Age Differences in Depression and Anxiety Levels of Open-Heart Surgery Patients

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Introduction

Age, as well as gender, are key demographic measures in cardiac patients. Further, depression and anxiety have been long established to be comorbidities of heart disease (HD). Meta-analysis reviews also associated anxiety with increased major cardiac events or mortality (references available upon request). In patients scheduled for open heart surgery (OHS), the months before and after OHS are both highly stressful and associated with anxiety, even though OHS can serve as a life-saving intervention. Likewise, waiting time prior to surgery, especially life-altering operations such as OHS, is characterized by distress, depression, and poor well-being. We examined how age related to preoperative depression and postoperative anxiety within the context of open-heart surgery.

Methods

We collected two waves of survey data along with medical indices from patients at a top-10 heart center in the USA (n = 481, mean age = 62.18 ± 12.04, female 42%).
Our collected survey data included socio-demographic information (age, gender, race), religious affiliation and other religious factors, general health and health behaviors, medical comorbidities, cardiovascular health indices, dispositional optimism, hope, social support, depression symptoms, and anxiety symptoms. We conducted a hierarchical regression analyses to examine post-OHS anxiety, and likewise for preoperative depression. Further information will be provided upon request, we have included the regression results of post-OHS surgery and the conceptual model for depression, gender, and medical comorbidities.

Results

TABLE 3. Standardized Coefficients for Regression Models of Post-OHS Anxiety

Variable	Step 1 β (p)	Step 2 β (p)	Step 3 β (p)	Step 4 β (p)	Step 5 β (p)
Male *vs.* female	0.120*	0.020	0.030	0.046	0.047
Age	−0.047	0.062	0.063	0.074	0.094*
Non-White *vs.* White	−0.126*	−0.097*	−0.107*	−0.115**	−0.094*
Others *vs.* married with spouse	−0.123*	−0.068			
Education	−0.088				
Annual income	0.007				
Pre-OHS anxiety		0.671***	0.653***	0.566***	0.563***
Medical comorbidity		−0.009			
BMI		−0.097*	−0.089*	−0.069	
Smoker		0.003			
Diabetes		0.015			
Hypercholesterolemia		−0.044			
Hypertension		−0.014			
Renal failure		−0.055			
Chronic lung disease		0.106*	0.136*	0.133**	0.105*
Congestive heart failure			−0.018		
NYHA classification			−0.085	−0.074	
Arrhythmia			−0.043		
Angina			−0.071		
MI			0.052		
Left main disease >50%			0.080	0.058	
No. diseased coronary vessels			0.117	0.061	
Coronary artery bypass			0.032		
Perfusion time, min			0.043		
Optimism				−0.138**	−0.207***
Hope				−0.058	
Social support				−0.065	
R^2	0.067	0.481	0.487	0.520	0.486
F (no. independent variables, df)	22.612** (13,317)	3.565*** (6305)	19.003*** (15,300)	25.674*** (12,284)	50.176*** (6306)

*p < 0.05.
**p < 0.01.
***p < 0.001.

Table 3. Regression results in steps 1-5 to predict post-OHS survey anxiety levels

TABLE 2. Bivariate Correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Male *vs.* Female	1											
2. Age	0.013	1										
3. Non-White *vs.* Whites	0.008	0.104*	1									
4. Others *vs.* married with Sb	−0.234**	−0.111*	0.055	1								
5. Education	−0.209**	−0.195**	0.028	0.121**	1							
6. Income level	−0.264**	−0.187**	0.146**	0.385**	0.431**	1						
7. Medical comorbidity	0.216**	0.154**	−0.059	−0.149**	−0.178**	−0.246**	1					
8. BMI	−0.017	−0.108*	0.025	0.075	0.009	0.002	0.105*	1				
9. Optimism	−0.035	0.100*	0.048	0.145**	0.207**	0.129**	−0.150**	−0.017	1			
10. Hope	−0.123*	0.011	0.044	0.141**	0.296**	0.282**	−0.163**	−0.046	0.527**	1		
11. Social support	−0.004	−0.035	0.018	0.234**	0.082	0.126*	−0.116*	0.056	0.308**	0.379**	1	
12. Post-OHD anxiety	0.143**	−0.028	−0.120*	−0.133*	−0.098	−0.128*	0.181**	−0.015	−0.472**	−0.350**	−0.224**	1
13. Pre-OHD anxiety	0.168**	−0.189**	−0.118**	−0.081	−0.087	−0.106*	0.276**	0.084	−0.509**	−0.387**	−0.143*	0.649

*p < 0.05.
**p < 0.01.
***p < 0.001.
Sb, spouse present.

Table 2. Bivariate correlation between sex and age with HD-specific conditions and pre and post-OHS anxiety

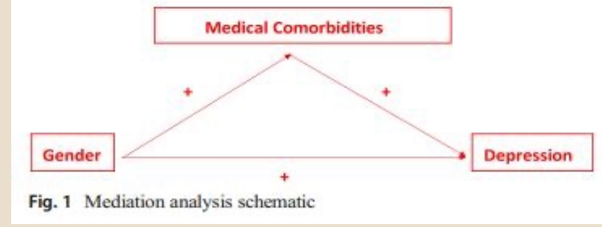

Fig. 1 Mediation analysis schematic

Fig 1. Mediation analysis schematic

Discussion

Our findings support that higher age correlates with increased levels of cardiac symptoms. **Younger age** was associated with higher levels of postoperative depression, while **older age** was associated with higher levels of postoperative anxiety. Higher levels of dispositional optimism were consistently associated with lower levels of both postoperative depression and postoperative anxiety regardless of age. Female gender had an impact on depression scores but not on anxiety scores. Our findings are limited by the cross-sectional study design, our sample being a convenience sample, and our findings being an observational study.

Implications

Findings suggest that medical practitioners might benefit from being more attentive to non-medical conditions such as mood states, dispositional optimism, and general positive expectations about the future in post-OHS life.

Awareness of the mentioned age differences in anxiety and depression might inform practitioners as to sentiments to address before and after OHS with different age groups.

Links to articles

For references and further information reach out to Beren Crim Sabuncu at csabuncu@fsu.edu