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Research Article

Interprofessional Collaboration: Use of Cardiac Risk Perception Tool by Personal Trainers

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Abstract

Background: Cardiovascular disease (CVD) remains a major cause of death in the United States. The Institute of Medicine and The American Association of College of Nursing recommend an interprofessional teamwork approach to improving cardiac health outcomes.

Objective: The purpose of this study was to determine if individuals who participate in a Personal Trainer Program perceived themselves to be at risk for developing CVD.

Methods: This was a descriptive psychometric study. An exploratory factor analysis was conducted using the Cardiovascular Risk Perception Survey (CRPS). The participants were volunteers in a Personal Trainer Program who answered the CRPS Questionnaire which addressed known cardiovascular risk factors.

Results: Spearman correlations showed strong relationships were shared with high blood pressure (HBP) & high cholesterol (HC) (0.595), and HBP and age & gender (AG) (0.591). Moderate relationships were also seen between HBP with diabetes (DM) (0.465), ethnicity (ET) (0.359), and family history (FH) (0.398). Aside from HBP, HC shared moderate relationships with physical inactivity (PI) (0.351), DM (0.382), ET (0.351), FH (0.369), and stress level (ST) (0.358). Strong relationships were shared with Overweight (OW) & PI (0.686), as well as OW & DM (0.549). Moderate relationships were seen with OW and smoking (SM) (0.419), as well as with OW and AG (0.475), ET (0.432), and FH (0.427). Strong relationships were shared between PI and DM (0.669), while PI shared moderate to strong relationships with SM (0.443), AG (0.501), ET (0.395), FH (0.442), and ST (0.397). Moderate-to-strong relationships were shared between DM and the following: AG (0.469), ET (0.468), FH (0.681), and ST (0.673). Finally, AG, ET, FH, and ST shared strong

relationships with each other.

Conclusion: Personal trainers in collaboration with nurses have the opportunity to promote cardiovascular knowledge and prevent cardiac risk factors. Interprofessional education and collaboration among health sciences professionals could influence cardiovascular outcomes.

Keywords: interprofessional, health sciences professional, cardiac risk, psychometric

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1 INTRODUCTION

Cardiovascular disease (CVD) remains a major cause of death in the United States in both men and women[1]. To reduce the chance of developing CVD or improve the quality of life for those with CVD, interprofessional education and collaboration in the delivery of care are recommended[2]. Although interprofessional perspectives identify communication and collaboration as important in clinical care[3,4], clinical care is limited to studies on chronic disease[5], nutrition management[6], aging[7,8], pediatric care[9], and dental / pharmacy learning activities[10]. Interprofessional collaboration is deemed successful when two or more professions allow patients to achieve a greater quality of life than they could not have received individually[11,12]. The Institute of Medicine[13], the Centers for Disease Control and Prevention[14], The American Association of College of Nursing[15], and the Institute for Healthcare Improvement recommend an interprofessional teamwork approach to improving the health outcomes[16,17]. Ojelabi et al.[2] report that specialties and services are often fragmented and lead to inconsistent delivery of care. A primary example is rather than preventing CVD through modification of cardiac risk factors, the common approach is directed at the treatment of CVD[18].

Despite the recommendations from these organizations and indications of fragmented delivery of care, health science education from both nurses and exercise science professionals takes place in isolation[17,19]. A systematic review was conducted to assess the impact of interprofessional practice and education outcomes among healthcare pre-licensure learners and professionals. Among the twelve studies assessed, there are mixed results related to the development of collaborative skills. However, there is a growing interest in interprofessional approaches to meet the challenges of cardiovascular health, particularly within cardiology itself[19]. Rather than wait for the development of CVD, healthcare professions such as exercise science and nursing are well-matched to integrate the knowledge of cardiac risk factors and perception into an interprofessional academic curriculum where participants in an exercise science training programs can learn about cardiovascular health knowledge[20,21]. Exercise science professionals are usually dedicated to college athletics and sports medicine staff with primary responsibilities in emergency medicine and rehabilitation[22,23]. The majority of the interprofessional education / practice literature related to exercise science and nursing professionals focuses on athletic trainers[22,23]. However, personal trainers have emerged from gyms and fitness centers to extended follow up such as orthopedic offices, occupational health services and military installations. These settings have positioned personal trainers to be part of the health promotion and prevention teams[24]. Pettitt and Joy[24] discuss The connection between health care, health and fitness with an emphasis on the value of health professionals such as personal trainers to fill the gap in improving health outcomes, particularly physical inactivity (PI); one of the major cardiac risk factors. Other authors[25] outlined the role of fitness professionals (personal trainers) in public health with a focus on a call to action on merging the fitness and healthcare industry. In addition, authors suggested from their qualitative study that exercises professionals want to share / collaborate on health promotion topics with participants and / or clients. This offers an opportunity for nursing to link with the community through personal trainers, creating a partnership of health promotion[26].

There is a move to examine the role of personal trainers under the umbrella of exercise professionals to engage in public health. However, while there is a lack of cardiovascular research on interprofessional education and practice among personal trainers and nurses[27,28], the authors did not want to miss an opportunity to examine this partnership among healthcare professionals[29]. Investigators clearly indicated that more studies are needed among healthcare professionals to assess changes in patient-centered outcomes[30]. The purpose of this study was to determine if individuals who participated in a Personal Trainer Program perceive themselves to be at risk for developing CVD.

2 MATERIALS AND METHODS

This study was a secondary analysis examining cardiac risk perception. This study was approved by the Institutional Review Board at the University of Colorado

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Cardiovascular Risk Perception Survey

DIRECTIONS: The following ask about your thoughts about your risks for heart disease. Please indicate how small or big you think your risk is for each statement below by circling either very small, small, none, big, or very big. There are no right or wrong answers as the statements measure what you think about your personal risk/chance of developing these cardiovascular risk factors. Please answer according to what you think and not how you think you should answer or how you think others want you to answer. Also, if you could complete the demographic information at the bottom of the survey that would be greatly appreciated.

1. What do you think your personal risk or chance is of getting high blood pressure in your lifetime?
none very small small big very big

2. What do you think your personal risk or chance is of having a high cholesterol level in your lifetime?
none very small small big very big

3. What do you think your personal risk or chance is of being overweight in your lifetime?
none very small small big very big

4. What do you think your personal risk or chance is of being physically inactive in your lifetime?
none very small small big very big

5. What do you think your personal risk or chance is of smoking in your lifetime?
none very small small big very big

6. What do you think your personal risk or chance is of getting diabetes in your lifetime?
none very small small big very big

7. Based on your gender and age, what do you think your personal risk or chance is of developing heart disease in your lifetime?
none very small small big very big

8. Based on your ethnic background, what do you think your personal risk or chance is of developing heart disease in your lifetime?
none very small small big very big

9. Based on family history, what do you think your personal risk or chance is of developing heart disease in your lifetime?
none very small small big very big

10. Based on your current stress level, what do you think your personal risk or chance is of developing heart disease in your lifetime?
none very small small big very big

Thank you so much for your input on this Cardiovascular Risk Perception Survey!

Figure 1. Cardiovascular risk perception survey.

Colorado Springs (Project 18-147-CNV, April 2018). As part of the local university Personal Trainer Program, students include the Cardiovascular Risk Perception Survey (CRPS) tool as part of the health assessment for individuals who volunteered to participate in the student personal training program (Figure 1)[31]. As part of the Personal Trainer Program, students used the CRPS tool to assess participants' risk perception when engaged with a student personal trainer. Blood pressure, weight and exercise were tracked. In addition, individuals were assessed for CVD risk by using the CRPS. An analysis was conducted using the CRPS (Figure 1). The participants were volunteers (n=33) in a Personal Trainer Program offered by the Health Sciences Department and Recreation Center of a medium-sized public university. Participants answered a questionnaire to determine their views related to CVD risk perception, traditional demographics were collected but not analyzed. The questionnaire was based on a review of the literature, the Health Belief Model, and known cardiovascular risk factors. The items addressed participants' chances of having the following conditions: high blood pressure (HBP), high cholesterol (HC), overweight (OW), PI, smoking (SM), diabetes (DM), and demographic

Table 1. Participants Mean Descriptives for CRPS Questions

Item / Individual Question on CRPS	All Participants (*n*=33), Mean±SD	Median
High blood pressure (HBP)	3.3±1.1	3.0
High cholesterol (HC)	3.7±1.0	4.0
Overweight (OW)	3.4±1.3	4.0
Physical inactivity (PI)	2.9±1.2	3.0
Smoking (SM)	1.3±1.0	1.0
Diabetes (DM)	2.7±1.2	3.0
Age & gender (AG)	3.2±1.0	3.0
Ethnicity (ET)	2.9±1.0	3.0
Family history (FH)	3.4±1.0	3.0
Stress level (ST)	3.3±1.0	3.0

Table 2. Spearman's Rank Correlation Matrix

	HBP	HC	OW	PI	SM	DM	AG	ET	FH
HC	0.595***								
OW	0.269	0.325							
PI	0.331	0.351*	0.686***						
SM	0.039	0.239	0.419*	0.443**					
DM	0.465**	0.382*	0.549***	0.669***	0.268				
AG	0.591***	0.323	0.475**	0.501**	0.157	0.469**			
ET	0.359*	0.379*	0.432*	0.395*	0.167	0.468**	0.649***		
FH	0.398*	0.369*	0.427*	0.442*	0.037	0.429*	0.681***	0.626***	
ST	0.349*	0.358*	0.329	0.397*	0.058	0.323	0.673***	0.611***	0.497**

Notes: *P<0.05, **P<0.01, ***P<0.001.

predictors of heart disease [age & gender (AG), ethnicity (ET), family history (FH), stress level (ST)].

3 RESULTS

Descriptive statistics and data analyses were completed using JASP Version 11.1[32]. Mean descriptives for CRPS questions are presented in Table 1. A higher mean score indicates a higher risk of that particular cardiac risk factor. Because the sample was relatively small and much of the data were not normally distributed, Spearman rank correlations were used to analyze the relationships between the items.

K-means cluster analysis was used to find unspecified groups within the cohort. This is an exploratory method used to create groupings based upon a group of continuous variables that are relevant to a particular task[32,33]. As this method is exploratory, there are no correct clusters, only useful ones. Thus, the Hartigan-Wong algorithm was used, with the number of clusters determined using Bayes Information Criterion optimization.

Strong relationships were shared with HBP & HC (0.595), and HBP and AG (0.591). Moderate relationships were also seen between HBP with DM (0.465), ET (0.359), and FH (0.398). Aside from HBP, HC shared moderate relationships with PI (0.351), DM (0.382), ET (0.351), FH (0.369), and ST (0.358). Strong relationships were shared with OW & PI (0.686), as well as OW & DM (0.549). Moderate relationships were seen with OW and SM (0.419), as well as with OW and AG (0.475), ET (0.432), and FH (0.427). Strong relationships were shared between PI and DM (0.669), while PI shared moderate to strong relationships with SM (0.443), AG (0.501), and ET (0.395), FH (0.442), & ST (0.397). Moderate-to-strong relationships were shared between DM, and the following: AG (0.469), ET (0.468), FH (0.681), and ST (0.673). Finally, AG, ET, FH, & ST shared strong relationships with each other. The results are in Table 2.

Three clusters were specified and explained 47.8% of the variance in the group. One cluster of five (cluster 3) had a relatively low-risk perception, with a cluster of four participants (cluster 2) with relatively low risk perception. The largest cluster of 24 participants tended to be somewhat moderate (Table 3).

4 DISCUSSION

Results of the study highlight the value and importance of interprofessional collaboration and education in a

Table 3. Cluster Descriptive (Reported as Mean±SD)

Item / Individual Question on CRPS	Cluster 1 (*n*=24)	Cluster 2 (*n*=4)	Cluster 3 (*n*=5)
High blood pressure (HBP)	3.4±0.9	1.5±1	4.2±0.8
High cholesterol (HC)	3.9±0.6	2.0±0.8	4.2±0.8
Overweight (OW)	3.4±1.1	1.8 ±1.5	4.8±0.5
Physical inactivity (PI)	2.8±1.0	1.5±0.6	4.4±0.6
Smoking (SM)	1.1±0.3	1.0±0	2.4±1.9
Diabetes (DM)	2.5±1.0	1.5±0.6	4.4±0.9
Age & gender (AG)	3.3±0.4	1.5±0.6	4.4±0.6
Ethnicity (ET)	2.8±0.8	1.5±0.6	4.2±0.4
Family history (FH)	3.4±0.6	1.8±1	4.6±0.6
Stress level (ST)	3.5±0.8	1.8±1	3.8±0.8

unique setting such as a student personal training program. This opportunity creates a foundation for future personal trainers to change cardiovascular risk factors. Not only does the CRPS introduce a cardiac risk factor tool into the practice of personal trainers, but it allowed the trainers to learn how important it is to educate individuals about changing health behavior. Similar to Pettitt and Joy[24] who identified that health professionals play a key role in assisting individuals to achieve healthy outcomes such as engaging in physical activity, this study allowed personal trainers to educate participants about changing risk factors like PI. Connecting personal trainers and healthcare professionals such as nursing via interprofessional collaboration has the benefit of meeting the challenges of cardiovascular health, mortality and morbidity rates in the community[19,27,34]. This study connected personal trainers and healthcare professionals to focus on identifying cardiac risk factors. Another important component of this collaboration is to expand and highlight the role of a student and / or certificated personal trainer in changing patient outcomes as they relate to the development of CVD[30]. There are barriers to connecting personal trainers to healthcare professionals, but the CRPS tool offers a common tool and a shift in personal trainer-healthcare professional collaboration effort where not only nurses, and physicians can change an individual's cardiac risk, but personal trainers become part of the change in healthy communities[24,35]. However, the major limitation of this study is the sustainability of the tool within a personal trainers' education and practice. This is a call for personal trainers to become part of the interprofessional efforts in academic institutions, healthcare settings (primary care), and community settings[29] and influence the goal of preventing heart attacks and strokes within the United States[1,34]. Although this study involved only personal trainers and those individuals who participate in this training program within an academic environment, this tool can be expanded to be used within the community / public health areas where individuals are improving their health and exercise capacity.

5 CONCLUSION

This study demonstrated that personal trainers are inherently well-placed to influence an individual's cardiac risk, particularly in unique settings. The CRPS tool captures the common cardiac risk factors that clearly influence the development of CVD. Personal trainers can collaborate with other health professionals and more importantly be part of a larger team in changing outcomes related to cardiovascular mortality and morbidity.

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Not applicable.

Conflicts of Interest

The authors declared no conflict of interest.

Author Contribution

Prue-Owens K and Lindsay KG were responsible for writing and the original draft. Lindsay KG was responsible for statistical analysis and reviewing. Prue-Owens K supervised the overall project. All authors contributed to the manuscript and approved the final version.

Abbreviation List

AG, Age & gender
CRPS, Cardiovascular risk perception survey
CVD, Cardiovascular disease
DM, Diabetes
ET, Ethnicity
FH, Family history
HBP, High blood pressure
HC, High cholesterol
OW, Overweight
PI, Physical inactivity
SM, Smoking
ST, Stress level

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