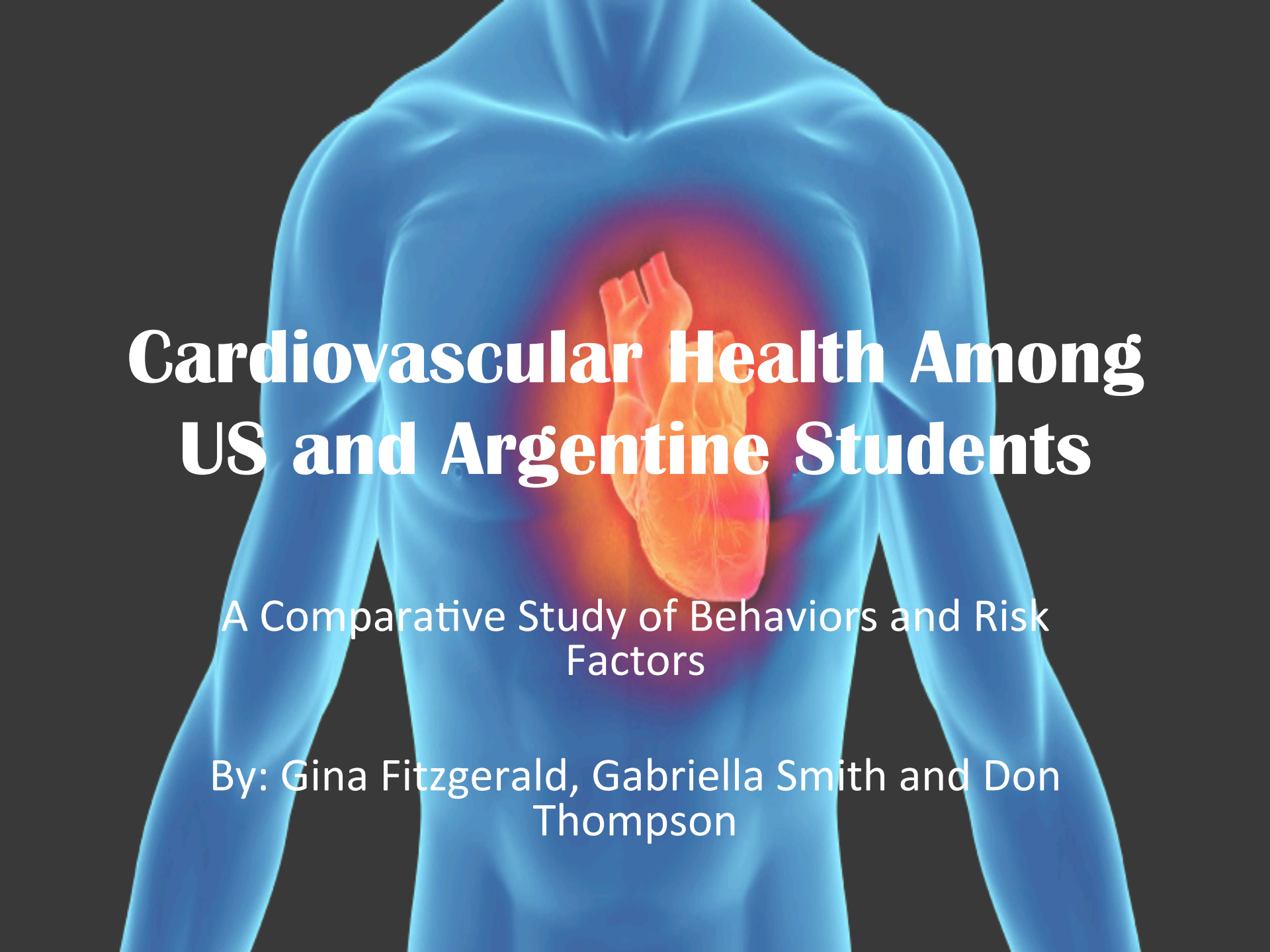


Cardiovascular Health Among US and Argentine Students

A Comparative Study of Behaviors and Risk Factors

By: Gina Fitzgerald, Gabriella Smith and Don Thompson

Abstract

Cardiovascular disease for some time has been the leading cause of death in the Western world. Primary prevention is the only way to halt the onset of cardiovascular disease, yet there is little information on the prevalence of risk factors for cardiovascular disease in young adults.

This study seeks to evaluate students from the Catholic University of Argentina and Pepperdine University of America for the prevalence of CVD risk factors, as well as knowledge of CVD and daily habits that contribute to heart health. Thus we compared two cultures with very different lifestyles and prevalence of risk factors.

We hypothesized that students with low prevalence of CVD risk factors are more likely to maintain a normal range of blood pressure and heart rate, and those with high prevalence of CVD risk factors are more likely to have heart rate and blood pressure outside an acceptable range.

A web-based survey assessed 500 students from Buenos Aires, and 500 students from Malibu in the areas of current medical information, personal health history, family health history, personal habits, and knowledge of cardiovascular health. Additionally, blood pressure, heart rate, and demographic information were recorded.

Our research supports our hypothesis: students with greater CVD risk factors displayed increased risk of heart rate and blood pressure outside a healthy range.

Introduction

When researching cardiovascular disease we found little literature sources on the prevalence and risk factors in young adults. As college students, this subject is important in our own lives and the lives of our peers.

According to a study in the Official Journal of the American Academy of Pediatrics, cardiovascular disease is the leading cause of death among adults in the US. In addition, the risk factors for various cardiovascular diseases preexist in childhood and young adults. According to another study by the Journal of American Medical Association, cardiovascular disease is also the leading cause of death among the US Hispanic and Latino population. Often times, the prevalence of CVD and CVD risk factors in Latino individuals are attributed to the lower socioeconomic status held by many of these individuals, especially in the US.

While studying abroad in Argentina, a cross-cultural comparative study was proposed that would evaluate CVD in young adults in both the United States and Argentina. We aimed our focus more on if and how the individuals' personal habits and health histories affect the prevalence of CVD and CVD risk factors in these two populations, keeping socioeconomic status, age, and nationality constant.

Methods

- A survey assessed 500 students from Buenos Aires, and 500 students from Malibu in the areas of
  - Current medical information
  - Personal health history
  - Family health history
  - Personal habits
  - Demographic information
  - Knowledge of cardiovascular health.
- Additionally, blood pressure, heart rate were recorded.
- International students, and those outside the 18-25 age range were omitted from final analysis

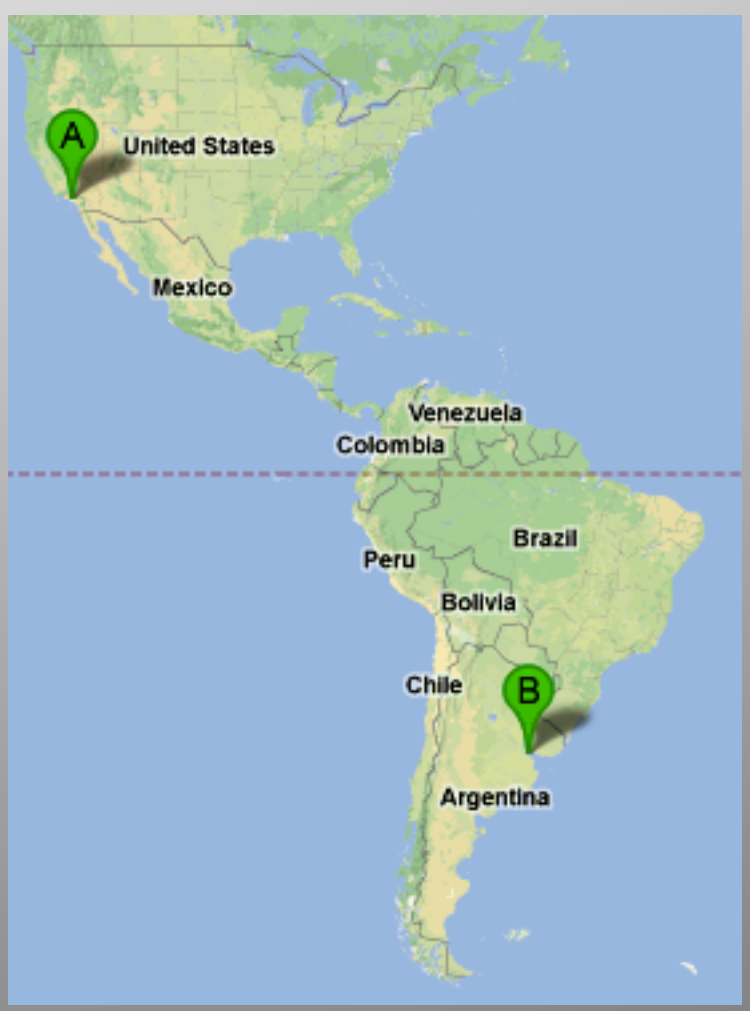
Methods Continued

We organized our survey and vital statistics measurements into eight variables:

1) Body Mass Index (BMI)
2) Mean Arterial Pressure (MAP)
3) Resting Pulse
4) Country
5) Gender
6) Health History Composite Score
7) Health Knowledge Composite Score
8) Health Habit Composite Score

Data

- Argentina
  - Total Sample Size = 399
  - Female Sample Size = 241
    - Average Age = 20.47
  - Male Sample Size = 158
    - Average Age = 20.87
- USA
  - Total Sample Size = 195
  - Female Sample Size = 101
    - Average Age = 19.95
  - Male Sample Size = 94
    - Average Age = 19.82



Results

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.035	25.441	25.441	2.035	25.441	25.441
2	1.558	19.469	44.910	1.558	19.469	44.910
3	1.053	13.167	58.077	1.053	13.167	58.077
4	.893	11.167	69.245			
5	.840	10.503	79.748			
6	.653	8.164	87.912			
7	.603	7.534	95.446			
8	.364	4.554	100.000			

Extraction Method: Principal Component Analysis.

1=BMI
2=MAP
3=Pulse
4=Country
5=Gender
6=Health History Score
7=Health Knowledge Score
8=Health Habit Score

Overall Correlations among survey variables

Overall Correlations		MAP	BMI	Pulse	Health Habit Score	Health History Score	Knowledge Sco
Correlation	MAP	1.000	0.290	0.053	-0.088	-0.113	-0.148
	BMI		1.000	-0.115	-0.137	-0.046	-0.018
	Pulse			1.000	-0.079	0.089	-0.024
	Health Habit Score				1.000	0.162	0.139
	Health History Score					1.000	0.109
	Knowledge Score						1.000
Signifiance	MAP	-	0.000	0.098	0.016	0.003	0.000
	BMI		-	0.003	0.000	0.130	0.327
	Pulse			-	0.028	0.015	0.276
	Health Habit Score				-	0.000	0.000
	Health History Score					-	0.004
	Knowledge Score						-

Us Male correlations among survey variables

US MALE		MAP	BMI	Pulse	Health Habit Score	Health History Score	Knowledge Scor
Correlation	MAP	1.000	0.224	0.005	-0.079	-0.049	-0.136
	BMI		1.000	-0.089	0.035	0.043	0.079
	Pulse			1.000	-0.077	0.099	0.006
	Health Habit Score				1.000	0.006	-0.056
	Health History Score					1.000	-0.175
	Knowledge Score						1.000
Signifiance	MAP	-	0.031	0.965	0.452	0.640	0.195
	BMI		-	0.396	0.739	0.681	0.450
	Pulse			-	0.465	0.347	0.951
	Health Habit Score				-	0.952	0.592
	Health History Score					-	0.094
	Knowledge Score						-

US Female correlations

US FEMALE		MAP	BMI	Pulse	Health Habit Score	Health History Score	Knowledge Scor
Correlation	MAP	1.000	0.227	0.118	0.063	0.103	0.149
	BMI		1.000	0.044	-0.107	0.021	0.017
	Pulse			1.000	-0.029	0.137	-0.144
	Health Habit Score				1.000	0.070	-0.025
	Health History Score					1.000	0.019
	Knowledge Score						1.000
Significance	MAP	-	0.004	0.140	0.063	0.199	0.063
	BMI		-	0.585	0.182	0.795	0.832
	Pulse			-	0.718	0.086	0.070
	Health Habit Score				-	0.385	0.753
	Health History Score					-	0.815
	Knowledge Score						-

Argentine Male correlations

ARGENTINE MALE		MAP	BMI	Pulse	Health Habit Score	Health History Score	Knowledge Scor
Correlation	MAP	1.000	0.227	0.118	0.063	0.103	0.149
	BMI		1.000	0.044	-0.107	0.021	0.017
	Pulse			1.000	-0.029	0.137	-0.144
	Health Habit Score				1.000	0.070	-0.025
	Health History Score					1.000	0.019
	Knowledge Score						1.000
Significance	MAP	-	0.004	0.140	0.430	0.199	0.063
	BMI		-	0.585	0.182	0.795	0.832
	Pulse			-	0.718	0.086	0.070
	Health Habit Score				-	0.385	0.753
	Health History Score					-	0.815
	Knowledge Score						-

Argentine Female correlations

ARGENTINE FEMALE		MAP	BMI	Pulse	Health Habit Score	Health History Score	Knowledge Sco
Correlation	MAP	1.000	0.198	0.146	0.085	-0.106	0.058
	BMI		1.000	-0.108	-0.162	-0.036	0.039
	Pulse			1.000	-0.122	0.034	0.032
	Health Habit Score				1.000	0.080	-0.048
	Health History Score					1.000	-0.026
	Knowledge Score						1.000
Signifiance	MAP	-	0.002	0.023	0.189	0.101	0.371
	BMI		-	0.095	0.012	0.580	0.542
	Pulse			-	0.058	0.598	0.625
	Health Habit Score				-	0.218	0.460
	Health History Score					-	0.692
	Knowledge Score						-

Female group statistics

	Country	N	Mean	Std. Deviation
MAP	1	241	88.690	7.183
	2	101	84.930	7.847
BMI	1	241	21.840	2.923
	2	101	22.040	2.596
Pulse	1	241	77.770	12.672
	2	99	78.600	13.570
Health Habit Score	1	241	11.000	1.334
	2	101	12.170	1.393
Health History Score	1	241	10.510	1.706
	2	101	11.120	1.321
Knowledge Score	1	241	9.490	1.403
	2	101	12.160	2.682

Male group statistics

	Country	N	Mean	Std. Deviation
MAP	1	158	95.400	8.586
	2	93	87.000	10.444
BMI	1	158	27.390	3.010
	2	93	23.120	2.733
Pulse	1	158	72.600	12.390
	2	92	70.920	11.618
Health Habit Score	1	158	10.870	1.376
	2	93	12.300	1.196
Health History Score	1	158	9.970	2.426
	2	93	11.410	0.797
Knowledge Score	1	158	9.310	1.432
	2	93	11.490	2.556

Female T-tests

	Females: t-test for Equality of Means				
	t	df	Significance (2-tailed)	Mean Differences	Std. Error Differences
MAP	4.297	340	0.000	3.761	0.875
BMI	-0.605	340	0.546	-0.203	0.336
Pulse	-0.534	338	0.594	-0.824	1.545
Health Habit Score	-7.266	340	0.000	-1.164	0.160
Health History Score	-3.182	340	0.000	-0.604	0.190
Knowledge Score	-12.026	340	0.000	-2.669	0.222

*Equal Variances Assumed

Male T-test

	Males: t-test for Equality of Means				
	t	df	Significance (2-tailed)	Mean Differences	Std. Error Differences
MAP	6.900	249	0.000	8.401	1.218
BMI	3.343	249	0.001	1.272	0.380
Pulse	1.026	248	0.306	1.677	1.635
Health Habit Score	-8.322	249	0.000	-1.428	0.172
Health History Score	-5.524	249	0.000	-1.434	0.260
Knowledge Score	-8.681	249	0.000	-2.184	0.252

* Equal Variances Assumed

Conclusion

- Cross culturally, correlations exist between CVD risk factors and CV behaviors that are consistent in both populations. Mean Arterial Pressure is significantly correlated with
  - Health habit,
  - health knowledge
  - health history
  - BMI
- T-tests showed that population groups with higher CVD risk factor means also had lower behavior means, indicating that populations with poor CVD behavior correlate with accumulation of CVD risk factors.
- We can infer/speculate that a way to improve young adult CV health is to improve health habits and health knowledge.

Future Improvements

- Take physical data in more relaxed setting
  - More accurate resting heart rates
- More comprehensive survey
  - Minimize binary (Y/N) questions
  - Quantify behavior to greater depth
- Track young adults into later adulthood and look for correlation

Acknowledgements

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