ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE OF RECOMMENDED PHYSICAL ACTIVITY AMONG HEALTH CARE PHYSICIANS OF PAKISTAN: A CROSS-SECTIONAL STUDY

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Objectives: Active lifestyle is mandatory for prevention of atherosclerotic cardiovascular diseases. The present study was aimed to identify the physical activity of doctors as well as their knowledge and attitude toward the American College of Cardiology (ACC) recommended physical activity.

Methodology: For this survey, an online questionnaire was shared with doctors of various specialties working in private and public healthcare hospitals of Pakistan. Opinion was recorded regarding importance of physical activity (5-point scale), perceived physical activity level (4-point scale), knowledge regarding ACC recommended physical activity level, lifestyle, and barriers in following recommended physical activity level.

Results: A total of 159 doctors participated in the survey, of which 97 (61%) were cardiologists. Most participants (72.3%) were males and mean age was 32.12±4.33 years. Nearly two-thirds (61.6%) of the participants were free of any pre-existing co-morbid condition. Most common atherosclerotic cardiovascular disease risk factor was positive family history (26.4%). A total of 74.8% (119) of the participants claimed to know about ACC recommended physical activity level. According to the lifestyle activities, only 26.4% (42) of the participants were found to follow the ACC recommendations. Lack of time from daily routine (71.7%) was found to be most commonly stated reason for physical inactiveness.

Conclusion: Knowledge and adherence to the ACC recommended physical actively level is poor among both cardiologists and non-cardiologists. More than half of health care physician were overweight and obese. Lake of time, resources and overstressed work life of doctors are the key barriers in following recommended physical activity level.

Keywords: Physical Activity; Knowledge; Attitude; Doctors; Pakistan

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INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of mortality globally, claiming approximately 17.9 million lives in 2016 alone. Low- and middle-income countries account for over 75% of the CVD associated mortalities.[1] The South Asian population are prone to atherosclerotic coronary artery diseases (CAD) in comparison with population of other origins worldwide.[2] The individuals of Indo-Asian origin are highly vulnerable population to CAD, and thus it is witnessed that CAD is one of the predominant causes of mortalities in the Indo-Pakistan subcontinent.[3,4] The epidemiological estimates of CVDs report 41% hypertension and 2.8% stroke in Pakistani adult population.[5] Unhealthy eating habits, smoking, physically inactive lifestyle, dyslipidemia, obesity, hypertension and diabetes mellitus are rampantly rooting in this population, and thereby the increase risk of atherosclerotic CVD.[6]

Given the fact of sufficient health-related knowledge and resources available to doctors, it is assumed that the risk factors of CVD would be fairly low among doctors, with physically active lifestyle.[7] Nevertheless, factors related to work life like extended duty hours, tiring work schedule, physical and psychological strain can expose healthcare workers, including doctors, to enormous risk of developing ailments secondary to sedentary lifestyle. Moreover, due to aforementioned reasons, most of the doctors do not even get the chance to evaluate their predisposition to develop CVD. As a result, amalgamation of these risk factors collectively add to deteriorating health condition, especially related to cardiovascular health, in the doctors.[8]

According to American College of Cardiology/American Heart Association (ACC/AHA) 2019 guidelines for prevention of CVD, following is recommended: (1) healthy lifestyle, (2) identification

of social determinants of health to direct therapy, (3) 10-year risk assessment for atherosclerotic cardiovascular disease (ASCVD) for individuals aged 40-75 years, (4) healthy diet intake, (5) minimum 150 minutes/week moderate-intensity or 75 minutes/week strenuous physical activity, (6) lifestyle modification for individuals with type 2 diabetes mellitus, (7) assessment of tobacco use, (8) avoiding aspirin as much as possible for primary prevention of ASCVD, (9) statin is the first-line therapy for primary prevention of ASCVD in individuals with high low-density lipoprotein (LDL) cholesterol and diabetes mellitus, and (10) non-pharmacological approach is highly advised for adults with hypertension.[9] Interestingly, these preventive measures are known to doctors and in fact they advise active cardiac disease or at risk patients to embrace this approach, especially related to modifiable risk factors, to decrease their risk of future cardiac event. However, doctors even so often do not follow or adhere to these guidelines themselves. There is no such study from Pakistan to appraise the prevalence and knowledge and attitude of doctors toward physically active lifestyle with reference to ACC/AHA recommendations. Hence, the present study was aimed to identify the physical activity of doctors as well as their knowledge and attitude toward ACC recommended physical activity.

METHODOLOGY

Before commencement of the study, an ethical approval was obtained from the Institutional Review Board (IRB) of National Institute of Cardiovascular Diseases (NICVD), Karachi, Pakistan. This online questionnaire-based cross-sectional study enrolled doctors of various specialties working in private and public healthcare system of the Pakistan. Link of the questionnaire was shared through social medial platforms and other online communication mediums relevant to the healthcare community of Pakistan. Consent for participation was obtained at the beginning of online questionnaire. Data for this study was collected from November 2020 to February 2021. Participants were grouped into two cohorts as "cardiologists" and "non-cardiologists", and results were compared between the two groups. Confidentiality was maintained and no remunerations were given for participation in the study.

The questionnaire comprised of informed consent for participation in the survey, followed by information regarding demographic profile, preexisting co-morbid conditions, opinion regarding importance of physical activity to prevent ASCVD (5-point scale), perceived physical activity level (4-point scale), knowledge regarding ACC/AHA recommended physical activity level for primary prevention of ASCVD, lifestyle, and barriers in following recommended physical activity level, as outlined in the Figure 1 below.

Research data was entered and analyzed using Statistical Package for Social Sciences (SPSS) version 24 (SPSS, Chicago, Illinois, USA). For continuous variables, means and standard deviations were reported and frequency and percentages were documented for categorical variables. A p-value of <0.05 was considered as statistically significant.

Figure 1: Study questionnaire

Questionnaire

Q1: In your opinion, how much physical activity is important for the prevention of cardiovascular diseases?

- o Not important
- o Least important
- o Neither important nor unimportant
- o Important
- o Extremely important

Q2: In your opinion, how you rate your own level of physical activity?

- o Not active at all
- o Least active
- o Moderately active
- o Extremely active

Q3: Are you aware of ACC recommended physical activity for primary prevention of cardiovascular diseases?

- o Yes
- o No

Q4: What is the American College of Cardiology (ACC) recommended physical activity level per week? [Based on those who answered yes in Q3 above]

- o 180 min of moderate-intensity or 120 min of vigorous-intensity aerobic
- o 150 min of moderate-intensity or 75 min of vigorous-intensity aerobic
- o 120 min of moderate-intensity or 60 min of vigorous-intensity aerobic

Q5: Which of the following best describe your physical activity level?

- o Sitting, reclining, or lying; watching television.
- o Walking slowly, cooking, light housework.
- o Brisk walking, biking, active yoga, recreational swimming
- o Jogging/running, vigorous biking, swimming laps

Follow ACC recommended physical activity level per week

- o Yes
- o No

Q6: Which of the following activities you perform on weekly basis and with what frequency?

Brisk walking	
Duration (min/day)	Frequency (days/week)
Jogging/running	
Duration (min/day)	Frequency (days/week)
Biking	
Duration (min/day)	Frequency (days/week)
Swimming	
Duration (min/day)	Frequency (days/week)

Q7: What are the factors that restrict you from recommended physical activity?

- o Lack of time from daily routine.
- o Lack of availability of resources.
- o Overburden/overstress at workplace.
- o Lack of awareness regarding benefits.
- o Others

Q8: In your opinion, what initiatives will motivate you regarding active lifestyle?

- o Education and awareness from expert healthcare professionals.
- o Availability of resources at workplace.
- o Electronic and social media awareness campaigns.
- o Arranging programs for extra-curricular activities.
- o Others

RESULTS

A total of 159 doctors participated in the survey, of which 97 (61%) were cardiologists and remaining 62 (39%) were affiliated with other specialties. The sample consisted of predominantly male participants (72.3%) and mean age was 32.12±4.33 years. Nearly two-thirds (61.6%) of the participants were free of any preexisting co-morbid condition. Most common ASCVD risk factor was positive family history (26.4%), followed by smoking (7.5%) and hypertension (6.3%). Data regarding BMI showed that most of the subjects; 40.3% (64), were overweight. The demographic and clinical characteristics are presented in Table 1.

Table 1: Demographics distribution of clinical factors

Characteristics	Total	Specialty		P-value
		Cardiologist	Non-Cardiologist	
Total (N)	159	97 (61%)	62 (39%)	-
Gender				
Male	72.3% (115)	74.2% (72)	69.4% (43)	0.503
Female	27.7% (44)	25.8% (25)	30.6% (19)	
Age (years)	32.12 ± 4.33	32.13 ± 3.6	32.1 ± 5.3	0.964
20-30 years	37.1% (59)	39.2% (38)	33.9% (21)	0.500
> 30 years	62.9% (100)	60.8% (59)	66.1% (41)	
Body mass index (kg/m2)	30.44 ± 23.16	31.51 ± 25.45	28.76 ± 19.12	0.468
Under weight	5% (8)	4.1% (4)	6.5% (4)	0.047*
Normal weight	33.3% (53)	25.8% (25)	45.2% (28)	
Over weight	40.3% (64)	44.3% (43)	33.9% (21)	
Obese	21.4% (34)	25.8% (25)	14.5% (9)	
Co-morbid Conditions				
Ischemic Heart Diseases	2.5% (4)	2.1% (2)	3.2% (2)	0.648
Hypertension	6.3% (10)	6.2% (6)	6.5% (4)	0.946
Diabetes	2.5% (4)	0% (0)	6.5% (4)	0.011*
Smoking	7.5% (12)	7.2% (7)	8.1% (5)	0.843
Positive Family History	26.4% (42)	18.6% (18)	38.7% (24)	0.005*
Dyslipidemia	3.1% (5)	3.1% (3)	3.2% (2)	0.963
None	61.6% (98)	69.1% (67)	50% (31)	0.016*

Physical activity was rated extremely important by 78.6% (125) of the participants (Table 2). This rate was significantly higher among cardiologists as compared to non-cardiologists (85.6% versus 67.7%) respectively. A total of 74.8% (119) of the participants claimed to know about ACC recommended physical activity level; however, only 65.5% (78) of them were actually aware of recommended 150 min of moderate-intensity or 75 min of vigorous-intensity aerobic activity level. The claimed and actual knowledge about recommended physical activity level among cardiologists was 89.7% and 71.3%, respectively. On the other hand, it was 51.6% and 50% among non-cardiologists, respectively. For lifestyle activities, only 26.4% (42) of the participants were found to follow the ACC recommended physical activity level per week. This proportion was almost similar between cardiologists and non-cardiologists (25.8% versus 27.4%). Lack of time from daily routine (71.7%) was found to be most commonly stated reason for physical inactiveness, followed by overburden/overstress at workplace (33.3%) and lack of resources (14.5%). Table 2.

Table 2: Physical activity and knowledge and attitude toward recommended physical activity

Characteristics	Total	Specialty		P-value
		Cardiologist	Non-Cardiologist	
Total (N)	159	97	62	-
Q1: In your opinion, how much physical activity is important for the prevention of cardiovascular diseases?				
Not important	0% (0)	0% (0)	0% (0)	0.027*
Least important	1.9% (3)	1% (1)	3.2% (2)	
Neither important nor unimportant	0% (0)	0% (0)	0% (0)	
Important	19.5% (31)	13.4% (13)	29% (18)	
Extremely important	78.6% (125)	85.6% (83)	67.7% (42)	

Q2: In your opinion, how you rate your own level of physical activity?				
Not active at all	1.9% (3)	2.1% (2)	1.6% (1)	0.207
Least active	34% (54)	27.8% (27)	43.5% (27)	
Moderately active	61% (97)	66% (64)	53.2% (33)	
Extremely active	3.1% (5)	4.1% (4)	1.6% (1)	
Q3: Are you aware of ACC recommended physical activity for primary prevention of cardiovascular diseases?				
Yes	74.8% (119)	89.7% (87)	51.6% (32)	<0.001*
No	25.2% (40)	10.3% (10)	48.4% (30)	
Q4: What is the American College of Cardiology (ACC) recommended physical activity level per week? [Based on those who answered yes in Q3 above]				
180 min of moderate-intensity or 120 min of vigorous-intensity aerobic	22.7% (27)	17.2% (15)	37.5% (12)	0.503
150 min of moderate-intensity or 75 min of vigorous-intensity aerobic	65.5% (78)	71.3% (62)	50% (16)	
120 min of moderate-intensity or 60 min of vigorous-intensity aerobic	11.8% (14)	11.5% (10)	12.5% (4)	
Q5: Which of the following best describe your physical activity level?				
Sitting, reclining, or lying; watching television.	6.9% (11)	7.2% (7)	6.5% (4)	0.494
Walking slowly, cooking, light housework.	42.8% (68)	39.2% (38)	48.4% (30)	
Brisk walking, biking, active yoga, recreational swimming	44% (70)	45.4% (44)	41.9% (26)	
Jogging/running, vigorous biking, swimming laps	6.3% (10)	8.2% (8)	3.2% (2)	
Follow ACC recommended physical activity level per week				
Yes	26.4% (42)	25.8% (25)	27.4% (17)	0.818
No	73.6% (117)	74.2% (72)	72.6% (45)	
Q6: Which of the following activities you perform on weekly basis and with what frequency?				
Brisk walking	37.7% (60)	42.3% (41)	30.6% (19)	0.140
Duration (min/day)	35 ± 17	32 ± 14	44 ± 21	0.012*
Frequency (days/week)	5 ± 1	5 ± 1	5 ± 1	0.624
Jogging/running	17% (27)	18.6% (18)	14.5% (9)	0.508
Duration (min/day)	25 ± 15	20 ± 9	35 ± 19	0.010*
Frequency (days/week)	4 ± 2	4 ± 1	5 ± 2	0.286
Biking	6.3% (10)	3.1% (3)	11.3% (7)	0.038*
Duration (min/day)	23.8 ± 18.16	30 ± 26.46	21.14 ± 15.3	0.512
Frequency (days/week)	3 ± 1.94	3 ± 2	3 ± 2.08	>0.999
Swimming	3.1% (5)	2.1% (2)	4.8% (3)	0.328
Duration (min/day)	20 ± 10	20 ± 14.14	20 ± 10	>0.999
Frequency (days/week)	2.6 ± 1.67	3 ± 0	2.33 ± 2.31	0.724
Q7: What are the factors that restrict you from recommended physical activity?				
Lack of time from daily routine.	71.7% (114)	67% (65)	79% (49)	0.101
Lack of availability of resources.	14.5% (23)	15.5% (15)	12.9% (8)	0.654
Overburden/overstress at workplace.	33.3% (53)	33% (32)	33.9% (21)	0.908
Lack of awareness regarding benefits.	1.9% (3)	3.1% (3)	0% (0)	0.162
Others	4.4% (7)	5.2% (5)	3.2% (2)	0.563
Q8: In your opinion, what initiatives will motivate you regarding active lifestyle?				

Education and awareness from expert healthcare professionals.	25.8% (41)	24.7% (24)	27.4% (17)	0.707
Availability of resources at workplace.	50.9% (81)	51.5% (50)	50% (31)	0.849
Electronic and social media awareness campaigns.	7.5% (12)	10.3% (10)	3.2% (2)	0.099
Arranging programs for extra-curricular activities.	42.8% (68)	45.4% (44)	38.7% (24)	0.408
Others	3.8% (6)	4.1% (4)	3.2% (2)	0.772

DISCUSSION

Non-communicable disease (NCD) is a global epidemic. To a certain extent, this is owing to a drastic shift in a standard of living progressing to increased physical inactivity, poor dietary habits and tobacco abuse. In fact, just mentioned characteristic modifiable features are common to both developing and developed countries.[10] Among the etiological factors leading to worldwide mortality, physical inactivity is the fourth on list. Globally, it is accountable for loss of approximately over 3 million lives. Despite well recognized repercussions, physical inactivity is critically prevalent in most parts of the world. A profoundly active lifestyle can have myriad of returns, especially the physical, psychological and cognitive benefits to health including preemptive and therapeutic effects.[10,11] A plethora of research studies have demonstrated reduced physical activity and risk of NCDs such as hypertension,[12] coronary heart disease (CHD),[13] stroke,[14] and metabolic syndrome and type II diabetes mellitus.[15]

Research literature suggests that physical activity among doctors is not ideal, be it work related or non-work related.[16,17] In the present study, over one-third (34%) of the doctors (cardiologists and non-cardiologists) were reportedly least active, with the majority of the participants significantly overweight (40.3%). A study from Saudi Arabia by Al Reshidi et al. (2016) found that 66.7% of the resident physicians with low physical activity were overweight.[17] Another recent study by Perrin et al. 2018 also reported high body mass index (BMI) among surgical residents who worked more hours per week.[18] This may instigate a vicious cycle; inactive lifestyle leads to overweight and overweight doctors are more likely to be prone to sedentary lifestyle and so on. This finding can have multiple conceivable explanations. Nearly two-third (62.9%) of our study participants were over 30 years of age which could have been one of the reasons of age-related decline in physical activity. Moreover, doctors are exposed to fast-paced work environments and schedule work demands every now and then and therefore are vulnerable to lapse the physical activity standards to maintain a healthy lifestyle.

Interestingly, we observed that comorbidities like diabetes mellitus was slightly more prevalent in non-cardiologists than in cardiology specialists. Based on the finding, we presume that being part of a specialty that deals with cardiology cases every other day may have influenced them to embrace active lifestyle and therefore lesser occurrence of diabetes mellitus. It has been reported that physically inactive lifestyle is accountable for approximately 14% of type 2 diabetes mellitus worldwide.[19]

In this study, the doctors, especially the cardiologists, were of the opinion that physical activity is extremely important for prevention of CVDs and that two-thirds of the cardiologists were found to be moderately active. This highlights their physically active routine. Earlier studies have shown that doctors' own lifestyle with regards to physical activity may also affect their counselling practices.[20] In fact, doctors with physically inactive lifestyle are more inclined to escape offering exercise counselling to their patients and may not be an ideal role model for adoption of active lifestyle.[21] Moreover, patients are more likely to get encouraged to adopt healthy lifestyle if their doctors happen to be physically fit.[22]

Most of the doctors in this study were aware of the American College of Cardiology (ACC) guidelines for the primary prevention of CVDs. Despite that over one-third were in least physical active state. The key predictor of physical inactivity could be extra work hours and work demands as we found in the present study as well. Of late, one study from Canada found high BMI and poor aerobic fitness in surgical residents than in non-surgical residents due difference in working hours.[18]

According to World Health Organization (WHO), those who exercise regularly are not only physically but also psychologically healthy.[23] Interventions must be implemented to promote physical activity for doctors and other healthcare personnel. In fact, an interventional setup can be placed at the workplace to encourage healthcare personnel to participate in actively healthy lifestyle. This should be certainly cemented in hospital policies for ongoing and permanent reinforcement. The WHO recommends a

minimum 150 minutes of moderate or 75 minutes of vigorous exercise per week with 10 minutes' interval. Furthermore, a moderate workout of 300 minutes or an intense workout of 150 minutes per week can also be performed. Activities that strengthen major muscles, brisk walking, jogging, sports and recreational activities are encouraged twice a week.[24]

The present study has strengths that needs to be acknowledged. To the best of our knowledge, this is the first study from Pakistan to explore the physical activity among doctors as well as their knowledge and attitude towards recommended physical activity. Furthermore, we assessed the knowledge and attitude of doctors towards recommended physical activity using the well-established ACC/AHA 2019 guidelines on the primary prevention of CVD.[9] However, limited number of participants and online survey nature of the study are key limitations of this study, more in-depth and face to face interviews are warranted to further elaborate knowledge and attitude towards recommended physical activity among cardiologist and non-cardiologists.

CONCLUSION

This study demonstrates that knowledge and adherence to the ACC recommended physical actively level was poor among both cardiologists and non-cardiologists despite awareness of it as important for the primary prevention of ASCVD. More than half of health care physician were overweight and obese. Lake of time, resources and overstressed work life of doctors are the key barriers in following recommended physical activity.

AUTHORS' CONTRIBUTION

SA, SK, RK, KIB, GSS, AA, and MKB: Concept and design, data acquisition, interpretation, drafting, final approval, and agree to be accountable for all aspects of the work. JAS, and TS: Data acquisition, interpretation, drafting, final approval and agree to be accountable for all aspects of the work.

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