Available online at **www.ijmrhs.com**

ISSN No: 2319-5886

International Journal of Medical Research & Health Sciences, 2017, 6(11): 1-13

Perceptions and Attitudes of Primary Healthcare Providers in Riyadh City, Saudi Arabia, towards the Promotion of Physical Activity

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ABSTRACT

Background: *Physical inactivity increases the risk of several chronic, non-communicable diseases which ultimately reduces life expectancy. Recently, major lifestyle changes in Saudi Arabia due to economic growth, globalization, and modernization resulted in physical inactivity and low level of physical fitness. Health care professionals can play an important role in developing awareness about physical fitness among people. However, little is known about the impact of current health promotion practices of Saudi healthcare providers. This cross-sectional study evaluates Saudi primary healthcare providers' attitudes, knowledge, and awareness associated with advising patients about physical activity during routine consultations.* ***Methods:*** *A quantitative survey on 803 respondents who comprised of general physicians, nurses, nurse assistants, dieticians and health educators in five districts of Riyadh city, Saudi Arabia was conducted using convenience sampling method.* ***Results:*** *The data showed that most of the primary care staffs are quite enthusiastic in promoting physical activity among the patients and revealed that they routinely discussed and advised about the benefits of physical fitness. However, there are some factors acting as barriers for promoting physical activity, such as i) lack of time, ii) lack of educational materials for patients, iii) lack of proper training and protocols for health care professionals, iv) lack of patient cooperation, and v) lack of financial incentive.* ***Conclusion:*** *Proper strategies should be developed to motivate primary health care professionals, so that they can effectively encourage the general population to be more active physically. Hence, there is an urgent need to integrate physical activity promotion in to practice consultation in Saudi Arabia. In addition, more efforts are required from the policy makers and health professionals to gather sufficient knowledge about current physical activity recommendations.*

Keywords: Physical activity, Promotion, Healthcare providers, Saudi Arabia

INTRODUCTION

Unhealthy life style behaviours exhibiting physical inactivity are risk factors associated with the growing global prevalence of chronic non-communicable conditions, including obesity, cardio-vascular diseases, hypertension, osteoporosis, type two diabetes mellitus, neurological, and mental health disorders [1-5]. Even though it is recognized that adults engaged in regular physical activity (PA) exhibit a lower prevalence of chronic conditions [6-8], and are less likely to die prematurely [9], less than half of the adult population worldwide appear to participate in regular physical activity [5].

The current study was conducted in Riyadh city, Saudi Arabia, where the majority of the population are reported to have diminishing levels of PA [10,11]. Economic growth, affluence, modernization, and globalization have contributed toward the development of unhealthy lifestyles and behaviours, reflected by a high prevalence of inactivity among Saudi children, youth, and adults, reported to be about 60%, 70%, and 80% respectively [12]. A previous survey conducted at King Khalid University revealed that 58% of the students were physically inactive [13].

Increasing levels of inactivity among the Saudi population may be associated with the major causes of morbidity and

mortality, including obesity, type two diabetes mellitus, hypertension, and ischemic heart disease [10,14-16]. The World Health Organization reported that in 2002, about 80% of the non-communicable diseases in Saudi Arabia were due to unhealthy dietary patterns, physical inactivity, and use of tobacco and alcohol [17].

In the last decade, healthcare providers in the United States of America and Europe have searched for health promotion solutions to prevent the deleterious consequences of sedentary lifestyle behaviours [3,18-21]. About 28% of Primary health care physicians show support for physical activity counselling to their clients. However, a number of challenges are present, such as time constrains, lack of training and knowledge about physical activity. Before new health promotion guidelines can be developed, more research is required to explore the current extent to which primary healthcare providers contribute toward the promotion of physical activity [22-25].

In the light of the above background, the purpose of this empirical research study was to conduct a survey using a self-report questionnaire to explore the level of awareness of Saudi healthcare providers regarding the significance of PA for health maintenance and disease prevention, and to analyse their attitudes and perceptions regarding health promotion practices concerned with improving the levels of PA of patients.

PARTICIPANTS AND METHODS

A quantitative survey was conducted between May and September 2016, through the administration of a self-report questionnaire to explore primary healthcare providers' attitudes and perceptions related to routinely advising patients about physical activity. This questionnaire has been used in several previous surveys distributed to primary healthcare providers' in clinical settings [18,19,26]. The questionnaire contains 15 questions classified into ten dimensions (1) Demographics; (2) Activities during consultations; (3) Advice for patients with medical conditions; (4) Recommended physical activity for healthy adults; (5); Physical activity recommendations for inactive/not regularly active healthy adults; (6) Health promotion activities; (7) Reasons for not giving advice; (8) Routinely recorded information in practice; (9) Members of staff recording information and; (10) Reasons for recording information.

The construct validity of the questionnaire was underpinned by sound theoretical principles, specifically the Health Belief Model (HBM). The HBM is a framework for health promotion positing that the perceptions of individuals regarding the severity of, or susceptibility for, unhealthy behaviour is correlated with the likelihood of individuals taking action to reduce the risk of disease associated with that behaviour. Furthermore, health promotion messages will achieve optimal behaviour changes if they successfully target perceived barriers, benefits, and self-efficacy [27,28]. In the context of the current study, the HBM predicts that if a healthcare provider believes that low physical activity causes disease, then he or she is more likely to recommend patients to increase their levels of physical activity. In practice, however, health promotion activities are restricted by the self-efficacy of individuals, and several other barriers that interfere with the outcomes of health promotion activities, including the motivations of patients [27,28].

Inclusion criteria include primary healthcare providers (general practitioners or family physicians, nurses, nurse assistants, dieticians, and health educators) working in primary health care centres in Riyadh City. A calculation was performed to determine the minimum sample size required to obtain a representative sample with tolerable error in a cross-sectional survey [29]. Given that the total population of primary healthcare providers in Riyadh City 30 is 34563 (7652 physicians; 17226 nurses; and 9685 allied health personnel) The sample size was estimated according to the following formula: $N = (Z_{\alpha})^2 \times ([p(1-p)]/d^2)$, where N is the estimated sample size, Z_{α} at the 5% level of significance equals 1.96, d is the level of precision and was estimated to equal 0.04, and p is the prevalence rate counselling on health benefits of physical activity previous studies conducted in the region [30]. Hence, the sample size is 817 subjects.

To reduce sampling bias, and ensure generalizability, the questionnaire was distributed to a representative sample of the target population. The survey was conducted for both male and female participants at primary healthcare centres (PHCCs) in the city of Riyadh, Saudi Arabia. The paper-based questionnaire was distributed to 1000 primary health care providers in 75 PHCCs. The director of each PHCC was responsible in sending it to the healthcare provider in that centre. The participants were classified into five groups (physicians, nurses, nurse assistants, dieticians, and health educators). A cluster-multistage random sampling technique was employed. For the purpose of study; PHCCs were clustered according to their geographic divisions into five districts (middle, southern, northern, eastern, and western) with 75-80 PHCCs in each district. We randomly chose 15 PHCCs in each district. Therefore, we had 75 PHCCs. The questionnaire was completed by 803 respondents using convenience sampling of participants, giving a response rate of 80.3%.

RESULTS

Demographic characteristics of the respondents

Questionnaires were completed by 803 respondents (response rate 80.3%). The mean age of the respondents was 33.06 ± 8.45 years. About 60% of the participants were female, 40% were male who comprised of 304 physicians, 424 nurses, 26 nurse assistants (NA), 31 dieticians and 13 health educators (HE) (Table 1).

Table 1 Demographics characteristics of the participants

Variables		Statistics
Mean Age		33.06 ± 8.45 years
Gender	Male	321 (40%)
	Female	482 (60%)
Education	MBBS	233 (29%)
	Board	136 (16.9%)
	Bachelor (non-medical)	193 (24%)
	Diploma	175 (21.8%)
	Master	52 (6.5%)
	PhD	14 (1.7%)
Profession	Physician	309 (38.5%)
	Nurse	424 (52.8%)
	Nurse assistant	26 (3.2%)
	Dietician	31(3.9%)
	Health educator	13 (1.6%)
Professional experience	<5 years	304 (37.9%)
	5-10 years	296 (36.9%)
	10-15 years	99 (12.3%)
	>15 years	104 (13.0%)

Perceptions about PA levels among healthcare professionals in Saudi Arabia

A significant difference in opinions of healthcare professionals about perceptions of PA levels among general population was observed. Compared to NAs, dietician and HEs, the physicians and nurses believed that overall perceptions about PA level had increased a lot (Table 2).

Table 2 Perceptions about the physical activity levels in Saudi Arabia

Health Professional	Increased a lot	Increased a little	Unchanged	Decreased a little	Decreased a lot
Physician	87 (28.2%)	115 (37.2%)	47 (15.2%)	27 (8.7%)	33 (10.7%)
Nurse	105 (24.8%)	144 (34.0%)	96 (22.6%)	51 (12.0%)	28 (6.6%)
Nurse assistant	4 (15.4)	9 (34.6)	5 (19.2)	7 (26.9)	1 (3.8)
Dietician	4 (12.9)	13 (41.9)	3 (9.7)	4 (12.9)	7 (22.6)
Health Educator	2 (15.4)	8 (61.5)	0 (0.00)	1 (7.7)	2 (15.4)
Chi-square: 36.465, df: 16, p=0.002					

Topics discussed during consultations with apparently healthy adult

Participants were asked to identify how often they counsel their patients on “health and psychological benefits of PA”. Almost 84-96% of participants responded for advising health benefits of PA and 77-94% responded for advising psychological benefits of PA. Majority of them recommended walking as the best form of PA, followed by household work, and moderate activity (Figure 1). However, a statistically significant difference existed among the groups regarding advice on vigorous activity as evident from p-value (Table 3).

Table 3 Topics likely to be covered during consultations with apparently healthy adult

Topics	Occupation	N (%)	P value
Health benefits	Physician	95.40%	0.04
	Nurse	95.75%	
	Nurse assistant	92.30%	
	Dietician	83.87%	
	Health educator	92.30%	
Psychological benefits	Physician	88.02%	0.031
	Nurse	93.80%	
	Nurse assistant	96.10%	
	Dietician	77.41%	
	Health educator	84.61%	
Household work	Physician	86.73%	0.585
	Nurse	86.08%	
	Nurse assistant	92.30%	
	Dietician	80.64%	
	Health educator	100%	
Walk more	Physician	94.49%	0.455
	Nurse	93.63%	
	Nurse assistant	96.15%	
	Dietician	80.64%	
	Health educator	92.30%	
Moderate activity	Physician	79.60%	0.284
	Nurse	83.49%	
	Nurse assistant	84.61%	
	Dietician	67.74%	
	Health educator	76.92%	
Vigorous activity	Physician	45.95%	0.001
	Nurse	60.37%	
	Nurse assistant	57.69%	
	Dietician	32.25%	
	Health educator	23.07%	

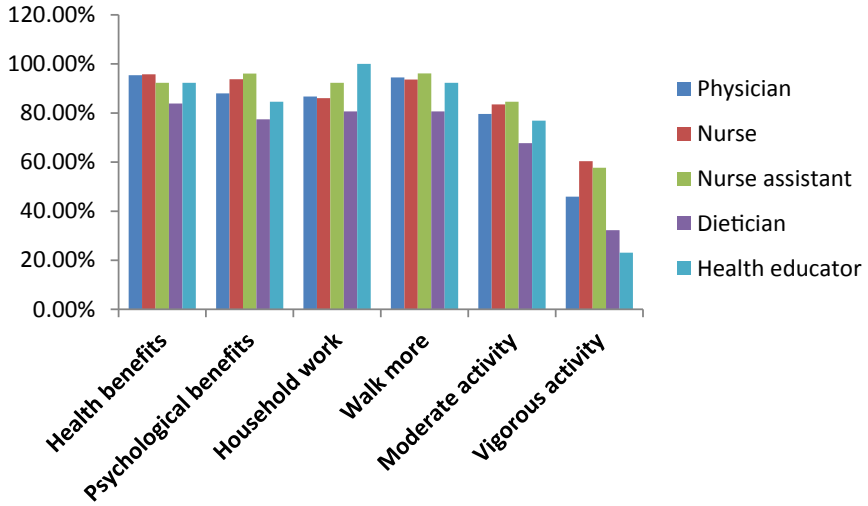

Figure 1 Graph showing topics likely to be covered during consultations with apparently healthy adult (%)

Besides walking, some other forms of exercises were also recommended during consultation. This included running, jumping, lifting, push-ups, cycling, swimming, jogging, and climbing. However, considerable variation in opinion about different forms of exercises was observed among all participants (Tables 4 and 5).

Table 4 Advice given during consultations with adult patients who are apparently healthy (Chi-square test)

Physical activity	Physician	Nurse	Nurse assistant	Dietician	Health educator	P value
Walking	284 (91.9%)	379 (89.4%)	20 (76.9%)	26 (83.9%)	12 (92.3%)	0.109
Running	91 (29.4%)	119 (28.1%)	4 (15.4%)	15 (48.4%)	4 (30.8%)	0.084
Jumping	29 (9.4%)	33 (7.8%)	4 (15.4%)	8 (25.8%)	1 (7.7%)	0.015
Lifting	4 (1.3%)	21 (5%)	0 (0%)	4 (12.9%)	4 (30.8%)	0.00
Push-ups	9 (2.9%)	15 (3.5%)	0 (0%)	1 (3.2%)	3 (23.1%)	0.003
Cycling	33 (10.7%)	57 (13.4%)	3 (11.5%)	4 (12.9%)	4 (30.8%)	0.263
Swimming	65 (21.0%)	130 (30.7%)	6 (23.1%)	7 (22.6%)	6 (46.2%)	0.022
Jogging	54 (17.5%)	146 (34.4%)	6 (23.1%)	3 (9.7%)	2 (15.4%)	0.00
Climbing	49 (15.9%)	73 (17.2%)	2 (7.7%)	4 (12.9%)	4 (30.8%)	0.415

Table 5 Recommendations for current physical activity for inactive, apparently healthy adults (Chi-square test)

Physical activity	Physician	Nurse	Nurse assistant	Dietician	Health educator	P value
Walking	279 (90.3%)	377 (88.9%)	16 (61.5%)	26 (83.9%)	12 (92.3%)	0.00
Running	54 (17.5%)	61 (14.4%)	6 (23.1%)	9 (29.0%)	3 (23.1%)	0.176
Jumping	14 (4.5%)	19 (4.5%)	1 (3.8%)	5 (16.1%)	1 (7.7%)	0.067
Lifting	9 (2.9%)	9 (2.1%)	1 (3.8%)	3 (9.7%)	2 (15.4%)	0.012
Push-ups	7 (2.3%)	14 (3.3%)	3 (11.5%)	2 (6.5%)	4 (30.8 %)	0.00
Cycling	17 (5.5%)	29 (6.8%)	2 (7.7%)	3 (9.7%)	1 (7.7%)	0.879
Swimming	35 (11.3%)	65 (13.0%)	3 (23.1%)	1 (3.2%)	2 (15.4%)	0.221
Jogging	44 (14.2%)	82 (19.3%)	4 (15.4%)	3 (9.7%)	3 (23.1%)	0.299
Climbing	26 (8.4%)	69 (16.3%)	1 (3.8%)	2 (6.5%)	3 (23.1%)	0.006

Advice given for specific medical conditions

The physicians and nurses more often gave advice to specific medical conditions than other groups. All healthcare professionals were likely to provide PA advice 'always' to overweight patients (54-77%) than any other medical conditions. Additionally, PA advice for diabetes, Ischemic heart disease, and hypercholesterolemia did not show significant difference among all the groups. However, variation was observed for advising hypertension and depression patients. Besides, depression patients were mostly advised by HE (Table 6).

Table 6 Advice given for specific medical conditions (Chi-square test)

Medical condition	Occupation	Always n (%)	Often n (%)	Occasionally n (%)	Never n (%)	P value
Overweight	Physician	219 (70.9)	80 (25.9)	10 (3.2)	0 (0)	0.002
	Nurse	270 (63.7)	124 (29.2)	22 (5.2)	8 (1.9)	
	Nurse assistant	14 (53.8)	8 (30.8)	4 (15.4)	0 (0)	
	Dietician	17 (54.8)	8 (25.8)	4 (12.9)	2 (6.5)	
	Health educator	10 (76.9)	1 (7.7)	2 (15.4)	0 (0)	
Hypertension	Physician	157 (50.8)	126 (40.8)	25 (8.1)	1 (0.3)	0.001
	Nurse	219 (51.7)	151(35.6)	44 (10.4)	10 (2.4)	
	Nurse assistant	11 (42.3)	10 (38.5)	4 (15.4)	1 (3.8)	
	Dietician	12 (38.7)	10 (32.3)	7 (22.6)	2 (6.5)	
	Health educator	3 (23.1)	4 (30.8)	5 (38.5)	1 (7.7)	
Ischemic heart disease	Physician	104 (33.7)	110 (35.6)	67 (21.7)	28 (9.1)	0.148
	Nurse	131 (30.9)	152(35.8)	95 (22.4)	46 (10.8)	
	Nurse assistant	7 (26.9)	4 (15.4)	10 (38.5)	5 (19.2)	
	Dietician	9 (29.0)	13 (41.9)	6 (19.4)	3 (9.7)	
	Health educator	1 (7.7)	6 (46.2)	6 (46.2)	0 (0)	

Diabetes	Physician	168 (54.4)	108 (35.0)	33 (10.7)	0 (0)	0.129
	Nurse	227 (53.5)	139(32.8)	46 (10.8)	12 (2.8)	
	Nurse assistant	17 (65.4)	6 (23.1)	3 (11.5)	0 (0)	
	Dietician	12 (38.7)	13 (41.9)	4 (12.9)	2 (6.5)	
	Health educator	8 (61.5)	3 (23.1)	2 (15.4)	0 (0)	
Hypercholesterolemia	Physician	162 (52.4)	114 (36.9)	33 (10.7)	0 (0)	0.012
	Nurse	200 (47.2)	134 (31.6)	79 (18.6)	11 (2.6)	
	Nurse assistant	11 (42.3)	11 (42.3)	4 (15.4)	0 (0)	
	Dietician	11 (35.5)	14 (45.2)	4 (12.9)	2 (6.5)	
	Health educator	7 (53.8)	4 (30.8)	2 (15.4)	0 (0)	
Depression	Physician	98 (31.7)	128 (41.4)	66 (21.4)	17 (5.5)	0.126
	Nurse	144 (34.0)	160 (37.7)	87 (20.5)	33 (7.8)	
	Nurse assistant	12 (46.2)	6 (23.1)	7 (26.9)	1 (3.8)	
	Dietician	7 (22.6)	9 (29.0)	12 (38.7)	3 (9.7)	
	Health educator	8 (61.5)	2 (15.4)	2 (15.4)	1 (7.7)	

Attitudes associated with health promotion and PA advising

Majority of the respondents agreed that health promotion and encouragement of PA play key role in the primary care work and they also believed to possess sufficient knowledge to advice patients about PA benefits. Nevertheless, all of them were consistent about the fact that they advise PA, if required for the patients' existing problems, or if mentioned by patients (Table 7).

Table 7 Primary care staff's opinions on promoting physical activity, n (%) (Chi-square test)

Opinion on promoting physical activity	Occupation	Strongly agree n (%)	Agree n (%)	Neither agree nor disagree n (%)	Disagree n (%)	P value
Health promotion is an important part of primary care work	Physician	219 (70.9)	87 (28.2)	1 (0.3)	2 (0.6)	0.106
	Nurse	305 (71.9)	111 (26.2)	8 (1.9)	0 (0.00)	
	Nurse assistant	15 (57.7)	11 (42.3)	0 (0.00)	0 (0.00)	
	Dietician	16 (51.6)	15 (48.4)	0 (0.00)	0 (0.00)	
	Health educator	11 (84.6)	2 (15.4)	0 (0.00)	0 (0.00)	
Promoting physical activity is important in primary care	Physician	178 (57.6)	130 (42.1)	1 (0.3)	0 (0.00)	0.014
	Nurse	235 (55.4)	174 (41.0)	15 (3.5)	0 (0.00)	
	Nurse assistant	9 (34.6)	17 (65.4)	0 (0.00)	0 (0.00)	
	Dietician	14 (45.2)	16 (51.6)	1 (3.2)	0 (0.00)	
	Health educator	9 (69.2)	3 (23.1)	1 (7.7)	0 (0.00)	
I only patients about advise physical activity if linked to their presenting problem	Physician	76 (24.6)	136 (44.0)	28 (9.1)	69 (22.3)	0.001
	Nurse	107 (25.2)	173(40.8)	86 (20.3)	58 (13.7)	
	Nurse assistant	6(23.1)	14 (53.8)	3 (11.5)	3 (11.5)	
	Dietician	9 (29.0)	16 (51.6)	2 (6.5)	4(13.0)	
	Health educator	3 (23.1)	4 (30.8)	2 (15.5)	4 (30.8)	
I have sufficient knowledge to advise patients about physical activity	Physician	94 (30.4)	172 (55.7)	42 (13.6)	1 (0.3)	0.00
	Nurse	129 (30.4)	246 (58.0)	45 (10.6)	4 (1.0)	
	Nurse assistant	4 (15.4)	14 (53.8)	7 (26.9)	1 (3.8)	
	Dietician	8 (38.7)	15 (48.4)	5 (16.1)	3 (9.7)	
	Health educator	3 (23.1)	6 (46.2)	2 (15.4)	2 (15.4)	

I try to encourage as many patients as possible to increase their physical activity	Physician	59 (19.1)	129 (41.7)	118 (38.2)	3 (0.9)	0.02
	Nurse	117 (27.6)	160 (37.7)	144 (34.0)	3 (0.7)	
	Nurse assistant	5 (19.2)	9 (34.6)	12 (46.2)	0 (0.00)	
	Dietician	5 (16.1)	8 (25.8)	17 (54.8)	1 (3.2)	
	Health educator	1(7.7)	4 (30.8)	8 (61.5)	0 (0.00)	
I only discuss physical activity if patient mentions it.	Physician	38 (12.3)	102 (33.0)	59 (19.1)	113 (35.6)	0.143
	Nurse	52 (12.3)	146 (34.4)	110 (25.9)	116 (27.3)	
	Nurse assistant	4 (15.4)	13 (50.0)	5 (19.2)	4 (3.8)	
	Dietician	5 (16.1)	16 (51.6)	7 (22.6)	3 (9.7)	
	Health educator	1 (7.7)	4 (30.8)	3 (23.1)	5 (38.5)	

Perceived barriers against physical activity counselling

More than 50% of physicians (57%) and nurses (55%) reported lack of time as the main barrier for PA discussion with patients. In addition, lack of patients' motivation to follow advice, expectation of patients for receiving drug treatment, shortage of health educational materials, and scarcity of specific training programs and appropriate guidelines for PA promotion were reported as other perceived barriers by all the professionals. Except NA (30.8%) financial incentive was not considered to be a significant barrier by other groups (Table 8).

Table 8 Reasons given by primary care staff about why they do not give advice to patients about physical activity, n (%) (Chi-square test)

Reasons for not advising patients about physical activity	Occupation	Strongly agree n (%)	Agree n (%)	Neither agree nor disagree n (%)	Disagree n (%)	P value
Patients are unlikely to be motivated to follow advice to be more active	Physician	47 (15.2)	128 (41.4)	61 (19.7)	73 (23.7)	0.007
	Nurse	80 (18.9)	217 (51.2)	68 (16.0)	59 (13.9)	
	Nurse assistant	4 (15.4)	16 (61.5)	4 (15.4)	2 (7.7)	
	Dietician	2 (6.5)	20 (64.5)	5 (16.1)	4 (13.0)	
	Health educator	3 (23.1)	4 (30.8)	4 (30.8)	2 (15.4)	
I don't have enough time to promote physical activity to my patients	Physician	42 (57.6)	84 (42.1)	77 (0.3)	106 (0)	0.042
	Nurse	37 (55.4)	105 (41.0)	126 (3.5)	156 (0)	
	Nurse assistant	2 (7.7)	15 (57.7)	6 (23.1)	3 (11.5)	
	Dietician	3 (9.7)	4 (12.9)	13 (41.9)	11 (35.5)	
	Health educator	2 (15.4)	2 (15.4)	3 (23.1)	6 (46.2)	
I would be more likely to promote physical education if there was a financial incentive	Physician	27 (8.7)	58 (18.8.0)	86 (27.8)	138 (44.6)	0.018
	Nurse	44 (10.4)	75 (17.7)	109 (25.7)	196 (46.3)	
	Nurse assistant	8 (30.8)	5 (19.2)	4 (15.4)	9 (34.6)	
	Dietician	0 (0.00)	5 (16.1)	14 (45.2)	12 (38.7)	
	Health educator	1 (7.7)	4 (30.8)	2 (15.4)	6 (46.2)	
Educational material for patients are insufficient	Physician	43 (13.9)	121 (39.2)	66 (21.4)	79 (25.5)	0.009
	Nurse	55 (13.0)	163 (38.4)	144 (34.0)	62 (14.7)	
	Nurse assistant	5 (19.2)	10 (38.5)	6 (23.1)	5 (19.2)	
	Dietician	5 (16.1)	12 (38.7)	5 (16.1)	9 (29.0)	
	Health educator	3 (23.1)	6 (46.2)	2 (15.4)	2 (15.4)	
Patient expect drug treatment when they visit their GP practice	Physician	63 (20.4)	106 (34.3)	67 (21.7)	73 (23.6)	0.008
	Nurse	68 (16.0)	187 (44.1)	102 (24.1)	67 (15.8)	
	Nurse assistant	7 (26.9)	16 (61.5)	3 (11.5)	0 (0.00)	
	Dietician	6 (19.4)	13 (41.9)	5 (16.1)	7 (22.6)	
	Health educator	4 (30.8)	8 (61.5)	1 (7.7)	0 (0.00)	

There is a lack of available education for health professional regarding physical activity promotion	Physician	52 (16.8)	118 (38.2)	66 (21.4)	73 (23.6)	0.403
	Nurse	60 (14.2)	178 (42.0)	90 (21.2)	96 (22.6)	
	Nurse assistant	2 (7.7)	15 (57.7)	7 (26.9)	2 (7.7)	
	Dietician	8 (25.8)	15 (48.4)	3 (9.7)	5 (16.1)	
	Health educator	3 (23.1)	7 (53.8)	1 (7.7)	2 (15.4)	

Information routinely recorded for PA levels in PHCC

Respondents presented a significant dissimilarity in recording different information related to patients' PA levels. Overall, the physicians were found to be least involved in recording information whereas the HEs were most involved (Table 9).

Table 9 Information routinely recorded regarding physical activity levels (Chi-square test)

Information type	Occupation	N (%)	P value
Patient's current activity level	Physician	107 (34.6%)	0.00
	Nurse	212 (50%)	
	Nurse assistant	12 (46.2%)	
	Dietician	15 (48.4%)	
	Health educator	9 (69.2%)	
Barriers the patient identified to becoming more active	Physician	63 (20.4%)	0.001
	Nurse	105 (24.8%)	
	Nurse assistant	8 (30.8%)	
	Dietician	15 (48.4%)	
	Health educator	7 (53.8%)	
Advice given to patient to be physically active	Physician	92 (29.8%)	0.002
	Nurse	184 (43.4%)	
	Nurse assistant	9 (34.6%)	
	Dietician	16 (51.6%)	
	Health educator	6 (46.2%)	
No information about physical activity is routinely recorded	Physician	182 (58.9%)	0.00
	Nurse	159 (37.5%)	
	Nurse assistant	6 (23.1%)	
	Dietician	6 (19.4%)	
	Health educator	8 (61.5%)	

Staff members responsible for recording information regarding PA

In order to determine the staff members responsible for recording PA information, the participants were requested to reply in either "yes" or "no" (Table 10). The data showed a significant difference between negative and positive responses ($p<0.001$) in all the groups (Figure 2).

Table 10 Staff member responsible for recording the information regarding physical activity

Staff Member	Yes (N (%))	No (N (%))
General practitioner	328 (40.8%)	475 (59.2%)
Practice nurse	284 (35.4%)	519 (64.6%)
Health educator	278 (34.6%)	525 (65.4%)
Head Nurse	97 (12.1)	706 (87.9%)
Supporting staff	141 (17.5%)	662(82.4%)
No body	274 (34.1%)	529 (65.9%)

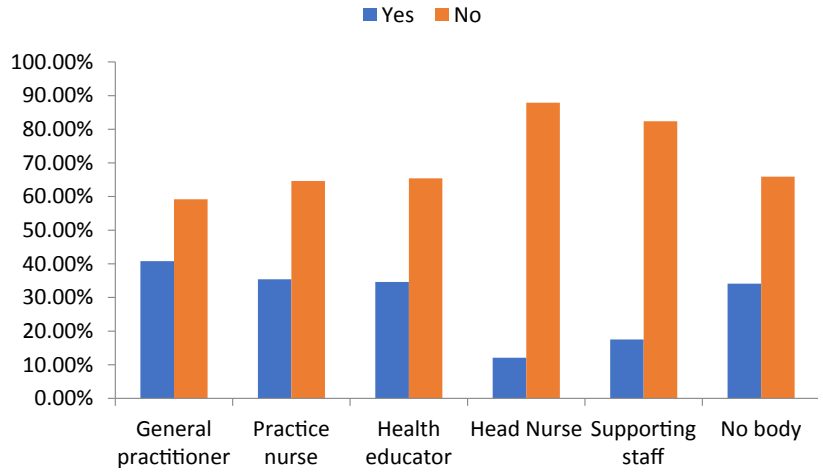

Figure 2 Bar graph demonstrating staff member responsible for recording the information regarding physical activity (Chi-square test: p<0.001)

Reasons for recording information about PA in practice

In order to identify the possible reasons for recording information about PA in practice, the respondents were presented with several variables and asked whether they were likely to consider them as probable reasons. Their response was in either "yes" or "no" (Figure 3). The participants consistently provided a very high negative response for most of the variables compared to positive responses (p<0.001), except for practice policy (yes: 34.1%, no: 65.9%) and performance monitoring (yes: 37.9%, no: 62.1%) (Table 11).

Table 11 Reasons for recording information about physical activity in practice

Staff Member	Yes (N (%))	No (N (%))
Practice policy	274 (34.1%)	529 (65.9%)
Monitor Performance	304 (37.9%)	499 (62.1%)
Required by auditors	91 (11.3%)	712 (88.7%)
Required for research project	92 (11.5%)	711 (88.5%)
Routinely collected to monitor trends	163 (20.3%)	640(79.7%)
No information recorded	339 (42.2%)	464 (57.8%)

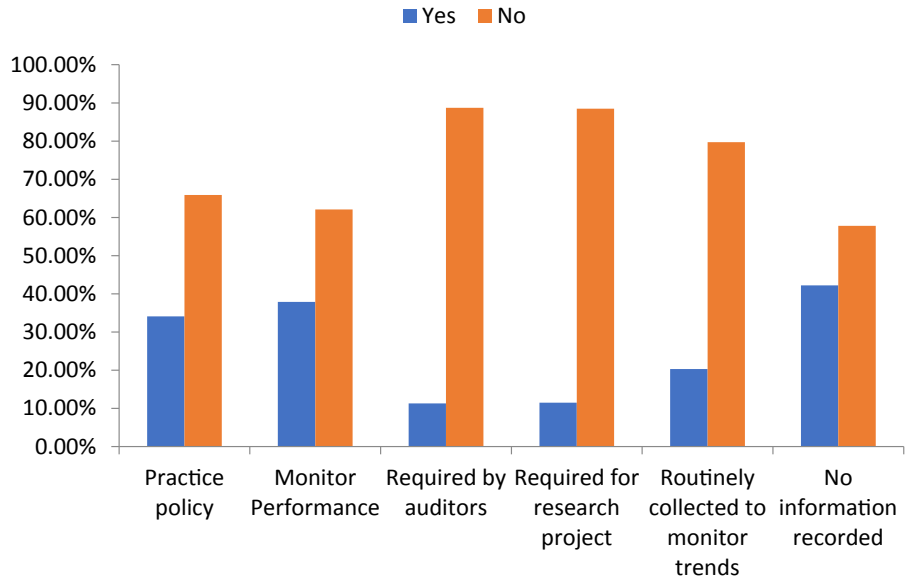

Figure 3 Graph showing reasons for recording information about physical activity in practice (Chi-square test: p<0.001)

DISCUSSION

Physical inactivity is considered to be responsible for 6% to 10% of non-communicable diseases worldwide [31]. PA is one of the major public health concerns in Saudi Arabia resulting in diseases like diabetes mellitus, hypertension, ischemic heart, obesity, depression, and hypercholesterolemia which are likely to become the main cause of morbidity and mortality in Saudi Arabia in the next decade [32]. According to the World Health Organization (WHO) this problem can be resolved by promoting healthy lifestyles through health education by primary healthcare providers [33]. This study explored the current situation of PA promotion and awareness in PHCC in Saudi Arabia.

The data showed that a high percentage of staff reported to have an increased awareness towards health education and considered PA promotion as an important part of primary care work and also encouraged majority of the patients to increase their PA level. These findings could be explained in two ways. Firstly, there might be good support from practitioners in promoting PA in PHCC. Secondly, this might be the result of sampling bias, where the healthcare staffs most actively promoting PA had completed the questionnaire.

Majority of the participants believed to have sufficient knowledge to advice patients about PA; conversely, they stated lack of sufficient training program and protocols about PA promotion. This contradictory finding indicates apparent deficiency in awareness and knowledge about the recent guidelines for PA promotion. Hence, it is necessary to develop awareness amongst each professional group about the updated PA recommendations through training programs, health education, and proper guidelines.

Most health care professionals revealed that during consultations with apparently healthy adult patients they discussed about health benefits and psychological benefits of PA. Walking was recommended as the most important form of exercise unanimously. This recommendation is quite beneficial for people who lead sedentary life, since regular walking would definitely increase their PA level [34]. Additionally, moderate activity and household work were also recommended by all. Except nurse and nurse assistants, other respondents do not recommend vigorous activity. Significant variation in opinion was also observed for other forms of exercises. These findings indicate the necessity of more clarity and uniformity in the advice provided by healthcare staffs, otherwise patients will be perplexed. Hence, for the benefit of general population, the health care staffs should adhere correctly to the clinical guidelines [35].

In general, majority of health care professionals were more likely to recommend PA to overweight patients compared to those suffering from other non-communicable diseases. This finding matches with the data of several previous studies [36]. Although the physicians and nurses were mostly responsible for advising PA to patients with different medical conditions, yet HE was more likely to advice exercises to patients suffering from depression. This might be due to the fact that patients with physical problems are inclined to take advice mostly from the physicians and nurses, whereas mental disorder patients seek help more from health educators.

Similar to the earlier reports [37,38], the current study indicated that barriers against PA advising by primary healthcare professionals include lack of available time, inadequate knowledge and training required to provide counselling, shortage of educational materials, unlikeliness of patients to follow advice, patient expectation for drug treatment rather than counselling, and lack of financial incentive. Physicians and nurses mostly considered lack of time as one of the main barriers for PA advising. This could be due to their busy practice schedule; therefore, strategies should be developed to provide more available time for health care promotion by professionals in PHCC. The problem like inadequate knowledge of healthcare guidelines could be solved by organizing more training programs, developing proper protocols, guidelines, and providing them to both healthcare staffs and patients. Moreover, accurate monitoring is needed to detect whether the busy healthcare staffs working in the real world could adapt to this training program [39]. Other perceived barriers such as lack of patients' motivation to follow healthcare professionals' advice and also expectation of patients to obtain drug treatment, rather than PA advice from physicians, indicate the possibility of lower level of confidence among healthcare staff about motivating patients. Henceforth, further studies are needed to investigate this behaviour. Besides, more patient-centred studies should be conducted to understand patients' attitudes towards PA advice. This in turn, might support the views of each professional group about the efficacy in inspiring patients to be more physically active. Financial incentive was considered as a barrier mostly by NA and this could be due to the differences in remuneration between NA and all other groups [40-43].

The current study displayed the attitudes of different healthcare professionals in terms of recording information about the patient's PA level. Data showed that physicians are most reluctant about recording information whereas the HEs are most likely to record different kinds of information provided by the patients and to offer them advice accordingly.

This can be due to the fact that larger number of patients discusses their PA level and issues related to PA more often with HE, probably because time constraints appear to be less of an issue with HE, compared to physicians. Nonetheless, further investigation is needed to explore this finding.

Regarding the reasons for recording information about PA in practice, no clear information was obtained from the data. However, some of the participants were more likely to consider practice policy and monitoring performance to be the causes to some extent. Future study should be directed for proper understanding of this matter.

Overall, the current study on exploring the level of awareness of Saudi healthcare providers regarding the significance of PA for health maintenance and disease prevention had achieved a reasonable response rate. The survey data helped to analyse the attitudes and perceptions of healthcare staffs regarding health promotion. This study also involved quite a different range of PHCC staff in the same survey on PA issue.

A significant limitation of this study is that the obtained data are 'self-reported' and hence may not be very accurate. Future research on PA promotion in PHCC may be benefitted by introduction of observational methods to confirm the claims. Secondly, the study didn't investigate the perceptions and beliefs of the patients about PA promotion by healthcare professionals. Hence, future studies should involve patient survey in order to aid primary health care staff to efficiently motivate patients for PA. Also, future local studies should take care of the health professional while on vacations as the huge health care staff being expatriates.

CONCLUSION

The current study reported that most of the healthcare professionals in Saudi Arabia considered PA promotion as an important aspect of PHCC, indicating a positive foundation for imminent work. However, respondents reported a lack of suitable training program and health education materials. Hence, regular training courses on PA counselling should be conducted and standardized structured protocols regarding exercise and other lifestyle modifications should be developed and distributed to all PHCCs to improve the knowledge and attitudes of primary care professionals in PA promotion. However, the effectiveness of these protocols must be determined through intervention studies. Moreover, adequate health education materials should be circulated to all PHCCs for educating the patients. Finally, to spread effective PA awareness among larger section of population across Saudi Arabia, involvement of other relevant groups with clear specialized role in the community, such as physiotherapist, policy makers, respective professional bodies and health improvement agencies is of utmost importance.

DECLARATIONS

Acknowledgement

We would like to thank all the students and employees who took part in this study.

Funding

This project was supported by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University under the research project #2015/03/3197.

Availability of data and materials

The datasets are available from the corresponding author on reasonable request.

Authors' contributions

This work was carried out in collaboration between all authors. Author Sameer Al-Ghamdi participated in study design and wrote the draft of manuscript. Authors Mansour Alajmi and Ali Al-Gonaim collected and processed the samples. Authors Saad, Al-Juhayyim, Saad Al-Qasem and Ibrahim Al-Tamimi participated in study design and carried out the statistical analysis. All authors read and approved the final manuscript.

Competing interest

The authors declare they have no competing interest.

Ethics approval

The research was approved by the Institutional Review Board of College of Medicine at Prince Sattam bin Abdulaziz University with IRB number PSAU-2016-FM-10/01/PI. An informed consent was signed by each participant.

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