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The Readiness of Secondary Schools Teachers in Al-Nasiriyah City to Screening for Heart Disease: The Mediating Role of the Hypertension Beliefs and Behavior, Health Beliefs, and Heart-Healthy Behaviors

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Abstract:

Objectives: *The study aims to determine teachers' readiness to screen for heart disease. To find out the association between teachers' age, gender, marital status, BMI, education qualification, years in education, hypertension beliefs and behavior, heart health behaviors and their readiness to screening for heart disease.* ***Methodology:*** *A descriptive study is carry out on teachers of secondary schools in Al-Nasiriyah City. A convenience (non- probability) sample of (344) teachers of secondary schools. The data collection has initiated from January 26th, 2020 to March 14th, 2020. The research instrument consists of three parts; the first part contains demographic data, second part focus on participants' heart behaviors questionnaire, and third part related to hypertension belief and behavior. Descriptive and inferential statistical data analysis approaches have used.* ***Results:*** *The result of the study revealed that less than a half of teachers age at (22-30) years (n = 155), participants are equally distributed between males and females (n = 172), more than a half are married (59.9%), the majority hold a bachelor's degree (81.1%), this showed in table 1. Around a half of the participants are within normal weight (49.7%). More than two-fifth do not know their systolic and diastolic blood pressure. Most of teachers do not know cholesterol level (n = 253), also the majority do not know HDL level it has (85.5%). More than a half reported that they do not have such family history (56.7%).* ***Conclusion:*** *The study conclusion has included more than a half are no ready to perform heart disease testing.* ***Recommendations:*** *The study has recommended that follow-up to check blood pressure periodically, follow up on continuous checks for cholesterol and HDL. Follow up on continuous checks for cholesterol and HDL Follow preventive measures to prevent hypertension.*

KEYWRODS: Readiness, Heart disease, Screening, Hypertension, Heart-Healthy Behaviors.

INTRODUCATION

Heart disease is a term that includes numerous problems of heart and blood vessels [(1)]. Heart disease includes coronary artery diseases (CAD) like angina and myocardial infarction, commonly mentioned as an attack. Other cardiovascular disease (CVDs) include stroke, cardiomyopathy, hypertensive heart disease, rheumatic endocarditis, cardiomyopathy, abnormal heart rhythms, congenital heart disease, valvular disease, endocarditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, and venous thrombosis [(2)]. Cardiovascular disease is the leading cause of death in the worldwide, with coronary heart disease (CHD) being the major component [(3)] . Coronary heart disease is a complex disease, resulting from numerous additive and interacting contributions in an individual's environment and lifestyle in combination with their underlying genetic architecture [(4)]. Coronary artery disease develops when the coronary arteries become too narrow. The coronary arteries are the blood vessels that supply oxygen and blood to the heart. Coronary heart diseases tend to develop when cholesterol builds up on the artery walls, creating plaques. These plaques cause the arteries to narrow, reducing blood flow to the heart [(5)]. The plaque formed eventually break away and form a clot. The interrupted blood flow can damage or destroy part of the heart

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muscle [6]. Hypertension is an important worldwide public health challenge because of its high prevalence and concomitant risks of cardiovascular and kidney diseases. The prevalence of hypertension has been on the increase because of aging and growth in world population. Hypertension is most harmful to people with comorbidities or added risk factors such as diabetes mellitus, hypercholesterolemia and tobacco use. Risk factors for hypertension include living a sedentary lifestyle, consuming diets with high fat and salt content, obesity, lack of exercise, smoking and excessive alcohol intake [7]. The primary risk factor for heart disease, high blood pressure is compounded by: smoking, lack of exercise, being overweight, poor nutrition, excessive alcohol consumption, and stress. It can be controlled through medication, but working on those lifestyle choices is even more beneficial [8].

OBJECTIVES OF THE STUDY:

1.To determine teachers' readiness to screen for heart disease.
2.To find out the association between teachers' age, gender, marital status, BMI, education qualification, years in education, hypertension beliefs and behavior, heart health behaviors and their readiness to screening for heart disease.

METHODOLOGY

A descriptive design was used to guide this study. The study was conducted for the period from January (26th, 2020 to March 14th, 2020) at the secondary schools in Al-Nasiriyah City. The time required for each teacher to complete answering the study questionnaire was (15-20) minutes. A convenience (non-probability) sample of (344) teachers of the secondary schools were chosen from the secondary schools in Al-Nasiriyah City based on criteria. The research instrument consists of three parts; the first part contains demographic data: age of the participants, gender, marital status, address, education qualification, monthly family income, socioeconomic status calculated by a constructed scale by DeWitty (2007). This part also includes health information of participants' height, weight, blood pressure reading, cholesterol reading, DM history, heart disease history, smoking, and family history. The second part of the study instrument focuses on participants' heart behaviors scale. These items were measured on a 5-point Likert scale that has composed of 6 items. Responses on this scale range from 1 (Strong disagree) to 5 (Strong agree). The third part of the instrument focus participants' hypertension style scale. This scale is a Likert style scale of 5 points. Content validity of the assessment tool was determined through panel of (10) experts in the different fields. The reliability for the questionnaire was statistically adequate. Data collection is performed through the use of the study instrument, after permission were obtained. Descriptive and inferential statistical data analysis approaches are used. A pilot study is conducted to determine the study instrument reliability and validity. Pilot study was conducted on (34) teachers of secondary schools who have teached in secondary schools in AL-Nasiriyah City for the period from January 11th, 2020 to January 18th, 2020.

RESULTS OF THE STUDY

Table 1. *Participants' sociodemographic characteristics (N = 344)*

Variable	Frequency	Percent
Age (Years)		
22-30	155	45.1
31-39	82	23.8
40-48	72	20.9
49-58	35	10.2
Mean (SD)	35.12	9.15
Gender		
Male	172	50.0
Female	172	50.0
Marital Status		
Not married	113	32.8
Married	206	59.9
Divorced	8	2.3
Widower	11	3.2
Separated	6	1.7
Educational Qualification		
Pre-diploma	2	0.6
Diploma	6	1.7
Bachelor's degree	249	81.1
Master's degree	43	12.5
Doctoral degree	14	4.1
Years in education		
1-5	178	51.7
6-10	44	12.8
11-15	60	17.5
16-20	31	9.0

≥ 21	31	9.0
Mean (SD)	8.62	7.96
Monthly income (Iraqi Dinar)	8	2.3
< 200.000	72	20.9
200.000-500.000	138	40.1
501.000-800.000	68	19.8
801.000-1.000.000	42	12.2
1.001.000-1.500.000	16	4.7
1.501.000 or more		

The age mean is 35.12 ± 9.15; less than a half age 22-30-years (*n = 155*; 45.1%), followed by those who age 31-39-years (*n = 82*; 23.8%), those who age 40-48-years (*n = 72*; 20.9%), and those who age 49-58-years (*n = 35*; 10.2%). Concerning the gender, participants are equally distributed between males and females (*n = 172*; 50.0%) for each of them. Regarding the marital status, more than a half are married (*n = 206*; 59.9%), followed by those who are not married (*n = 113*; 32.8%), those who are widowers (*n = 11*; 3.2%), those who are divorced (*n = 8*; 2.3%), and those who are separated (*n = 6*; 1.7%).
With respect to the educational qualification, the majority hold a bachelor's degree (*n = 279*; 81.1%), followed by those who hold a master's degree (*n = 43*; 12.5%), those who hold a doctoral degree (*n = 14*; 4.1%), those who hold a diploma degree (*n = 6*; 1.7%), and those who hold a pre-diploma degree (*n = 2*; 0.6%).
As per the years of working in education, the mean is 8.62 ± 7.96; more than a half have 1-5-years (*n = 178*; 51.7%), followed by those who have 11-15-years (*n = 60*; 17.5%), and those who have each of 16-20-years and 21-years or more (*n = 31*; 9.0%) for each of them.

The monthly income for around two-fifth ranges between 501.000-800.000 (*n = 138*; 40.1%), followed by those whose monthly income ranges between 200.000-500.000 (*n = 72*; 20.9%), those whose monthly income ranges between 801.000-1.000.000 (*n = 68*; 19.8%), those whose monthly income ranges between 1.001.000-1.500.000 (*n = 42*; 12.2%), those whose monthly income is 1.501.000 or more (*n = 16*; 4.7%), and those whose monthly income is less than 200.000 (*n = 8*; 2.3%).

Table 2. *Participants' body mass index (N = 344)*

Variable	***Frequency***	***Percent***
Underweight	*9*	*2.6*
Within Normal	*171*	*49.7*
Overweight	*113*	*32.8*
Obesity Class I	*43*	*12.5*
Obesity Class II	*5*	*1.5*
Obesity Class III	*3*	*.9*
Mean (SD)	*25.45*	*4.77*

The BMI mean is 25.45 ± 4.77; around a half are within normal (*n = 171*; 49.7%), followed by those who are overweight (*n = 113*; 32.8%), those who are classified as having class I obesity (*n = 43*; 12.5%), those who are underweight (*n* = 9; 2.6%), those who are classified as having class II obesity (*n = 5*; 1.5%), and those who are classified as having class III obesity (*n = 3*; 0.9%).

Table 3. *Participants' blood pressure indicators (N = 344)*

Variable	***Frequency***	***Percent***
Systolic Blood Pressure (mm/hg)		
< 120	*66*	*19.2*
120-140	*115*	*33.4*
> 14	*22*	*6.4*
Do not know	*141*	*41.0*
Diastolic Blood Pressure (mm/hg)		
< 80	*65*	*18.9*
80-90	*109*	*31.7*
> 90	*24*	*7.0*
Do not know	*146*	*42.4*
Are you now taking prescribed medication for your blood pressure?		
Yes	*39*	*11.3*
No	*305*	*88.7*

More than two-fifth do not know their systolic blood pressure (*n = 141*; 41.0%), followed those whose blood pressure ranges between 120-140 (*n = 115*; 33.4%), those whose systolic blood pressure is below 120 (*n = 66*; 19.2%), and those whose systolic blood pressure is above 140 (*n = 22*; 6.4%).

Concerning the diastolic blood pressure, more than two-fifth do not know such a pressure (*n = 146*; 42.4%), followed those whose blood pressure ranges between 80-90 (*n = 109*; 31.7%), those whose systolic blood pressure is below 80 (*n = 65*; 18.9%), and those whose systolic blood pressure is above 90 (*n = 22*; 7.0%).

Concerning taking prescribed medication, the majority reported that they do not take such medications (*n = 305*; 88.7%) compared to those who take them (*n = 39*; 11.%).

Table 4. *Participants' lipid profile (N = 344)*

Variable	***Frequency***	***Percent***
Cholesterol (mmol/L)		
< 160	*44*	*12.8*
160-199	*33*	*9.6*
200-239	*12*	*3.5*
240-279	*2*	*0.6*
Do not know	*253*	*73.5*
High-Density Lipoprotein (HDL) (mmol/L)		
60 or above	*19*	*5.5*
50-59	*17*	*4.9*
40-49	*12*	*3.5*
< 40	*2*	*0.6*
Do not know	*294*	*85.5*

Regarding the cholesterol level, most do not know it (*n = 253*; 73.5%), followed by those whose cholesterol is lower than 160 (*n = 44*; 12.8%), those whose cholesterol ranges between 160-199 (*n = 33*; 9.6%), whose cholesterol ranges between 200-239 (*n = 12*; 3.5%), and those whose cholesterol ranges between 240-279 (*n = 2*; 0.6%).

With respect to the HDL, the majority do not know it (*n = 294*; 85.5%), followed by those whose HDL is 60 or above (*n = 19*; 5.5%), those whose HDL ranges between 50-59 (*n = 17*; 4.9%), those whose HDL ranges between 40-49 (*n = 12*; 3.5%), and those whose HDL is below 4 (*n = 2*; 0.6%).

Table 5. *Difference in HBM constructs between gender groups*

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Perceived Susceptibility	Equal variances assumed	.520	.471	.786	342	.432	.37791	.48087	-.56793	1.32375
	Equal variances not assumed			.786	338.672	.432	.37791	.48087	-.56796	1.32378
Perceived Severity	Equal variances assumed	.050	.823	-.286	342	.775	-.19186	.67083	-1.51133	1.12761
	Equal variances not assumed			-.286	340.791	.775	-.19186	.67083	-1.51135	1.12763
Perceived Benefits	Equal variances assumed	.723	.396	-.101	342	.919	-.04070	.40220	-.83180	.75040
	Equal variances not assumed			-.101	333.890	.919	-.04070	.40220	-.83187	.75047
Perceived Barriers	Equal variances assumed	.178	.673	1.166	342	.244	.47674	.40884	-.32742	1.28091
	Equal variances not assumed			1.166	341.904	.244	.47674	.40884	-.32742	1.28091
Confidence	Equal variances assumed	1.988	.159	2.392	342	.017	1.28488	.53719	.22826	2.34151
	Equal variances not assumed			2.392	331.560	.017	1.28488	.53719	.22814	2.34162
Health Motivation	Equal variances assumed	2.011	.157	2.050	342	.041	.81977	.39990	.03319	1.60635
	Equal variances not			2.050	334.961	.041	.81977	.39990	.03313	1.60641

	assumed									

There are statistically significant differences in the Perceived Barriers and Confidence between gender groups (p-value = .017, .041) respectively.

Table 6. *Difference in HBM constructs among systolic BP groups*

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Perceived Susceptibility	Between Groups	927.430	3	309.143	17.857	.000
	Within Groups	5886.009	340	17.312		
	Total	6813.439	343			
Perceived Severity	Between Groups	403.128	3	134.376	3.559	.015
	Within Groups	12835.846	340	37.752		
	Total	13238.974	343			
Perceived Benefits	Between Groups	130.143	3	43.381	3.187	.024
	Within Groups	4627.877	340	13.611		
	Total	4758.020	343			
Perceived Barriers	Between Groups	147.835	3	49.278	3.499	.016
	Within Groups	4787.979	340	14.082		
	Total	4935.814	343			
Confidence	Between Groups	686.462	3	228.821	9.794	.000
	Within Groups	7943.187	340	23.362		
	Total	8629.648	343			
Health Motivation	Between Groups	408.057	3	136.019	10.623	.000
	Within Groups	4353.406	340	12.804		
	Total	4761.462	343			

There are statistically significant differences in the Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers
Confidence, and Health Motivation among systolic BP groups (p-value = .000, .015, .024, .016, .000, .000) respectively.

Table 7. *Difference in HBM constructs among cholesterol level groups*

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Perceived Susceptibility	Between Groups	694.509	1	694.509	38.818	.000
	Within Groups	6118.929	342	17.892		
	Total	6813.439	343			
Perceived Severity	Between Groups	405.003	1	405.003	10.793	.001
	Within Groups	12833.971	342	37.526		
	Total	13238.974	343			
Perceived Benefits	Between Groups	28.342	1	28.342	2.049	.153
	Within Groups	4729.679	342	13.829		
	Total	4758.020	343			
Perceived Barriers	Between Groups	36.255	1	36.255	2.531	.113
	Within Groups	4899.559	342	14.326		
	Total	4935.814	343			
Confidence	Between Groups	5.465	1	5.465	.217	.642
	Within Groups	8624.183	342	25.217		
	Total	8629.648	343			
Health Motivation	Between Groups	128.304	1	128.304	9.471	.002
	Within Groups	4633.158	342	13.547		
	Total	4761.462	343			

There are statistically significant differences in the Perceived Susceptibility, Perceived Severity, and Health Motivation among cholesterol level groups (p-value = .000, .001, .002) respectively.

Table 8. *Differences in the Health Behavior among marital status groups*

ANOVA

Health Behavior					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	67.402	4	16.850	1.198	.311
Within Groups	4768.029	339	14.065		
Total	4835.430	343			

There is no statistically significant difference in the Health Behavior among marital status groups.

Table 9. *Difference in health behavior among family history of heart disease groups*

ANOVA					
Health Behavior					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	23.973	2	11.987	.850	.429
Within Groups	4811.457	341	14.110		
Total	4835.430	343			

There is no statistically significant difference in health behavior among family history of heart disease groups.

Discussion

Part 1: Discussion of the Participants' sociodemographic characteristics

Regarding to the sociodemographic characteristics of the study sample in table (1). The age mean is 35.12 ± 9.15; less than a half age 22-30-years. In the study [9] found that 23% of the sample at age (61-70) years. In the study [10] found that the study sample age more than 44 years. These finding in consisted with the present study finding. Also, the study [11] found that the sample mean of age was 46.6 years. The study [12] in their study found that most of the study sample at age 46-60 years. This finding not consisted with the present study finding.

Concerning the gender, participants are equally distributed between males and females for each of them. The study [10] found that females more than males. The study [11] found that males more than females. The study [12] found that females more than males, also the study [15] that founded (17%) were male and (83%) were female, this finding disagree with our finding. Regarding the marital status, more than a half are married, the study [9] found that (47.5%) were married. The study [12] found that more than half of the sample were married. Also the study [13] that founded married were (75.6). This finding supported our finding. A different result of study [14] that founded greater percentage of the younger were single (49%).

With respect to the educational qualification, the majority hold a bachelor's degree. The study [9] found that 43.4% had some college education. The study [10] found that more than half of the sample had High School Graduate. This finding not consisted with our study. As per the years of working in education, the mean is 8.62 ± 7.96; more than a half have 1-5-years. The monthly income for around two-fifth ranges between 501.000-800.000. The study [9] found that (21.5%) form high economic level. This finding different from our finding. The study [11] found that about half of the study sample come from low economic status.

Part 2: Discussion of the Participants' body mass index

Regarding to the BMI of the teachers, it reflected that the mean is 25.45 ± 4.77; around a half are within normal weight and followed by those who are overweight in table (2). The study [9] found that (35.4%) of sample were obese. This finding disagree with our finding. The study [11] supported our finding, they found that the study sample had BMI 27 kg/m^2. The study [12] found that (41.3%) of were obese.

Part 3: discussion of the Participants' blood pressure indicators

With respect to the teachers' blood pressure in table (3) the finding shows that, more than two-fifth do not know their systolic blood pressure, followed those whose blood pressure ranges between 120-140. Concerning the diastolic blood pressure, more than two-fifth do not know such a pressure, followed whose blood pressure range between 80-90. The study [9] found that (49.2%) had systolic pressure (12-14) mmhg and (36%) had diastolic pressure from 80-90 mmhg. The study [11] found that the systolic blood pressure was 12.5 and diastolic was 76.5. The study [12] found that (28.6%) of them had systolic blood pressure less than 13mmhg and diastolic pressure less than 85mmhg. This finding support the present study finding. Concerning taking prescribed medication, the majority reported that they do not take such medications. The study [9] found that (51.8%) not take the medications. This finding in same line of the present study finding

Part 4: discussion of the Participants' lipid profile

Regarding the cholesterol level in table (4), most do not know it. With respect to the HDL, the majority do not know it. The study [9] found that (28.8%) not know the level of cholesterol and (53.8%) do not know the HDL level. This finding in same line of the present study finding. The study [11] found that the mean of HDL is 1.3 mg/dl. This finding in consisted with our finding.

Part 5: discussion of the Difference in HBM constructs between gender groups

According to the difference in HBM constructs between gender groups in table (5). There are statistically significant differences in the Perceived Barriers and Confidence between gender groups. The study [11] found that there is significant relationship between health beliefs and gender. This finding in agree with the present study finding

Part 6: discussion of the Difference in HBM constructs among systolic BP groups

According to the Difference in HBM constructs among systolic BP groups in table (6). There are statistically significant differences in the Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, Confidence, and Health Motivation among systolic BP groups. The study [11] found that there is significant relationship between health beliefs and systolic blood pressure. This finding consisted with our finding

Part 7: discussion of the Difference in HBM constructs among cholesterol level groups

According to the Difference in HBM constructs among cholesterol level groups in table (7). There are statistically significant differences in the Perceived Susceptibility, Perceived Severity, and Health Motivation among cholesterol level groups. The study [11] supported the present study finding, they found that there is significant relationship between health beliefs and systolic blood pressure.

Part 8: discussion of the Differences in the Health Behavior among marital status groups

According to the Differences in the Health Behavior among marital status groups in table (8). There is no statistically significant difference in the Health Behavior among marital status groups. The study [9] found that there are no statistically significant differences in the health behavior among marital status groups. These finding in same line of our study finding.

Part 9: discussion of the Difference in health behavior among family history of heart disease groups

According to the Differences in the Health Behavior among family history of heart disease groups in table (9). There is no statistically significant difference in health behavior among family history of heart disease groups.

This result disagrees with the finding of study [9], he found that There are statistically significant differences in the health behavior among family history of heart disease groups.

Conclusion: More than a half of participants are not ready to perform heart disease testing.

Recommendations:

Follow-up to check blood pressure periodically. Follow up on continuous checks for cholesterol and HDL. Follow preventive measures to prevent hypertension. Educational sessions for teachers about the symptoms and signs of hypertension and hypotension. Educate teachers about risk factors for hypertension. Follow healthy diet program with physical activity to keep human health and wellness.

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Ethical clearance: is obtained from Directorate of Education in Al-Nasiriyah city, the consent of subjects (teachers of secondary schools) was obtained.

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