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Background

- Congenital heart disease (CHD) is a life-long illness with significant burden on a patient's physical and mental health.
- CHD patients will face a variety of psychosocial challenges as they mature into adulthood.
- Resiliency is the ability to thrive in the face of adversity and can positively impact mental health.
- Higher resiliency is associated with better transition readiness and better mental health outcomes.
- The SARS-CoV-2 pandemic has negatively impacted many aspects of mental health for young people.

Methods

- The primary outcome was to compare the resilience of individuals with and without CHD
- Prospective observational study of individuals, 10-25 years old, with and without CHD using social media. Survey distribution was in early 2022.
- Participants were identified through groups on Facebook, Instagram, Reddit, and Twitter.
- Demographics were self-reported; individuals with CHD answered additional diagnosis-specific questions.
- All participants completed the 25-item Connor-Davidson Resilience Scale (CD-RISC); a validated tool to measure resiliency, and scores patients from 0 (least resilient) to 100 (most resilient).
- Normative pre-pandemic data for the CD-RISC reports a mean score in the US general population of 80.7.
- Data reported in mean and standard deviation; comparisons used t-tests, U-tests, ANOVA, and Kruskal-Wallis tests.

Results

- A total of 332 individuals with CHD and 134 individuals without CHD completed the survey.
- The two groups were comparable however the individuals without CHD were significantly older (20.4 ± 3.4 versus 17.2 ± 5.1 , $p < 0.001$).

Table 1. Overall resilience scores for CHD and non-CHD patients

CHD Resilience	Non-CHD Resilience	
(Mean \pm SD)	(Mean \pm SD)	p-value
65.3 \pm 16.1	55.4 \pm 13.8	<0.001

Table 2. Resiliency scores for study participants

Variable	CHD Resilience	Non-CHD Resilience	
	n	(Mean \pm SD)	p-value
Gender			
Male	152	64.4 \pm 16.1	
Female	174	66.6 \pm 16.0	0.12
Non-binary	5	53.6 \pm 6.4	
Race			
White	284	65.5 \pm 15.8	
Non-white	48	64.1 \pm 17.4	0.5
Age			
10-17 yrs	170	65.7 \pm 15.5	
18-25 yrs	162	64.9 \pm 16.6	0.6

Results

Table 3. Resilience scores among CHD participants

Variable	Resilience	
	(Mean \pm SD)	p-value
Prior mental Health		
Yes (n = 190)	61.7 \pm 15.7	
No (n = 140)	70.0 \pm 15.5	<0.001
Frequent exercise		
Yes (n = 195)	68.6 \pm 15.5	
No (n = 137)	60.6 \pm 15.8	<0.001
CHD camp or support group		
Yes (n = 125)	68.5 \pm 13.4	
No (n = 207)	63.3 \pm 17.2	0.002
Family structure		
Married (n = 217)	67.0 \pm 15.7	
All other (n = 87)	60.3 \pm 16.4	0.004
# of hospitalizations in last year		
0 (n = 222)	66.7 \pm 15.7	
1 (n = 63)	65.7 \pm 15.1	
2+ (n = 45)	58.0 \pm 17.1	0.005
Communicating with other CHD patients		
Yes (n = 265)	66.3 \pm 14.7	
No (n = 67)	61.1 \pm 20.3	0.05
Disease severity index		
Low (n = 21)	61.6 \pm 17.1	
Moderate (n = 89)	67.1 \pm 15.4	
High (n = 222)	64.9 \pm 16.2	0.2
Fontan physiology		
Yes (n = 147)	65.1 \pm 16.4	
No (n = 150)	65.6 \pm 15.2	0.7
Neonatal surgery		
Yes (n = 225)	65.4 \pm 16.4	
No (n = 104)	64.9 \pm 15.5	0.8
Formal transplant evaluation		
Yes (n = 35)	62.5 \pm 16.8	
No (n = 281)	65.9 \pm 16.0	0.3
Cardiac transplant		
Yes (n = 11)	66.0 \pm 9.79	
No (n = 321)	65.3 \pm 16.2	0.8
# of cardiac meds per day		
0 (n = 99)	67.7 \pm 15.0	
1-2 (n = 148)	64.5 \pm 16.7	
3+ (n = 85)	63.9 \pm 16.0	0.2

Study Limitations

- The precise impact of the SARS-CoV-2 pandemic on our findings is difficult to determine.
- Internet patient recruitment may have introduced sample bias.
- The demographics of our study sample did not accurately represent that of the general population.
- Findings may be different with alternative patient recruitment strategies.

Conclusions

- Resilience scores in both groups were lower compared to pre-pandemic historic norms.
- Young people with CHD scored higher than the comparison group on the CD-RISC, suggesting better resilience.
- Resiliency scores were not different across race, age, and gender in both the CHD and comparison group.
- In the CHD group, married family structure was associated with better resilience.
- Disease severity, Fontan physiology, history of neonatal surgery, and transplantation were not associated with any difference in resiliency.
- In the CHD group, no formal mental health comorbidity, frequent exercise, fewer hospitalizations, and attendance at CHD camps or support groups was associated with higher resilience.
- Future studies should expand to outpatient clinics to achieve a more diverse sample and avoid volunteer bias.