaders in developing transition strategies to mitigate worker stress and decreased satisfaction. Further work should explore the specific features of the EHR which are associated with these findings and variables such as the office organization, EHR planning, implementation and support, patient populations served, physician engagement in the practice and practice financing.