

# Barriers to proper sharing of cardiovascular rehabilitation services in Egypt: cross-sectional inter-physiotherapist study

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## **Abstract**

**Introduction:** Besides the little governmental financial support and the few scattered clinical settings of cardiovascular rehabilitation (CVR) in Egypt, there is no continuous education and/or involvement of the Egyptian physiotherapists (EPs) in the field of CVR. This cross-sectional survey aimed to determine the barriers preventing the proper implementation of EPs in the CVR program/team. **Methods:** Throughout 13 Egyptian cities, a soft copy of a questionnaire - developed by authors - was sent to 330 EPs who were at least in contact with cardiac patients in the different Egyptian hospitals. **Results:** Out of 281 respondents, 85.9 % were not familiar with the meaning and presence of an accredited CVR program from the European Society of Cardiology in Egypt, 72.9 % didn't worked before in CVR, 49.8% justified the non-engagement of EPs in CVR programs due to the disqualified and/or disvalued role of physiotherapy when compared with the medical one, and 87% recommended the need for more

*education and training to be involved in the CVR team. Conclusion: Urgent institutional and organizational strategies are critically needed in the Egyptian field of physiotherapy to enhance the role of EPs in the CVR team via theoretical and practical educational programs/courses under the supervision of local and/or international experts.*

*Keywords: barriers, cardiovascular rehabilitation, physiotherapy, Egyptian physiotherapists, cross-sectional survey.*

## **Introduction**

Considering the estimated 17.92 million deaths in 2015 caused by 422.7 million cases of cardiovascular disease (CVD)[1], CVD is considered one of the most worldwide-leading causes of mortality despite the continuous strenuous efforts to prevent and treat this disease [2]. CVD is the responsible cause of a 10%-estimated loss of disability-adjusted life years (a measure of overall disease burden, stated as the number of lost years due to poor health, disability, disease, and/or early mortality) in middle- and low-income countries, including Egypt [3].

Besides the strong recommendations for the engagement of different specialties in the cardiovascular rehabilitation (CVR) team, the attention toward continuous development and education of the CVR team is low in many countries despite the strong evidence-based role of CVR as a therapeutic and/or secondary preventive strategy for CVD[4].

Despite the reduced rate of co-morbidities, mortalities, and costs spent by private and formal health sectors in addition to other benefits including patient education, formulation of a structured individualized training program, management of risk factors of CVD, and management of stress in response to CVR programs, these programs are not widely available in all countries of the Eastern Mediterranean region because only six (27.3%) countries - out of 22 Arab countries - introduce this type of programs to the CVD patients [5].

In Egypt, besides the low or nearly absent financial support from the Egyptian ministry of health and institutional hospitals, the number of governmental/private CVR centers is very low and hence, the presence of a well-structured wide-spread accredited CVR program is not available all over Egypt.

In association with non-governmental funding organizations/resources, the only well-designed CVR program – accredited from the European Society of Cardiology (ESC) - is introduced to the Egyptian CVD patients in El-Demerdash hospital (Ain Shams University Hospitals). With early educational aims, this program progressed later to introduce free CVR services to 6000 CVD patients under the supervision of a different-specialty team including cardiology, psychiatry, psychology, andrology, dietary counseling, and nursing [6]. Despite the presence of physiotherapists among the main professional accredited workforce of rehabilitation in Egypt[7-9], unfortunately, physiotherapists are not involved in the El-Demerdash CVR team.

As a result of the need for the profession of physiotherapy(PT) in the Egyptian medical market[10], many governmental and private Egyptian universities grossly extended the construction of a high number of PT faculties with the vision of graduating well-qualified physiotherapists. Besides the newly developed Egyptian Fellowship for PT in 2018, postgraduate PT degrees as diploma, master (M.Sc.), philosophical doctorate (Ph.D.), and doctor of physiotherapy(DPT) in different subspecialties of PT- including cardiopulmonary rehabilitation- are granted only from one governmental university, Cairo University.

Despite the absence of accurate data about the workforce of physiotherapists in Egypt, it is estimated to be around 140,000 physiotherapists, based on the information that Egypt encompasses fourteen faculties of PT, some of these faculties were constructed > 20 years ago with an average of 200 to 500 PT graduates/faculty yearly.

Being the leaders of the CVR team, cardiologists are not fully accustomed until now to construct a multidisciplinary CVR team to introduce a good-quality CVR program to the CVD patients [11]. Despite the fairly large number of Egyptian physiotherapists with many different educational backgrounds and daily clinical contact with many patients, including cardiac ones, the strong ability of physiotherapists to formulate a well-tailored exercise program is underutilized in the field of exercise-based CVR.

To our knowledge, this the first cross-sectional survey in Egypt aimed to investigate barriers to proper participation of Egyptian physiotherapists in the CVR team to utilize their cumulative knowledge in the exercise field, increase their experience in CVR, and develop a well-structured CVR team and services.

## **Materials and Methods**

### ***Research design, sample and subjects***

This study was designed as a cross-sectional survey with the employment of the convenience sampling. The included subjects in this survey were working physiotherapists in the field of CVR or at least in daily-contact with cardiovascular patients during their career time in the different academic and/or clinical settings. Undergraduates and interns of PT were excluded from participation in this survey.

### ***Collection of data***

Besides the electronic mails, a soft copy of the used questionnaire in this study reached the participating physiotherapists via one of the available accounts of every participant on LinkedIn, Facebook, Instagram, and What's application. The responded physiotherapists sent their answered anonymous questionnaire to the emails and/or social media accounts of the authors (the accounts were written at the end of the questionnaire paper). This cross-sectional survey was conducted from November 2019 to November 2020.

To augment more responses in this survey, an e-mailed copy of the questionnaire was sent to the committee members of the National Cardiovascular Society and the

main/subsyndicates of PT to distribute the questionnaire to the largest possible number of physiotherapists all over Egypt. A periodic follow-up reminding messages were sent to non-immediately respondents to the questionnaire.

### ***Ethical considerations***

Besides following the recommended Declaration of Helsinki, the local institutional board of Faculty of Physical therapy, Cairo University, concerned with human research, approved this survey under the number P.T.REC/07/002005. The action of returning an answered questionnaire from every respondent is considered a consent form to participate in this survey.

### ***Questionnaire structure***

For its official use in the Egyptian medical practice, the English language was used in writing the items of the questionnaire. To avoid any misunderstanding of the used English words in the questionnaire, the items of the questionnaire were reviewed by a specialist in English at Cairo University Center for Foreign Languages and Specialized Translation.

Aiming to improve the way of PT implementation in the CVR team, a literature-established questionnaire was developed by the authors. The closed-answered yes/no-questionnaire included four direct investigatory sections include ten questions for each and forty questions in total, as a step towards a bigger investigational study.

Every respondent was asked to write his/her sex, profession, graduation year, the highest granted postgraduate degree (if present), place, work or experience years, and city of work. The questions were about the previous work history in the field of CVR, the previous knowledge about the existence of ESC-accredited active CVR program in El-Demerdash hospital in Egypt, the perception of devalued and/or disqualified PT role in comparison to the medical one, and the need for more education and training to involve the physiotherapists in the CVR team (for the last question: if any participant answered this question with (no), he/she was allowed to write the suggested name of the needed course and/or program(s).

### ***Sample size***

With regard to the following input: CVD is the first leading of cause; contributing to 46% of Egyptian mortality/year [12] Knowing that Egyptian population is 100M, and the mortality rate is 5.7% in 2019 [13], assuming that we have 2,622,000 CVD death-related cases in Egypt/year, so, if we put this together in a statistical equation:  $n = \frac{p(1-p)}{m^2}$ , [14] where  $p$  is the percentage of CVD to the population, and  $m$  is the error margin, we can assume that  $n = \frac{0.46 \times 0.54 \times 3.84}{0.0036} = 265$  needed physiotherapists to address this population (the sample size of 265 respondents at a 95% confidence level would be demanded to consider the knowledge of the sample frame). The above-mentioned strategies for the recruitment of physiotherapists utilized the non-probability convenience method of sampling. Out of 330 physiotherapists, the questionnaire was sent to them, the received replies were 281.

**Questionnaire validity**

Besides the concurrent examination of the face validity of the questionnaire by the research team, the construct validity was judged by seven cardiac experts, five academics and two hospital staff. The experts - with a 20-year experience in the CVR field and they are currently working in the management of heart failure, microvascular surgery, chest pain, and cardiac laboratory catheterization - judged the clearness, applicability, and relevance of the questionnaire with the availability to involve free comments. Besides the reported clarity and relevance of 85 % of questions, rules, and statements, as stated by 95% of reviewers, the other 15% percentage - that not followed the standards - in addition to the comments of experts were revised and corrected by the authors.

**Results**

The questionnaires with one-missed answers were discarded from the statistical analysis. The graphs were constructed via Microsoft Word. Data were gathered from 281 physiotherapists, 201 males and 77 females, with ages were ranged from 25-35 years old. Out of 281 respondents, four physiotherapists had M.Sc. degrees and 16 physiotherapists had Ph.D. degrees. The years of work/experience in the CVR field, or the daily contact with cardiac patients, were 10 years (n = 16 physiotherapists), 5 years (n = 4 physiotherapists), and one year (n = 261 physiotherapists).

The distribution of participated physiotherapists according to their work in the different hospitals of 13 Egyptian cities was Cairo (n=53), Alexandria (n=51), Aswan (n=33), Giza (n=28), Beni Suef (n=17), Tanta (n=14), Al-Ismailia (n=6), Al-Qalyubia (n=12), Al-Sharqia (n=6), Al-Minya (n=33), Al-Faiyum (n=8), Qena (n=12), and Port Said (n=8) as shown in Figure 1.

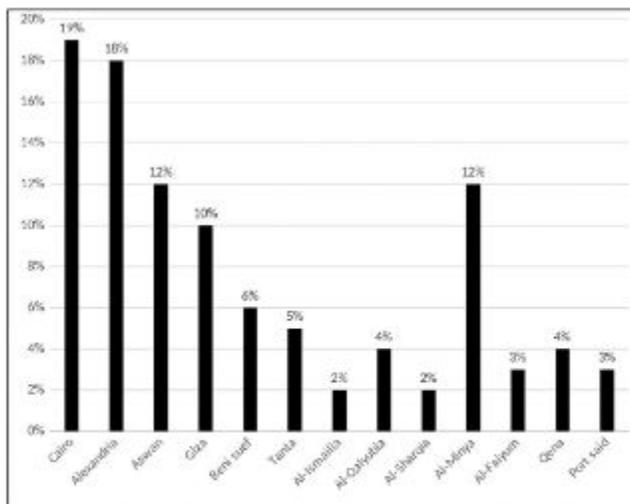


Figure 1: The participation of physiotherapists from the different Egyptian cities

The research team tried to gather the data from physiotherapists who worked in many hospitals all over Egypt with a special focus on the prime hospitals that introduced the CVR services to the cardiac patients as Al-Kasr Al-Aini in Cairo, El-Demerdash hospital in Cairo, National Heart Institute in Cairo, and Dar-Elfouad hospital in Cairo, Magdi Yacoub Heart Foundation in Aswan, Deraya hospitals in Al-Minya, Al-Andalusia hospital in Alexandria so the percentage of participating physiotherapists from the hospitals of these cities represented the largest percentage of participants (59 %, n = 165 physiotherapists). The results of every item of the questionnaire were expressed as a percentage as shown in Figure 2.

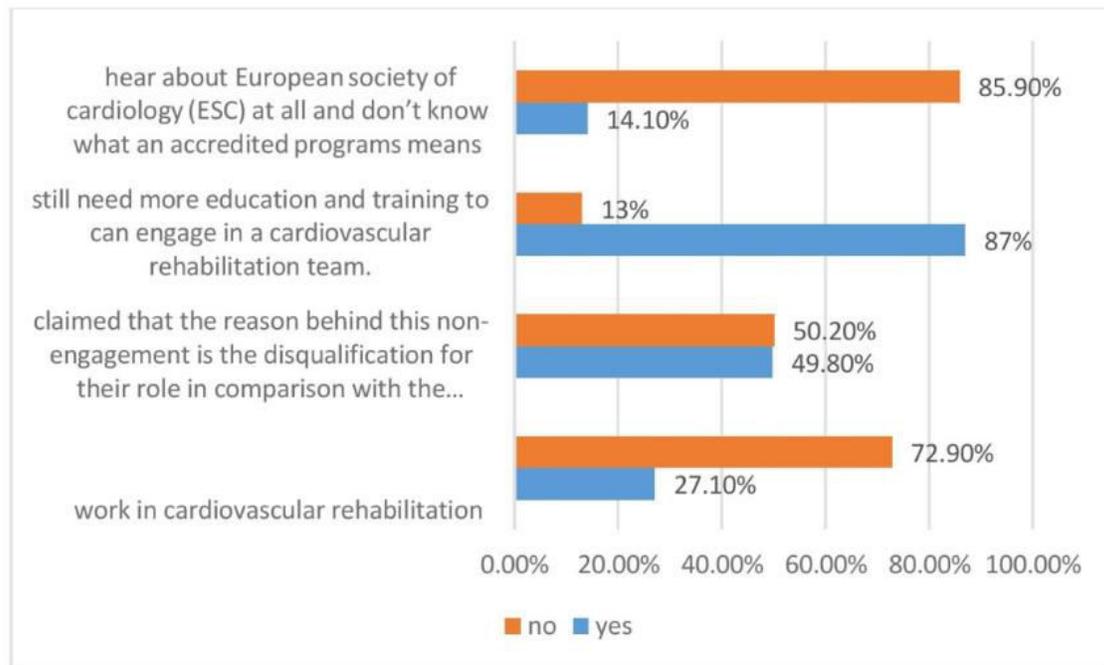


Figure (2): The percentages of the responses to the questionnaire

Regarding the comments of physiotherapists on the need for educational and training courses to involve the PT profession in the CVR team, the basic life support (BLS), advanced life support (ALS), electrocardiogram (ECG), and cardiopulmonary exercise testing (CPET) interpretation courses were the most needed and/or suggested courses by the majority of physiotherapists (85%) in addition to the suggested general introductory course about CVR by 2% of the participated physiotherapists. Also, 13% of physiotherapists appreciated their level of education in the CVR field and classified themselves as experts in this field.

### Discussion

CVR is considered one of the main secondary preventive therapeutic measures against the huge burden of CVD [15] in countries with middle and low income [16]. To increase the optimality and effectiveness of CVR, services of CVR must be introduced through a

multidisciplinary team [17] including physiotherapists [18] who can prescribe individualized tailored exercise-dependent CVR programs[19].

This is the first cross-sectional study in Egypt aimed to investigate the barriers to Egyptian physiotherapists' participation in a multidisciplinary CVR team. The results of this study revealed some complaints of physiotherapists as non-participation in the CVR team, knowledge lack of an existed ESC-accredited CVR program in El-Demerdash hospital in Egypt, some educational deficits, the perception of the disvalued role of PT in CVR programs. By asking about the potential solutions, 87% of physiotherapists recommended the need for development/upgrading of under and postgraduate educational levels with the emphasis on the importance of continuous education for allied professionals in the Egyptian universities.

Rehabilitation demands a cooperative multidisciplinary team including physiotherapists who deal professionally with the pre and postoperative cardiac complications via an evidence-based rehabilitation process [20]. CVR practice in Egypt is not optimal and must be adjusted to introduce the services of CVR with a good quality through a multidisciplinary CVR team including cardiologists, physical therapists, nurses, psychologists, dieticians, social workers, and/or rehabilitation physicians [21].

Despite the known and detected role of each member of the multidisciplinary-CVR team, the work scope of every member within the team must be respected and evaluated by the senior/leader clinician[17]. Besides the lower rates of cardiologists' referral, neglected involvement of PT profession in CVR programs was reported previously in Egypt despite the proven positive effect of PT on the quality of life of cardiac adult [22] and pediatric patients [23].

In far/regional areas, where the financial support is deficient, the ability to introduce CVR services through a complete professional multidisciplinary team is difficult. Sometimes, the services were carried out by one healthcare professional in these areas [17].

In the same scenario, no formal support/attention was given to utilize the benefits of CVR - under the supervision of a multidisciplinary team - in the prevention/treatment of CVD in 23 low- and middle-income countries including Egypt to decrease the highly-paid costs in the management of CVD[1]. The accessibility to deliver a good-quality CVR program is dependent on the income of any country. Besides the need for continuous fund and education to the CVR team, strategies to develop widely-spread CVR programs are recommended to better increase the availability of these programs [3].

Besides the absence of continuous educational training courses/programs to healthcare providers – including physiotherapists - who introduce the CVR services to cardiac patients of 22 Arabic countries including Egypt, there are deficient financial, human, physical resources of CVR infrastructure. There is an urgent need for constructing tailored guidelines of CVR in addition to in-service continuous training and education to healthcare providers of Arabic countries [24].

Despite the challenges of additional workload and costs, the obstacles to construct a complete professional multidisciplinary team of CVR are not understood until now [25]. Besides the only-one accredited (by ESC) and not widespread El-Demerdash CVR program in Egypt [6], a newly developed CVR program in an Egyptian private hospital in Cairo was upgraded to combine medical, behavioral, cognitive, motivational, psychological, educational, and supervised exercise therapies/counseling for cardiac patients [26]. Unfortunately, despite the presence of some CVR trials (programs) in Egypt in addition to the great role of PT in the rehabilitation process of cardiac diseases, the PT profession was not included among the different specialties of the team of both programs.

### **Limitations**

This study was limited to several factors. Firstly, the questionnaire addressed only major barriers to PT involvement in the field of CVR in Egypt. A more future detailed questionnaire is needed to give a comprehensive picture of barriers to the widespread of CVR in Egypt. Secondly, this study was limited to Egypt - as one of the low-income countries - but the comparison to similar low-income countries is required to give a broader picture of the situation of PT participation in CVR programs in these countries.

Thirdly, the study used a self-report - not an objective measure - to evaluate the non-involvement of physiotherapists in CVR; therefore - as with all self-report studies - there is an increased risk of more positive desirable/intentional responses so the anonymous questionnaire was used to decline or avoid this risk as possible.

Fourthly, the lack of experience/work years, whether in the field of CVR or in the direct contact with the cardiac patients, for most of the participating physiotherapists, is the major limitation of this study. Lastly, with the existence of only one university all over Egypt that awards M.Sc. and Ph.D. degrees, there was a limited number of the participants with postgraduate degrees/qualifications in the field of CVR.

### **Conclusion**

Articles promising improvement of CVR situation in Egypt have not yet been published. Despite the success of the El-Demerdash program for CVR, this model has not been transferred to other hospitals in the Egyptian capital, Cairo, or hospitals in other Egyptian cities until now. Besides the proposed continuous educational/training courses for the CVR team, the availability of financial resources to CVR services is critically needed.

To be included in the CVR team, continuous development of physiotherapists may be augmented by increasing CVR practical hours of undergraduate and postgraduate courses, obligatory minimum qualification requirements, mandatory minimum-hour participation in in-service CVR, reference to international/local CVR literature, reference to organizational bodies like the ESC, obligatory postgraduate registration for the practice of CVR, attracting local and international experts in the field of CVR to train the newly graduated physiotherapists on the effective participation in the CVR programs,

and official proposals or calls from PT syndicates to include physiotherapists in the team of CVR.

### **Implication for practice**

This study gives a sight on:

- The current state of CVR practice in Egypt.
- Some of changes/challenges needed to be managed in CVR programs/practices in Egypt.
- The level of satisfaction of CVR team regarding the availability CVR guidelines to practice and/or introduce a good-quality CVR service in Egypt.

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### **Disclosure statement**

No author has any financial interest or received any financial benefit from this research.

### **Conflict of Interest**

Authors state no conflict of interest

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