Prevalence and predictors of physical exercise among nurses.
A cross-sectional study

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ABSTRACT

Objectives: To identify the prevalence and predictors of physical exercise among nurses.

Methods: This study was conducted at 2 hospitals selected randomly from tertiary hospitals in King Fahad Medical City, Riyadh, Kingdom of Saudi Arabia (KSA) and Makassed General Hospital, Beirut, Lebanon in 2014. The study included nurses with at least one year of nursing experience. Data were collected using a self-administered questionnaire. The questionnaire was divided into 2 sections, one covering the respondents' demographics, and the other one assessing the prevalence and the characteristics of physical exercise.

Results: A total of 412 participants responded, of whom 248 (60.2%) are engaged in physical exercise. On multivariate analysis, normal weight and smoking were independently associated with physical exercise. Most 66.1% of respondents reported practicing walking as the most common type of physical activity. One hundred eighty (72.6%) respondents relied on their own motivation to perform physical activity and 64.6% reported the lack of availability of physical activity facilities.

Conclusion: Smoking and obesity were the significant predictors associated with physical inactivity. Encouraging nurses to adopt a healthy lifestyle for their role modeling to patients as health promoters is recommended.

The benefits of physical exercise on physical and mental health throughout life are well recognized.[1,2] The World Health Organization has recognized physical inactivity as a major threat to worldwide population health.[3] The risk factors associated with chronic diseases have been explored in numerous studies, which have indicated the importance of physical exercise as a preventive factor.[4-7] Although current evidence demonstrates positive outcomes from participation in exercise, previous research reveals that nurses' engagement in regular physical exercise is amongst the lowest level compared with other occupational groups.[8-10] It is important to understand the factors that determine participation in physical exercise among various groups to promote physical exercise.[11] Previous studies showed that nursing job long shifts and limited space, and access to exercise facilities present a challenge for nurses to get moderate to vigorous physical exercise recommended to sustain good health.[1,12] While, other studies revealed that perceived self-motivation and social support were significant predictors of physical exercise participation, especially social support from family and friends.[13] Thus, the aim of this study was to determine the prevalence, and predictors of physical exercise among nurses from Kingdom of Saudi Arabia (KSA) and Lebanon.

Methods.

Study design. A cross-sectional study was conducted at 2 hospitals selected randomly from tertiary hospitals; King Fahad Medical City (KFMC), Riyadh, KSA and Makassed General Hospital (MGH), Beirut, Lebanon in 2014. A PubMed database was used to identify relevant published articles. The search was conducted using the electronic library of KFMC, Riyadh, KSA.

Study population. Nurses (head nurses, registered, and practical nurses) of both genders with at least one year of nursing experience, serving in all shifts of various clinical settings at KFMC and MGH were included in the study.

Recruitment and sampling methods. We approached and invited nurses randomly from KFMC and MGH over a 4-month period. A trained research assistant handed the questionnaire to the participants and they were asked if they would voluntarily participate to answer a self-administered questionnaire and return it back to the research assistant.

Data collection. A self-administered questionnaire was used for data collection. The questionnaire was developed after in-depth literature review.[14] Before the main fieldwork, a pilot study was carried out to evaluate the reliability. The Cronbach alpha was greater than 0.70. The questionnaire composed of 2 parts; the first part explored the demographic data (age,

gender, educational level, years of experience, marital status, family income, height (meter), weight (Kg), and body mass index (BMI)),[15] as well as the presence of comorbidity (hypertension, diabetes mellitus) and smoking habits. The second part of the questionnaire assessed the physical exercise prevalence (planned and structured repetitive physical movement for health or recreation). In addition to characteristics, types, frequency, duration per session, monetary expenses, and stimulant motives for physical exercise.

Sample size estimation. A pilot study of 40 participants was conducted to estimate the prevalence of physical exercise among nurses. The results showed that 24 (60%) participants are engaged in physical exercise. This result enabled us to calculate the required sample size of 376 subjects. The sample size was calculated using the Raosoft online sample size calculator with 5% margin of error and 95% confidence interval (CI).

Ethical considerations. Ethical approval was obtained from the Institutional Review Board at KFMC and MGH. Participants who approved to take part in this study gave written informed consent.

Data analysis. The Statistical Package for the Social Sciences (IBM Corp., Armonk, NY, USA) version 22 was used to analyze the data. Categorical variables were presented as frequencies and percentages. Descriptive statistics and an exploratory evaluation conducted to assess whether independent variables (age, gender, educational level, years of experience, marital status, family income, smoking status, BMI, and chronic disease) associated with physical exercise. For the univariate analysis, the significance level of each factor

Table 1 - Association between respondents' characteristics and physical exercise.

Variables	No. of participants (%)	Physical exercise		Bivariate analysis	*P*-value
		Yes n (%)	No n (%)	OR [95% CI]	
Gender					
Male	188 (45.6)	124 (67.4)	64 (32.6)	0.98 [0.65-1.47]	0.920
Female	224 (54.4)	144 (64.3)	80 (35.7)		
Age group					
18 – 29	176 (42.7)	106 (60.2)	70 (39.8)	0.66 [0.36-1.21]	0.174
30 – 44	170 (41.3)	96 (56.5)	74 (43.5)	0.56 [0.31-1.03]	0.086
>45	66 (16.0)	46 (69.7)	20 (30.3)	1	
Marital status					
Single	170 (41.3)	98 (57.6)	72 (42.4)	1	
Married	224 (54.4)	136 (60.7)	88 (39.3)	1.13 [0.76-1.70]	0.537
Divorced / widowed	18 (04.3)	14 (77.8)	4 (22.2)	2.57 [0.81-8.14]	0.130
Education level					
Diploma	60 (14.6)	46 (76.7)	14 (23.3)	1.89 [0.99-3.63]	0.051
College degree	122 (29.6)	68 (55.7)	54 (44.3)	0.73 [0.47-1.12]	0.152
Graduate degree	230 (55.8)	136 (59.1)	94 (40.9)	1	
Years of experience					
≤10 years	240 (58.3)	130 (54.2)	110 (45.8)	0.871 [0.59- 1.29]	0.546
>10 years	172 (41.7)	99 (57.6)	73 (42.4)		
Family income (USD)					
<500	22 (5.3)	10 (45.4)	12 (54.6)	0.28 [0.08-0.97]	0.068
500 – 1500	310 (75.3)	180 (58.1)	130 (41.9)	0.46 [0.18-1.19]	0.131
1501 – 3000	56 (13.6)	40 (71.4)	16 (28.6)	0.83 [0.28-2.48]	0.792
> 3000	24 (5.8)	18 (75.0)	6 (25.0)	1	
Smoking					
Yes	106 (25.7)	46 (43.4)	60 (56.6)	0.39 [0.25-0.62]	*0.000
No	306 (74.3)	202 (66.0)	104 (34.0)		
BMI category (kg/m²)					
Underweight	42 (10.2)	18 (42.9)	24 (57.1)	0.88 [0.42-1.82]	0.729
Normal weight	84 (20.4)	56 (66.7)	28 (33.3)	2.35 [1.29-4.28]	*0.004
Overweight	186 (45.1)	102 (54.8)	84 (45.2)	1.42 [0.87-2.32]	0.154
Obesity	100 (24.3)	46 (46.0)	54 (54.0)	1	
History of chronic disease					
Yes	26 (06.3)	14 (53.8)	12 (46.2)	0.76 [0.34-1.68]	0.492
No	386 (89.3)	234 (60.6)	152 (39.4)		

* significant *p*–value, OR - odds ratio, BMI - body mass index, CI - confidence interval

was tested alone. For the multivariate analysis, a multiple logistic-regression model was performed.

Results. During the study interval, a total of 480 nurses were invited to participate in this study. Of whom, 412 (85.8%) participants responded, 48 declined to participate in the study due to time constraints, and 20 did not meet the inclusion criteria. A total of 224 (54.4%) respondents were females. The mean age of the respondents was 33.50 ± 9.80 years and 26 (6.3%) have a history of chronic disease. The mean BMI was 25.30 ± 4.80 kg/m² with 186 (45.1%) beingoverweight, and 100 (24.3%) obese (**Table 1**). When we asked about physical exercise, 248 (60.2%) participants reported that they are currently engaged in physical exercise, 68 (54.8%) of them were Lebanese

and the rest were Saudi's considered individually, only 2 variables (smoking andweight) had a statistically significant association with physical exercise (**Table 1**). On multivariate analysis, normal weight and smoking were independently associated with physical exercise. Non-smoker respondents were significantly more engaged in physical exercise compared with smokers (odds ratio [OR]=1.61; 95.0% CI [1.43 – 2.85]). Moreover, respondents with normal weight were 1.83 times more engaged in physical exercise compared with obese respondents (OR=1.83; 95.0% CI [1.15 – 4.47]) (**Table 2**). Our results after investigating the characteristics of physical exercise indicated that most 164 (66.1%) of respondents reported walking as the most common type of physical exercise. Moreover, only 40 (16.1%) respondents did physical exercise daily. One hundred eighty (72.6%) respondents relied on their own motivation to perform physical exercise and 64.6% reported the lack of availability of physical exercise facilities (**Table 3**).

Table 2 - Logistic regression analysis with all significant variables.

Variable	Odds ratio [95% CI]	*P*-value
Non-smoking	1.61 [1.43 – 2.85]	0.046
Normal weight	1.83 [1.15 – 4.47]	*0.032
* significant *p*–value, CI - confidence interval		

Table 3 - Characteristics of physical exercise among physically active respondents (N=248).

Characteristics	n (%)
Type of PA	164 (66.1)
Walking	36 (14.5)
Football	24 (09.7)
Swimming	12 (04.8)
Basket Ball	4 (01.6)
Others	8 (03.2)
Frequency (days/week)	
1-3	136 (54.8)
4-6	72 (29.0)
Daily	40 (16.1)
Duration (minutes)	
<60	150 (65.5)
≥60	98 (39.5)
Spend money	
Yes	84 (33.8)
No	164 (66.2)
PA motives	
Own motive	180 (72.6)
Medical advice	26 (10.5)
Nutritionist advice	22 (08.9)
Peer motive	2 (0.8)
More than one above	18 (7.2)
Availability of PA facilities	
Yes	146 (35.4)
No	266 (64.6)
PA - Physical activity	

Discussion. This survey reveals several important findings. First, it showed that the prevalence of physical exercise in these 2 countries among nurses was 60.2%. Second, it disclosed significant association of some modifiable lifestyle factors with physical exercise, such as obesity and smoking. Our prevalence was comparable to the prevalence of physical exercise in South Africa and US nurses.[15] However, it was lower than physical exercise prevalence in Taiwanese nurses.[16] Most of our respondents relied on their own motivation to perform physical exercise. Likewise, a study conducted by Shuriquie et al,[15] on nurses from Jordan revealed that self-motivation was a significant predictor of physical exercise participation.[13] Approximately 65% of participants reported the lack of availabile facilities for physical exercise. Similarly, a study conducted by Al-Kandari et al,[1] on nursing students in Kuwait.

In contrast to a study surveying 127 critical care nurses in the United States of America indicated that 70% of respondents were engaged in regular exercise.[17] Regular exercise was only reprted by 16.1% of our surveyees. Decreased work productivity, poor quality of life, and increased absenteeism lead to increase the costs to businesses, and low physical exercise is one of the key factors in these matters.[17,21] Therefore, policymakers should promote programs that enhance physical exercise to prevent obesity and decrease smoking among nurses, which is proved to be associated with many chronic diseases.[21-23] Moreover, further studies are

needed on larger samples covering other Arab countries with additional data collection methods to assess the potential modifiable factors. In addition, comparative studies are necessary to identify the interventions most likely to succeed in both initiation and maintenance of lifestyle change among nurses. The study demonstrated that the experiences of nurses should be utilized for improving health and focus on a deepening of the knowledge of how nursing staff can improve their health. Also, it is very important to implement and evaluate an intervention that focuses on maintaining and improving the health of nurses.

There are a number of study limitations, including: 2) limited number of setting, 1) data was collected using self-administered questionnaire, which is not validated, and 3) the effect of physical inactivity on health and occupation were not studied.

In conclusion, smoking and obesity were the significant predictors associated with physical inactivity. Encouraging nurses to adopt a healthy lifestyle for their role modeling to patients as health promoters is recommended.

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