



RESEARCH ARTICLE

REVISED Return to work rate of individuals after cardiac rehabilitation and the demographic and impairment factors that influence return to work in the Western Cape, South Africa [version 3; peer review: 2 approved, 1 approved with reservations]

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Abstract

Background

Cardiovascular disease (CVD) commonly affects individuals within the working age group, often resulting in unemployment, particularly in low- to middle-income countries. The purpose of the study was to determine the return to work (RTW) rate of individuals with CVD after cardiac rehabilitation (CR) and the impact of impairment and socio-demographics on the individual's ability to (RTW).

Methods

A cross-sectional survey, namely the Work Rehabilitation Questionnaire (WORQ) was used to gather the information. The IBM SPSS software (version 25) was used to manage the statistical analysis. Individuals who completed a CR program between the ages of 18 and 64 years made up a sample of 63 research participants.

Results

The RTW rate reported that only 30 (47.6%) of the participants successfully RTW after CR and 33 (52.4%) of participants did not RTW.

Open Peer Review

Approval Status

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The results also indicated that the older the individual and the higher the degree of impairment experienced, the less likely RTW would occur.

Conclusion

Factors such as the age and level of functional impairment of the individual with CVD must be addressed more aggressively in CR programs, particularly if the goal of the individual with CVD is to RTW.

Keywords

cardiovascular disease, cardiac rehabilitation, vocational rehabilitation, return to work

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REVISED Amendments from Version 2

The authors have incorporated all the changes as suggested. Some of the changes included the following:

Independent variables: Education, work, age, gender, marital status, medical condition. Sentence rephrased to indicate the socio-demographic made up the independent variables.

Dependent variable: Return work rate.

Any further responses from the reviewers can be found at the end of the article

Introduction

The impact that CVD in Sun-Saharan Africa has on the economy is said to be substantial as it is increasingly affecting individuals in their productive years of life.¹ A 10 year follow up study indicated that the incidence of Myocardial Infarct (MI) was 71.2 per 1000 males in the age group of 45-54.² Similarly in developed countries such as United States, the incidence of MI is among the working population.³ Furthermore, research indicates that although the number of older individuals with MI has decreased, the number of younger individuals within the working age group, with MI has increased.⁴ In a study conducted by Söderman, Lisspers & Sundin,⁵ they reported that the quality of life of individuals with MI on their study decreased and that one third of these individuals did not return to work.⁶

This burden of disease heeds calls to a more comprehensive approach for prevention and management of CVD, particularly in low- to middle-income countries such as South Africa.¹ Upon investigating the impact of evidence-based CR programs it was found that participation in such a preventative program does have an impact on decreasing CVD mortality and re-hospitalisation, as well as having an impact on an individual's ability to RTW.² A prospective study conducted with 83 patients of working age during their CR found that job satisfaction and a positively perceived work environment resulted in early RTW after cardiac intervention and may have economic benefits and improve quality of life.³ In a meta-analysis conducted by Sadeghi *et al.*,⁷ they indicate the positive affect of cardiac rehabilitation programs in facilitating the return to work of individuals diagnosed with cardiovascular conditions. The above authors indicate that of the results of the 16 studies analysed, pooled results showed that the prevalence of RTW in patients attending the cardiac rehabilitation (CR) group was 66% and the control group was 58%. They further indicate that subgroup analysis reveals that the proportion of RTW was higher in white-collar classified jobs, i.e. 76%, compared to individuals who had blue-collar classified jobs, i.e. 63%. A further analysis revealed that the RTW rate for individuals who attended out-patient CR was 72% and was more effective when compared to individuals that attended in-patient CR, the RTW rate being 62%.

Slebus *et al.*⁸ further explored facilitating factors for RTW and identified the following: no signs and symptoms of the disease, work contentment, positive relationships at work, ability to participate in work activities, information from the doctor that encouraged RTW, medical care was working well, family relationships were positive, financial motivation and intrinsic motivation to work. Similar results from a qualitative study of perpetuating factors for long-term sick leave and promoting factors for RTW, found that illness perceptions and self-efficacy expectations can be promoting factors for RTW.⁹ Furthermore, financial obligations and culture are also contributing factors of RTW according to a study that reviewed the employment status after myocardial infarction (MI) among men. These men stated that they did not want to take advantage of their wives earning an income and that it was their responsibility as the breadwinner to provide for their families.¹⁰

In a Danish cohort study examining RTW after hospitalisation for heart failure, the authors speculate that a lack of RTW was due to functional limitations as a result of the disease as well as the psychological effects of having the heart failure diagnosis.¹¹ Kearney *et al.*¹² also observed that fatigue was most frequently reported as a barrier to RTW, followed by mild cognitive impairment such as impaired memory and cognitive processing. Similarly, a study with patients who had implantable cardioverter defibrillators estimated that 75% of patients experience mild to severe short-term cognitive impairment, with roughly 33% of these expected to be prolonged at six months.¹³

Patients suffering from anxiety or emotional distress following the cardiac incident have been found to have increased difficulty in lifestyle modification and less likely to complete CR.¹⁴ This could have a negative impact on the individual's prospects of RTW and successfully maintaining employment. Similarly, in a prospective cohort study examining the associations between depressive episodes and anxiety disorder with RTW after MI at three and six months found that the presence of a depressive episode and anxiety disorder during the first three months after the MI was a significant predictor of not RTW by 12 months.¹⁵

Kearney *et al.*¹² also found that patients in occupations such as labourers, tradesman and in the transport industry were less likely to RTW as their jobs were labour-intensive and that their illness had a greater impact on their ability to perform their work tasks.

The significance of the current study was to determine the demographic factors that are associated with RTW for individuals with cardiac conditions. The results would determine the RTW rate of individuals after they have completed a CR program. Furthermore, the study would determine which specific factors influence RTW for individuals with cardiac conditions after the completion of a CR program.

Aim and objectives

- To determine the RTW rate of individuals with CVD after a completing a CR program
- To determine the impact of impairment and socio-demographic factors on an individual's ability to RTW after completing a CR program

Methods

Participant recruitment

All participants were patients of a district hospital, who were admitted due to a cardiac incident between 2017 and 2018. Each participant was referred to CR as an outpatient. The sampling technique utilised in this study was convenience sampling. A convenient sample was utilised at the data collection site. The advantage of using this sampling technique is that it is inexpensive, and results can be sorted quickly. However, there is a risk of the sample not being representative.¹⁶

Inclusion criteria

The inclusion criteria for participation was an age of 18-64 years, completion of the CR program and active employment prior to the cardiac incident.

Procedures

A pilot study was conducted over a two-month period between October and November 2017. Data collection for the study was conducted over a one-year period from January to December 2018. After ethical approval, access to contact information of participants in the CR program was obtained from the hospitals records department. The pilot study was completed with six participants to determine the practicability of the tool and outcome measure before commencing the study. Some participants required assistance with reading or comprehension therefore it was found that interviews were better than self-administration of the questionnaire. No changes to the questionnaire were necessitated. The questions were read verbatim. Through the pilot study it was determined that a maximum of twenty minutes was required per survey.

Information sheets describing the study and consent forms were provided for those interested in participating in the study. Once verbal and written consent were obtained, surveys were administered. Questions that some participants chose not to answer were considered as incomplete surveys and were not included in the final sample. Research participants chose to not answer questions that did not related to their context and life circumstances, e.g. they did not focus on commenting on their type of work they would want to do in the future as they were unemployed. In terms of the analysis only completed questionnaires were used.

Ethics

The World Health Organisation's (WHO)¹⁷ ethical guidelines helped promote the ethical conduct of research. Participants were informed of their right to stop participating in the study at any time during the study. Counselling was made available to participants who experienced distress during participation in the study. Through safely storing audio interviews and transcription of data on a password-protected computer, confidentiality was guaranteed. Pseudonyms were used to ensure participants' anonymity in all documentation related to the study. The study commenced after approval from the University's Research Ethics Committee and the Department of Health (Western Cape) was obtained.

Validity and reliability

The WORQ is aimed at gaining a fast, yet comprehensive overview of the functional problems experienced during the RTW process. The questionnaire is made up of two parts, part one being the sociodemographic and background information and part two a functional impairment section, comprising various health characteristics.

A study reported that the WORQ has a high level of internal consistency (Cronbachs alpha=0.88) and interlinker agreement (kappa=0.82), exhibits acceptable levels of test retest reliability (r=0.79), good face, content and criterion validity, therefore a valuable and appropriate instrument to use.¹⁸

Analysis

The independent variables selected for this study were acquired directly for the WORQ survey. The socio-demographic factors that made up the independent variables included age, sex, civil status and level of education. Work and health-related variables from part two of the questionnaire were collated to calculate an impairment score. RTW status was captured as the dependent variable. RTW status in the current study was described as the resumption of work in the open labour market, including formal employment, informal employment and self-employment. This was captured through a yes or no answer regarding RTW after participating in a CR programme. Furthermore, the capacity of RTW included full-time work, part-time work, changes in work type or adaptation to accommodate cardiac condition.

To summarise sociodemographic, work and health characteristics in relation to RTW ability, descriptive statistics of central tendency, frequency and percentages were used. Summary statistics of key independent variables were also calculated.

In order to assess the association between the independent variables (age, gender, civil status, level of education, degree of impairment) and dependent variable (RTW status) Chi-square was conducted. Significance level was set at $p \leq 0.05$.

To determine the variables that influence the ability to RTW for participants with cardiac conditions, binary logistical regression was conducted. For the purpose of this study the probability of RTW after CR was projected based on participants socio-demographics, work- and health-related characteristics. The work, health and activity restriction characteristics that formed the impairment score was derived from part 2 of the WORQ, of which 37 questions from of the following ICF categories: body functions, activities and participation and environmental factors, were used. This study’s sample of $n=63$ supported the binary logistical regression analysis with a 95% confidence interval.

Results

The results of the study highlights the participants’ responses to the WORQ questionnaire, which helped determine the RTW rate, factors associated with RTW and the work characteristics of the study sample. Seventy-seven copies of the questionnaire were administered, however only 63 surveys were accepted for analysis. Fourteen surveys were incomplete and therefore voided. The time period after completing of the CR varied amongst participants.

The study sample comprised 27 female and 36 male participants, with a mean age of 54 years and a standard deviation of 5.95. Most (60.3%) of the participants in the sample were in the 51-60 year age group. Forty-two of the participants were married, 12 divorced, 7 never married, 1 widowed and 1 was cohabiting. The majority (73%) of participants had a secondary school education. Forty-two participants completed secondary school, with 8 graduates from college/ university, 2 had completed post-graduate studies and 7 primary school only. All the participants had experienced a MI between 2016 and 2018 and received medical and therapeutic intervention. Nineteen participants were receiving government support in the form of social grants (Table 1).

Summary statistics of the RTW rate

Results of the bivariate analysis conducted to determine the RTW rate of individuals with CVD yielded the following results:

Only 30 (47.6%) of the participants reported, successful RTW after CR and 33 (52.4%) of participants did not RTW. (Figure 1).

Table 1. Logistic regression of socio-demographic factors and impairment score.

Variable	Odds ratio	Confidence interval-lower	Confidence interval-upper	P-value
Age	9.280	1.085	79.395	0.004*
Gender	2.125	.766	5.898	0.088
Marital status	.563	.195	1.621	0.456
Education	3.111	.577	16.783	0.693
Impairment score	.500	.388	.644	0.034*

*Statistical significance.

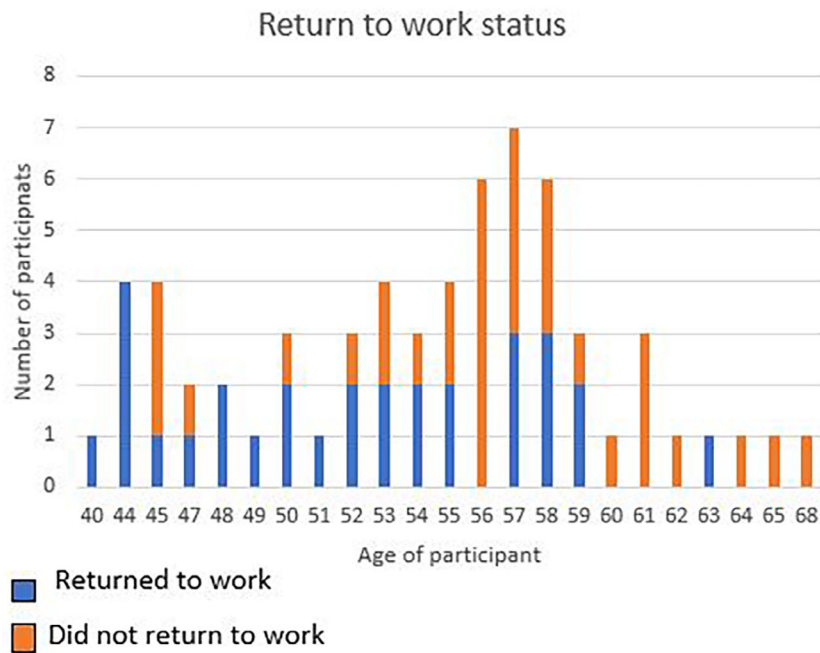


Figure 1. Age in relation to return to work.

Factors associated with RTW

There were five independent variables. Three of the socio-demographic variables, namely civil status, education level and gender had no significant association with ability to RTW. From the logistic regression it was found that age ($p \leq 0.004$) and impairment score ($p \leq 0.034$) were significant in influencing RTW (Table 1).

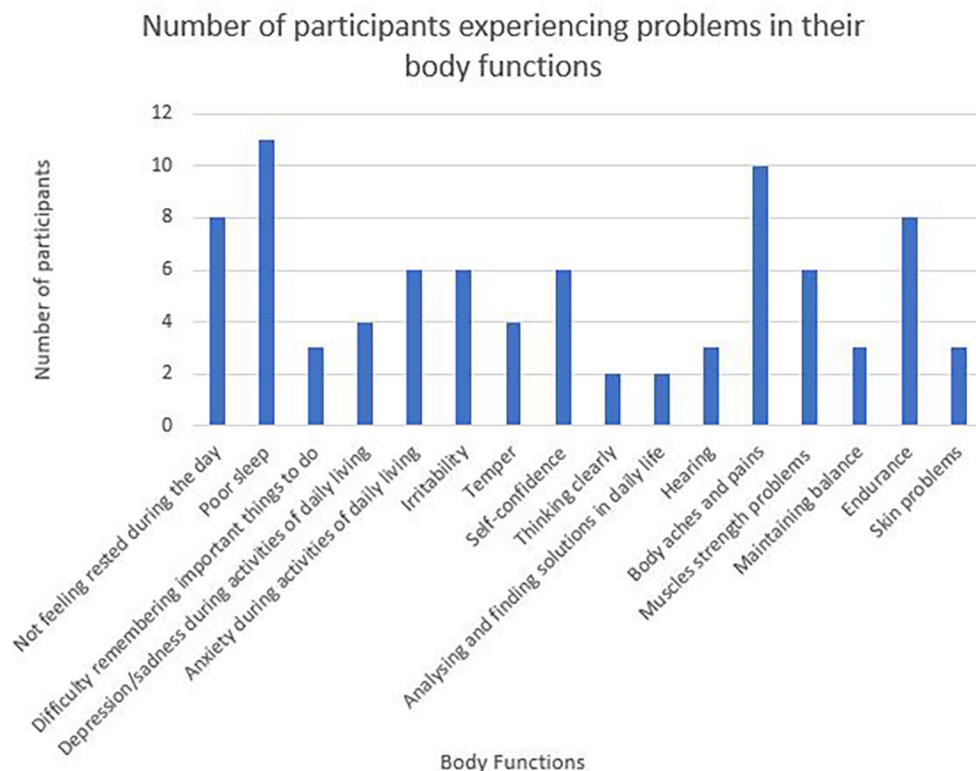


Figure 2. Number of participants experiencing problems in their body functions.

Age

From the logistic regression it was understood that the older you get the less likely you are to RTW after a cardiac incident. As noted in the figure below, most of the participants in the study sample were in the 57-year-old age group and did not RTW. All participants 44 years and below, did RTW (Figure 1).

Impairments and activity restrictions of study sample

The survey found the impairment score to have a p-value of p=0.034, indicating that if you experience a higher degree of impairment, the less likely you are to RTW successfully. Responses that scored 8-10 on the Likert scale for each category are detailed below.

Sixteen categories of body function are represented in the WORQ (Figure 2). Problems related to sleep, body aches and pains and endurance rated amongst the highest in the participant responses.

Twenty-one categories of activities and participation are represented in the WORQ (Figure 3). Lifting items more than 5 kg, walking more than a kilometre, crawling, climbing or running were identified as some of the most difficult activities to participate in.

Changes were noted at most levels of classification pre and post injury, except for the one person doing heavy duty work. (Table 2).

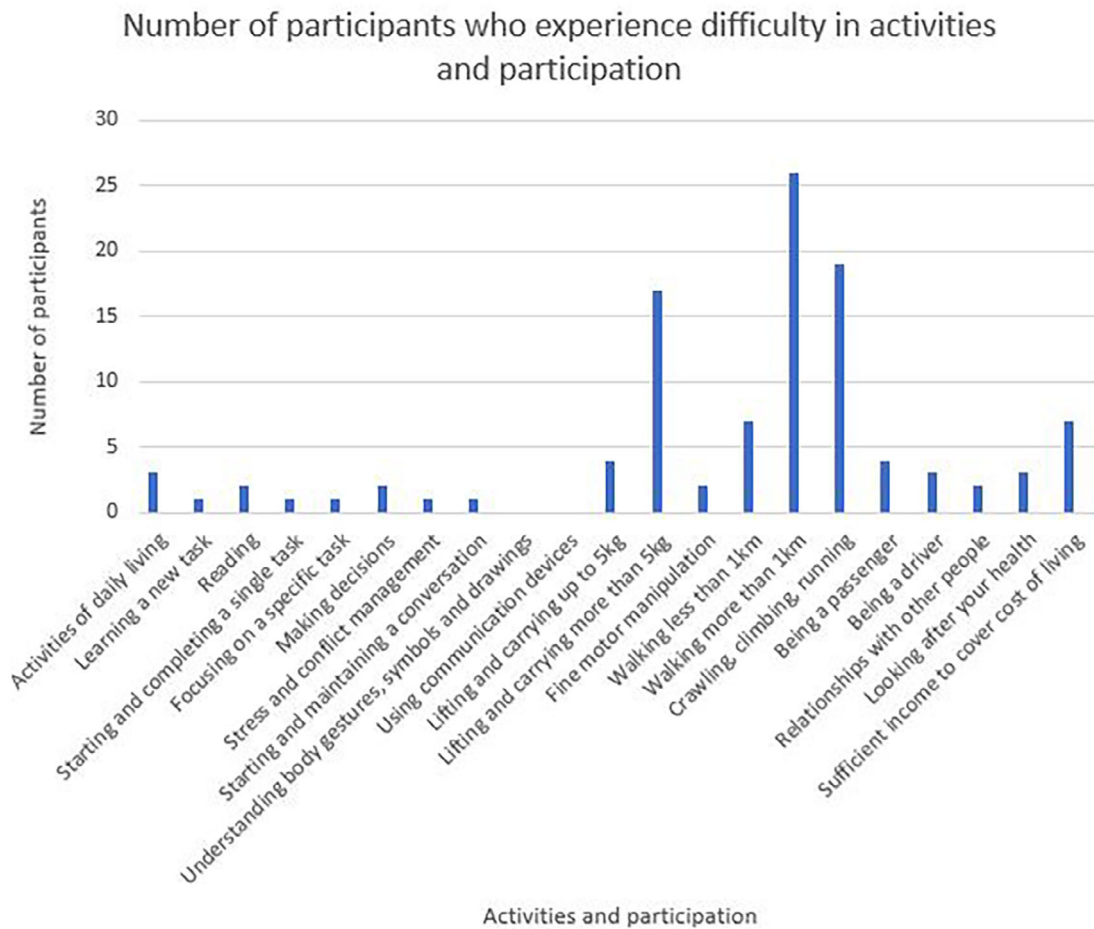


Figure 3. Number of participants experiencing problems in their activities and participation.

Table 2. Work characteristics.

Variable	n (63)	%
Pre-injury classification		
Sedentary	14	22.2
Light	35	55.5
Medium	11	17.5
Heavy	2	3.2
Unemployed	1	1.6
Current work classification		
Sedentary	11	17.5
Light	24	38.1
Medium	5	7.9
Heavy	1	1.6
Unemployed	22	34.9

Discussion

Results of the study indicated that 52.4% of the participants did not RTW, despite having had CR (Figure 1). Factors that significantly impacted on the participants' ability to RTW were age and degree of impairment as well as work characteristics (Table 2).

RTW rate after a cardiac incident

Similar to this study's low RTW rate, in the study examining factors associated with RTW after acute myocardial infarction (AMI) in China, it was found that almost half of the previously employed Chinese patients did not RTW within 12 months of the incident, with the researchers stating that CR availability was low and quality of rehabilitation poor.¹⁹ However, contrary, to the Chinese and the current study, a Malaysian study that predicted RTW after a cardiac event, reported that after participating in a CR program the RTW rate was 66.1% and that a focus on mental health during CR may improve the RTW of these individuals.²⁰ Likewise, in a Danish nationwide register follow-up study, 76.6% of patients RTW by the median time of 4 months post incidence.²¹ The latter supports the belief that RTW after a cardiac incident can be increased successfully, taking lessons from other programs such as mental health into consideration and applying it contextually.

Socio-demographic factors that impact RTW after cardiac incident

As reported from the quantitative results, the older you get, the less likely it is for you to RTW after a cardiac incident. Similarly, in an Italian review on the RTW after an acute cardiac incident, it was found that several studies reported that older age was an adverse factor for RTW.²² Jiang *et al.*'s¹⁹ study in China, also indicated that this notion of being older is still a negative factor for RTW. In another Danish study exploring the RTW and subsequent detachment from employment after MI, it was also found that the 60-65 year-old age group were at the highest risk of detachment from employment. Second to this age group was the youngest age group of 30-39 years, while their analysis reported that the 40-49-year-old age group had the lowest risk of detachment from employment.²³ The current study is similar as all participants under the age of 44 years, RTW and participants between 60 and 65, did not RTW, excluding one 63-year-old participant. Furthermore, the Smedegaard *et al.*'s²³ study stated that within the 50-59-year-old age group, 51.7% of participants did not RTW and 48.3% of the participants did RTW. These statistics are very similar to the results of the current study with the mean age being 54 years and the rate of RTW being 47.62% and 52.38 % of participants not RTW.

As reported in the results of the current study, gender did not play a significant role in determining RTW after a cardiac event. However, in the review of Fiabane *et al.*'s²² it was found that studies reported women to be at greater risk of not RTW and that married women, in particular, were discouraged. The studies of Kragholm *et al.*'s²¹ and Jiang *et al.*'s¹⁹ also stated that gender (i.e., males) were significantly associated with successful RTW. Within the context of this study, being located in a suburb where women are often forced to work in order to support or contribute towards the household, could be a possible reason for the insignificance.

In this study 67% of the participants were married; however, marital status was not a significant factor in the RTW of this study population. Similarly, the systematic review of Cancelliere *et al.*'s²⁴ on factors affecting RTW after injury or illness,

revealed that marital status had no association. Contrary, Dreyer *et al.*²⁵ postulates that being married, was seen as more likely to RTW successfully.

The current study also reported that educational level was not a significant factor. Contrary to these results the Italian review found that with a higher educational level and higher socio-professional category supported RTW, while blue collar workers were more at risk of not RTW.²² Similarly, the prospective cohort study on predicting RTW after AMI found that socio-occupational factors such as self-employment, higher educational level and lower levels of depression, were predictors of RTW.²⁶ The study by Smedegaard *et al.*²³ on employment after MI also found that higher education was associated with successful RTW but only for men, not women. In this study, participants' education level ranged from primary school to post-graduate level, with a majority of the study population having secondary education, however no significance was found. This could be related to the fact that blue collar work is dominant in South Africa due to education levels being lower than developed countries such as the studies mentioned above.

Impact of impairment score on RTW after cardiac incident

This study's calculated impairment score of $p=0.034$, proved to be a significant contributor to not RTW. The higher the degree of impairment, the more likely it was for the individual to not RTW. Impaired cardiac functioning was reported to have an impact on various aspects of body functions and activities and participation which collectively affected the participants' ability and motivation to RTW. In a study that compared young men and women RTW after AMI, it was found that 63% of those not RTW could be attributed to deteriorating health from impairments.²⁵ Thus, the degree of impairment must be established at the initial point of assessment and addressed within rehabilitation for it not to have such a negative influence on RTW.²⁷ In another study that compared differences between younger and older adults with multiple conditions, it was found that individuals with comorbidities were more likely to report impairments related to CVD.²⁸

Work characteristic factors that influence RTW after cardiac incident

The type of work the individual is returning to, needs to be addressed early on in the rehabilitation process so that more individuals have the opportunity to prepare for RTW. In this study, work ranged from sedentary to heavy classifications of work. Sedentary work refers to work that involves sitting, some standing and walking with minimal lifting. Light work requires walking, standing, some pushing and pulling objects of about 5 kg. Medium work involved frequent lifting or carrying objects up to 25 kg. Lastly, heavy work is defined as frequent lifting and carrying of objects up to 50 kg.²⁹ Grace *et al.*³⁰ notes that it is imperative to discuss timing of the RTW of clients and that consideration should be given to the family's financial situation, as well as the work characteristics. Considerations regarding the individuals mental health and modifiable tasks should be done in partnership with the individuals employer.³¹

Limitations to the study

The study was conducted with a small study sample, however cognisance must be taken of the fact that the district hospital mentioned in the study is the only hospital in the City of Cape Town (South Africa) that provided CR as a service to patients with cardiac conditions. There were no other CR programs available in the geographical area in the Western Cape. Due to reasons above caution must be taken in generalising the findings of the current study.

Conclusion

The aim and objectives of the study were to determine the RTW rate of individuals with CVD after a cardiac incident and the impact of impairment and socio-demographic factors on an individual's ability to RTW. The results of this study suggests that factors associated with age and impairment influences one's ability to RTW. Work characteristics changes were evident upon RTW after the cardiac incident. Civil status, education level and gender had no significance to RTW. It is therefore imperative for intervention programs being developed to consider age, degree of impairment and work characteristics when designing an integrative CR program which includes RTW preparation and strategies.

Data availability

Underlying data

University of Western Cape: Questionnaire data for 'Return to work rate of individuals after cardiac rehabilitation and the demographic and impairment factors that influence return to work in the Western Cape, South Africa', <https://doi.org/10.25379/uwc.21750356.v2>.³²

Data are available under the terms of the [Creative Commons Attribution 4.0 International license](https://creativecommons.org/licenses/by/4.0/) (CC-BY 4.0).

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[Publisher Full Text](#)

Open Peer Review

Current Peer Review Status:   

Version 3

Reviewer Report 15 July 2024

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Vrati M. Mehra 

Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

I think the paper looks much improved. I believe it is ready for indexed.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 2

Reviewer Report 13 April 2024

<https://doi.org/10.5256/f1000research.158815.r262503>

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Vrati M. Mehra 

Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

Introduction:

The statement: "In most countries the incidence of MI is among the working population." references a study done on working age population in the United States alone. As such it is not the best study to show that MI is increasing globally and specifically in the working age population. A good source maybe the recent report from Global Burden of Cardiovascular Diseases.

Similarly please reconsider the reference for the statement "Furthermore, research indicates that although the number of older individuals with MI has decreased, the number of younger individuals with MI has increased" as the current study cited does not state that MIs have increased in younger populations and decreased in older populations.

Kindly add "after completing a CR program" to the Aims and objectives so that they accurately describe that you are studying RTW only among those who completed a CR program.
"To determine the RTW rate of individuals with CVD after a cardiac incident after completing a CR program."
"To determine the impact of impairment and socio-demographic factors on an individual's ability to RTW after a cardiac incident after completing a CR program."

Methods

Procedures

Kindly specify what were some reasons for people leaving questions incomplete.

I would suggest including a separate section in the Methods section that defines how each of the independent variables was coded and which option was treated as the reference option within each of these.

Methods, Analysis: Kindly specify how many months (SD) after the completion of CR were the participants interviewed about returning to work.

Results

The results mentioned in Paragraph 2 should be included in a table. The current Table 1 only includes p values for each variable.

Table 1 should be modified to include categories where applicable for each of the variables. The Odds ratios, CI and P value. This is usually the way logistic regression results are reported in the literature.

Discussion, Work characteristic factors that influence RTW after cardiac incident:

I would suggest that the authors also consider the importance of modification of duties at work after CVD so people can continue to work if they would like to do so. As well helping patients learn ways to reintegrate in work safely is also important.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Partly

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Epidemiology, Logistic Regression, Large survey dataset analysis.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 24 Jun 2024

Shaheed Soeker

Introduction:

1) The statement: "In most countries the incidence of MI is among the working population." references a study done on working age population in the United States alone. As such it is not the best study to show that MI is increasing globally and specifically in the working age population. A good source maybe the recent report from Global Burden of Cardiovascular Diseases.

2) The first reference is in Sub-Saharan Africa.
Change sentence to indicate developed countries such as the United States experience the same thing.

3) Similarly please reconsider the reference for the statement "Furthermore, research indicates that although the number of older individuals with MI has decreased, the number of younger individuals with MI has increased" as the current study cited does not state that MIs have increased in younger populations and decreased in older populations. The intention was to illustrate that the working population is now increasingly affected by MI.
Restructured the sentence to indicate that.

4) Kindly add "after completing a CR program" to the Aims and objectives so that they accurately describe that you are studying RTW only among those who completed a CR program.
"To determine the RTW rate of individuals with CVD after a cardiac incident after completing a CR program."
"To determine the impact of impairment and socio-demographic factors on an individual's ability to RTW after a cardiac incident after completing a CR program.

5) Added 'after completing CR program ...' to aims and objectives.

6) Procedures

Kindly specify what were some reasons for people leaving questions incomplete.

7) Personal choice.

Research participants chose to not answer questions that did not related to their context and life circumstances, e.g. they did not focus on commenting on their type of work they would want to do in the future as they were unemployed. In terms of the analysis only completed questionnaires were used.

8) I would suggest including a separate section in the Methods section that defines how each of the independent variables was coded and which option was treated as the reference option within each of these.

Independent variables: Education, work, age, gender, marital status, medical condition.
Sentence rephrased to indicate the socio-demographic made up the independent variables.
Dependent variable: Return work rate

9) Methods, Analysis: Kindly specify how many months (SD) after the completion of CR were the participants interviewed about returning to work.

10) Varied but a min of 1 month as the cardiac rehab programme needed to be complete first.

Added this to the results section.

11) The results mentioned in Paragraph 2 should be included in a table. The current Table 1 only includes p values for each variable.

12) Added a separate table with demographic details be included. See below Table 1. Table 1 should be modified to include categories where applicable for each of the variables. The Odds ratios, CI and P value. This is usually the way logistic regression results are reported in the literature.

13) Table has been modified to include the Odds ratio and CI.

14) Discussion, Work characteristic factors that influence RTW after cardiac incident: I would suggest that the authors also consider the importance of modification of duties at work after CVD so people can continue to work if they would like to do so. As well helping patients learn ways to reintegrate in work safely is also important.

15) Considerations regarding the individuals mental health and modifiable tasks should be done in partnership with the individuals employer.

Ref:

Predicting return to work following myocardial infarction: A Prospective Longitudinal Cohort Study

Sun, W., Gholizadeh, I., Perry, I., Kang, K

[Int J Environ Res Public Health](#).

19(13)

2022

Competing Interests: No competing interests were disclosed.

Reviewer Report 24 January 2024

<https://doi.org/10.5256/f1000research.158815.r224043>

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Thomas Maribo 

Public Health, Aarhus University, Aarhus C, Denmark

Thank you for the revised version of the manuscript. It has improved the article. I have no further comments.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Cardiac rehabilitation. vocational rehabilitation

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 18 October 2023

<https://doi.org/10.5256/f1000research.141934.r200453>

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Barbara Iansã de Lima Barroso 

Federal University of São Paulo, São Paulo, Brazil

The article deals with cardiovascular diseases and the return to work of people after cardiac rehabilitation (CR) in low-to-middle income countries.

The article is of great importance for the Return to Work area, however, some adjustments need to be made. Getting started:

1. Review the references used, bring more current scientific evidence, systematic reviews and population studies are well evaluated for a more robust introduction and discussion;
2. The word return-to-work must be written without a hyphen, although an Entry Terms version with a hyphen appears in MeSH, in current literature we use the word without a hyphen.
3. Abbreviations throughout the text need to be revised, provide only one complete sentence followed by the abbreviation, then present only the abbreviation.
4. In statistical analysis, authors need to scientifically support the choice of method, and not just sampling (this was done to support the convenience sample), please provide more details;
5. Results can start with a description of the sample;
6. The conclusion needs to be redone. Add whether the objectives of the study were achieved, the limits of the study, the strengths and divergent points of the research.

I hope my contributions can further improve your work. Everything about RTW is very challenging, don't give up, continue to walk your path talking about work and its importance in our lives.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: I work mainly in the field of Policy, Planning and Management of the Brazilian Unified Health System, and its policies for the LGBTQIAP+ population. I have experience and interest in the area of Public Health, in the following topics: male and female workers' health - contributions on health, work and society; precariousness of work; health work; management in Occupational Health, and Systematic Reviews in the field of Work.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 10 Nov 2023

Shaheed Soeker

Response to reviewers

Dear Professor

Thank you so much for the informed comments that you provided. I have provided a detailed response to the comments that you have provided. As a team we have tried to incorporate as many of the suggestions that you provided.

Reviewer 1: **Barbara Iansã de Lima Barroso**, Federal University of São Paulo, São Paulo, Brazil

Comment

Review the references used, bring more current scientific evidence, systematic reviews and population studies are well evaluated for a more robust introduction and discussion;

Response

The introduction and discussion was updated with scientific evidence from systematic reviews

Comment

The word return-to-work must be written without a hyphen, although an Entry Terms version with a hyphen appears in MeSH, in current literature we use the word without a hyphen.

Response

Hyphen has been removed.

Comment

Abbreviations throughout the text need to be revised, provide only one complete sentence followed by the abbreviation, then present only the abbreviation.

Response

Abbreviations have been revised.

Comment

In statistical analysis, authors need to scientifically support the choice of method, and not just sampling (this was done to support the convenience sample), please provide more details;

Response

Reference has been added:

Kaur P, Stolfus J, Yellapu V: Descriptive statistics. *Int j Acad Med.* 2018; 4: 60-63

Comment

Results can start with a description of the sample;

Response

Sample description has been moved from methods to results section.

Comment

The conclusion needs to be redone. Add whether the objectives of the study were achieved, the limits of the study, the strengths and divergent points of the research.

Response

Conclusion has been rewritten.

Competing Interests: No competing interests

Reviewer Report 26 September 2023

<https://doi.org/10.5256/f1000research.141934.r206156>

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Thomas Maribo 

Public Health, Aarhus University, Aarhus C, Denmark

Headings should align with a scientific paper and headings like “description of dependent and independent variable”, “Univariate/descriptive statistics”, and “bivariate analysis” should be removed.

Procedure starts with "The pilot study" – which pilot study? If I understand correct you could start

with "A pilot study".

In the methods section: place the statistical programme at the end, not the beginning.

Delete redundant sentences like "The IBM SPSS software package is a well-established program used for batched and non-batched statistical analysis within health sciences research." (this is a scientific paper not a text book).

In the methods section, the impairment score is mentioned in 2 or 3 places. Rewrite and describe the outcome measures and then the analyses.

The term "the researcher" is used far too much (8 times!). The scientific world does not care what and how the researcher did - it is the study that is important. Rephrase "The researcher liaised with the head of department of internal medicine" - and more like that. And remove "The researcher and the researcher's supervisor were satisfied" we do not care what your supervisor think or do. We want science!

Rewrite and shorten "Ethics". This is far too long with redundant sentences like "The WHO14 ethical guidelines help promote ethical conduct of research, through the enhancement and protection of the rights of the research participants and communities" – this is a scientific paper! "Participation was voluntary and participants were allowed to withdraw from the study at any stage." is redundant as is it already stated.

The results section should start with a description of the population: how many patients were enrolled in CR, how many completed, how many (and who) did not complete CR – and how many did not complete the questionnaire

The sentence "Logistic regression was performed to determine the participant's ability to RTW and each of their socio-demographic, health and work characteristics were analysed using Pearson Chi-square test, with a significant p-value that is equal to or lower than 0.05." is placed in the results section! move to the methods section. If you want other researchers to read your paper it must be rewritten. I urge you to consult an experienced scientist.

Rewrite the discussion and include the following:

- why did you use interview and not the questionnaire? What did that mean?
- Why were interviews held at the first authors private place? And could this bias the result?

Minor:

Reread and check for abbreviations. cardiac rehabilitation (CR) is abbreviated in the 1st paragraph, yet cardiac rehabilitation is written out 3 times.

Rewrite " In the study conducted by Finger, Escorpizo, Bostan and De Bie,¹³ to identify the psychometric evidence for the use of the WORQ as a valuable instrument, they concluded that the WORQ showed a high test-retest reliability and good internal consistency. Finger et al.¹³ reported WORQ to have a high level of internal consistency (Cronbachs alpha=0.88) and interlinker agreement (kappa=0.82). The WORQ also exhibit acceptable levels of test retest reliability (r=0.79) and good face, content and criterion validity." Use Vancouver style and do not use the names of the authors

Rewrite the results section – report only results here.

Is the work clearly and accurately presented and does it cite the current literature?

No

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

No

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Partly

Are the conclusions drawn adequately supported by the results?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Cardiac rehabilitation. vocational rehabilitation

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 10 Nov 2023

Shaheed Soeker

Response to reviewers

Dear Professor

Thank you so much for the informed comments that you provided. I have provided a detailed response to the comments that you have provided. As a team we have tried to incorporate as many of the suggestions that you provided.

Reviewer 2: **Thomas Maribo**, University of Copenhagen, Aarhus University, Blegdamsvej, Copenhagen, Denmark

Comment

Headings should align with a scientific paper and headings like “description of dependent and independent variable”, “Univariate/descriptive statistics”, and “bivariate analysis” should

be removed.

Response

Unnecessary headings have been removed

Comment

Procedure starts with "The pilot study" – which pilot study? If I understand correct you could start with "A pilot study".

Response

This has been changed to 'A' pilot study

Comment

In the methods section: place the statistical programme at the end, not the beginning.

Response

This has been removed from the beginning of the section.

Comment

Delete redundant sentences like "The IBM SPSS software package is a well-established program used for batched and non-batched statistical analysis within health sciences research." (this is a scientific paper not a text book).

Response

Sentence has been removed.

Comment

In the methods section, the impairment score is mentioned in 2 or 3 places. Rewrite and describe the outcome measures and then the analyses.

Response

This question has been answered, the outcome measure was described first and then the analysis procedure as it relates to the study was described

Comment

The term "the researcher" is used far too much (8 times!). The scientific world does not care what and how the researcher did - it is the study that is important. Rephrase "The researcher liaised with the head of department of internal medicine" - and more like that. And remove "The researcher and the researcher's supervisor were satisfied" we do not care what your supervisor think or do. We want science!

Response

The word 'researcher' has been reduced.
Suggested removal of sentence done.

Comment

Rewrite and shorten "Ethics". This is far too long with redundant sentences like "The WHO14 ethical guidelines help promote ethical conduct of research, through the enhancement and protection of the rights of the research participants and communities" – this is a scientific paper! "Participation was voluntary and participants were allowed to withdraw from the study at any stage." is redundant as is it already stated.

Response

This section has been shortened and reformatted.

Comment

The results section should start with a description of the population: how many patients were enrolled in CR, how many completed, how many (and who) did not complete CR – and how many did not complete the questionnaire

Response

Description of the sample has been moved from methods to results section. As well as information related to the number of participants completing surveys, etc.

Comment

The sentence "Logistic regression was performed to determine the participant's ability to RTW and each of their socio-demographic, health and work characteristics were analysed using Pearson Chi-square test, with a significant p-value that is equal to or lower than 0.05." is placed in the results section! move to the methods section. If you want other researchers to read your paper it must be rewritten. I urge you to consult an experienced scientist.

Response

Methods and result information have been separated into the appropriate sections.

Comment

Rewrite the discussion and include the following:

- why did you use interview and not the questionnaire? What did that mean?
- Why were interviews held at the first authors private place? And could this bias the result?

Response

Some participants required assistance with reading or comprehension therefore interviews were done. The article describes that education levels varied which contributed to the level of understanding.

Telephonic interviews that were recorded were done from the researchers practice as it was logistically easier.

Comment

Reread and check for abbreviations. cardiac rehabilitation (CR) is abbreviated in the 1st paragraph, yet cardiac rehabilitation is written out 3 times.

Response

Abbreviations throughout have been revised.

Comment

Rewrite " In the study conducted by Finger, Escorpizo, Bostan and De Bie,13 to identify the psychometric evidence for the use of the WORQ as a valuable instrument, they concluded that the WORQ showed a high test-retest reliability and good internal consistency. Finger et al.13 reported WORQ to have a high level of internal consistency (Cronbachs alpha=0.88) and interlinker agreement (kappa=0.82). The WORQ also exhibit acceptable levels of test retest reliability (r=0.79) and good face, content and criterion validity." Use Vancouver style and do not use the names of the authors

Response

Sentence has been reworded and referenced without the authors name.

Comment

Rewrite the results section – report only results here.

Response

Result section has been rewritten as suggested.

Competing Interests: No competing interests were disclosed.

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