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Centers about Screening Investigations

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Abstract

Purpose: Screening investigations are group of tests designed to the risks of subsequent disease or early detection of diseases in apparently healthy individuals. Seeking for screening tests is influenced by awareness of the individuals about its importance. The current study aimed at estimating the level of awareness about screening investigations among attendants of the primary health care centers.

Methodology: Through a cross-sectional design, 389 attendants were randomly selected form four primary health care centers in Jeddah governorate, they responded to a predesigned questionnaire including items reflecting awareness of the respondents about the importance and types of screening investigations in the primary health care centers. Data entry and statistical analysis were done using Statistical Package for Social Science (SPSS) version (26). The awareness scores were tested for normality using Shapiro Wilk's test, accordingly, for testing significance in difference between two subgroups. Independent sample t test was used, and ANOVA test was used for more than two groups. To detect significant factors predicting the level of awareness, linear logistic regression was used. Statistical significance was set at P-value <0.05 and confidence interval of (95%).

Findings: Out of all interviewed participants (n=389), females formed two thirds (68.9%), and the great majorities were Saudis (87.4%) and most of the respondents had university qualifications (79.9%). The overall awareness score accounted for 3.82 ± 0.48 that corresponds to 76.4%. The majority were aware that checking blood pressure 368(94.6%) and blood sugar 343(88.2%) are among the recommended routine medical checkup for individuals. Almost one third undergone previous routine medical checkup (36.7%). The awareness score was significantly higher among females (3.87 ± 0.49), Saudis (3.85 ± 0.48) and highly educated individuals (3.87 ± 0.48) $p<0.05$.

Recommendations: The attendants of the primary health care centers have a good level of awareness about the importance. Types of routine screening investigation, nevertheless, their utilization of these services is suboptimal. The level of awareness was found to be higher in females and highly educated individuals. It is recommended that health education should be provided to the attendants of the primary health care centers focusing on males and the low educated individuals.

Keywords: *Awareness, screening investigations, primary health care centers.*

INTRODUCTION

According the World Health Organization statement, screening aims at early detection of health problems among apparently healthy population.(1) In high income countries, screening programs account for a considerable proportion of expenditure on health; for example in UK in 2015, more than twenty million screening tests had been carried out for the population, empowered by the rationale of preventing poor health.(2) Primary health care centers (PHCC), being in the frontline of health services and based on their essential role in prevention and control of diseases, are considered the central for providing screening programs.(3) Through its wide distribution, PHCC are capable of screening people who have not sought of medical help.(4) Screening in primary health care centers, besides improving community health, has been proved to be cost effective, as early identification of diseases leads to timely intervention and preventing serious consequences.(5) Therefore, typically, the effective screening programs aim at maximizing benefits including costs, and minimizing harms.(6)

Realistic expectations of the patients about the benefits and harms about screening tests paly important role in the proper uptake of these services. For example, underestimation of the health benefits or overestimating the harms of the a screening tests could eventually lead to underutilization of this test and vice versa.(7) For these reasons, the World Health Organization recently in 2020 emphasized on the importance of awareness of both the public and the patients about the screening tests, and provided a guide for increasing it's the effectiveness of these tests.(8) The reviewed literature showed that most of published articles about awareness of the patients about screening tests focused on particular screening tests for specific diseases; for example screening about cancers,(9–11) diabetes mellitus (12) and hypertension.(13) The current study aims at estimating the level of awareness about screening investigations in attendants of the primary health care centers in Jeddah, Saudi Arabia, and to determine factors influencing their level of awareness.

MATERIAL AND METHODS

Through a cross-sectional analytic study design, all adult attendants of the primary health care centers in Jeddah were considered eligible for inclusion in the study. It is estimated that there are about 100,000 people attending 44 health centers monthly. The sample size was estimated using Raosoft sample size calculator with 5% margin of error, 95% confidence level, and response distribution 50% to achieve maximal sample size (n=384). Simple random sampling was adopted to select four centers and convenient sampling to select the respondents. A structured anonymous questionnaire was used to collect data from the respondents. The questionnaire is comprised of three main compartments; first one describing relevant demographic characteristics of the respondent (age, gender, education level, marital status, job and monthly income), the second compartment includes questions about the main health problems (e.g. diabetes and hypertension). All variables forming the two compartments were considered as independent variables. The third part covers the main outcome (independent variables of the study), including items reflecting awareness of the respondents about the importance of screening investigations in the primary health care centers.

The items reflecting awareness about screening investigation had been adopted from previous researches (10,12,14,15). On average, completing a questionnaire is expected to take 10-15 minutes. The questionnaire was tested for reliability with r=0.83, which indicates sufficient level of reliability. Ethical approval was ensured form the local IRB in the Directorate pf Health Affairs in Jeddah. Data entry and statistical analysis were done using Statistical Package for Social Science (SPSS) version (26). The awareness score was calculated from five questions measured on Likert scale; with a score ranging from 1 for strongly disagree to 5 for strongly

agree, putting into consideration that 2 questions were reversed. The scores of the five questions were summed up and divided over 5 to get an overall mean score (maximum 5). The scores were tested for normality using Shapiro Wilk's test, accordingly, for testing significance in difference between two subgroups; independent sample t test was used, and ANOVA test was used for more than two groups. To detect significant factors predicting the level of awareness, linear logistic regression was used. Statistical significance was set at P-value <0.05 and confidence interval of (95%).

RESULTS

Out of all interviewed participants (n=389), females formed two thirds (68.9%), and the great majorities were Saudis (87.4%). Their mean age accounted for 43.8±14.1 years. Most of the participants were married (66.1%), one half of them (48.6%) were living in families with an average of 3-5 members. Most of the respondents had university qualifications (79.9%), and those who had a job formed 53.2% of them [Table 1].

Table 1: Characteristics of the study group (n=389)

Characteristics		No.	Percentage
Gender	Male	121	31.1
	Female	268	68.9
Nationality	Saudi	340	87.4
	Non Saudi	49	12.6
Age categories	<30 years	84	21.6
	30-<40 years	113	29.3
	40-<50 years	66	17.0
	≥50 years	126	32.1
	Mean±SD		43.8±14.1
Marital status	Single	96	24.7
	Married	257	66.1
	Divorced	22	5.7
	Widowed	14	3.6
Number of family members	<3 members	91	23.4
	3-5 members	193	49.6
	>5 members	105	27.0
Education level	Preparatory	7	1.8
	Secondary	71	18.3
	University	311	79.9
Working status	Has a job	207	53.2
	Jobless	182	46.8

Almost one half of the respondents (45.8%) reported that they had one or more chronic disease, mostly hypertension (24.4%), diabetes mellitus (22.4%) and bronchial asthma (10.0%). Three quarters (72.2%) had medical records in the primary health care centers (PHC), out of them 45.9% indicated that they had regular visits to the center, and almost equal percentage (47.7%) pointed that one or more of their family members visit PHC centers regularly. Only one third of the respondents (36.7%) indicated that had been subjected to routine checkup, and 37.0% pointed that other family member had routine checkup [Table 2].

Table 2: Clinical characteristics of the respondents and their family members (n=389)

Characteristics		No.	Percentage
Chronic disease	Yes	178	45.8
	No	211	54.2
Type of the chronic disease	Hypertension	95	24.4
	Diabetes mellitus	87	22.4
	Bronchial asthma	39	10.0
	Thyroid dysfunction	16	4.1
	Dyslipidemia	13	3.3
	Others	35	9.0
Has a medical record in PHC center	Yes	281	72.2
	No	108	27.8
Regular visits to the PHC center (n=281)	Yes	129	45.9
	No	152	54.1
Regular visits to PHC center by other family members (n=281	Yes	134	47.7
	No	147	52.3
Undergone routine checkup before (n=281)	Yes	103	36.7
	No	178	63.3
Other family member undergone routine checkup before (n=281)	Yes	104	37.0
	No	177	63.0

Table 3 demonstrates that almost two thirds of the respondents 256(65.8%) disagreed the statement that the routine medical checkup is important only for patients, and not for apparently healthy individuals, and the great majority 366(94.1%) agreed that the medical checkup aims at detecting disease which have significant impact on public health, and 361(92.8%) agreed that screening helps detection of diseases at its earlier stages. Also, it was found that 339(87.1%) of them agreed that the type of medical checkup depends on the age and gender of the subject. However, it was realized that only 52(13.3%) who disagreed that

the results of screening test confirm presence of the disease. Regarding awareness of the respondents about the recommended screening tests according to the gender and age.

Table 3: Awareness of the respondents about screening investigation (n=389)

	SA N(%)	A N(%)	Neutral N(%)	D N(%)	SD N(%)
Routine medical checkup is important only for patients, not for healthy.	50(12.9)	56(14.4)	27(6.9)	145(37.3)	111(28.5)
				256(94.1)	
Routine medical checkup aims at early detection of diseases which have significant impact on public health.	254(65.3)	112(28.8)	18(4.6)	4(1.0)	1(0.3)
Screening helps early detection of diseases at its earlier stages.	223(57.3)	138(35.5)	26(6.7)	1(0.3)	1(0.3)
Positive results of screening tests are sure sign for confirming the disease.	107(27.5)	121(31.1)	109(28.0)	46(11.8)	6(1.5)
The type of the routine medical checkup depends on the age and gender of the subject.	165(42.4)	174(44.7)	36(9.3)	12(3.1)	2(0.5)

Figure 1 displays that most of the respondents were aware that checking blood pressure 368(94.6%), blood sugar 343(88.2%) and blood lipids 288(74.0%) are among the recommended routine medical checkup for individuals, while 299(76.9%) and 237(60.9%) were aware that mammography and checking for cervical cancer respectively are among the recommended screening tests for adult women. A relatively lower percentages of the respondents were aware that screening for cancer colon 237(60.9%) and bone density 233(59.9%) are recommended for elderly people and fundoscopy 228(58.6%) is recommended for chronic diseases' patients.
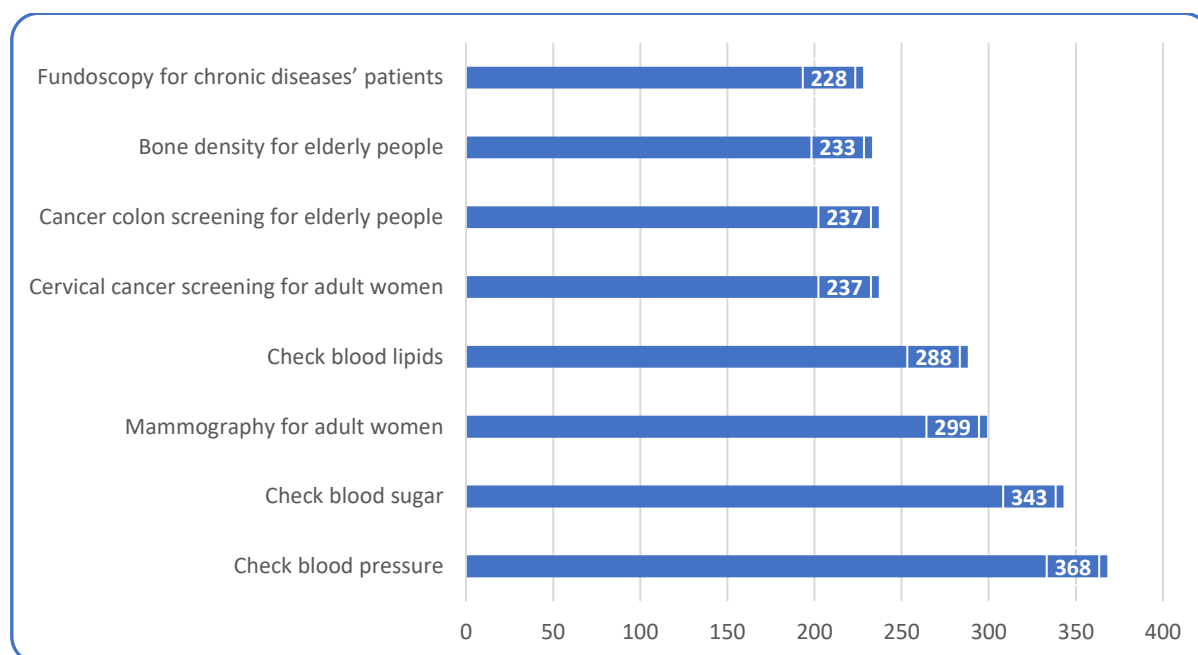
Figure 1: Awareness of the respondents about the types of routine medical checkup.

The overall awareness score accounted for 3.82±0.48 that corresponds to 76.4%, Table 4 demonstrates that females had a significantly higher awareness than males (3.87±0.49 vs 3.75±0.47; p=0.026), and Saudis reported higher awareness score than the non-Saudis (3.85±0.48 vs 3.70±0.51; p=0.035). Regarding the education level, it was found that there was a consistent stepwise significant increase in the awareness score towards higher education level, the mean score increased from (3.57±0.44) in those who had lower education level up to (3.87±0.48) among those who had university qualifications p=0.002.

Table 4: Level of awareness of the respondents about screening investigations according to their demographic characteristics

Characteristics		Mean±SD	P
Gender	Male	3.75±0.47	
	Female	3.87±0.49	0.026*
Nationality	Saudi	3.85±0.48	
	Non-Saudi	3.70±0.51	0.035*
Age categories	<30 years	3.85±0.49	
	30-<40 years	3.80±0.52	
	40-<50 years	3.78±0.46	
	≥50 years	3.86±0.46	0.582
Marital status	Single	3.86±0.52	
	Married	3.88±0.49	
	Divorced	3.82±0.36	
	Widowed	3.77±0.44	0.823

Education level:	Preparatory	3.57±0.44	
	Secondary	3.67±0.45	
	University	3.87±0.48	0.002*
Working status:	Has a job	3.83±0.50	
	Jobless	3.82±0.47	0.938

Table 5 illustrates the differences in the awareness score about screening investigations according to the clinical characteristics of the respondents, it was found that although the awareness score was higher among respondents who had chronic diseases (3.83±0.43), had medical record in PHC center (3.86±0.47), visit the PHC regularly (3.84±0.49) and those who had undergone routine checkup, however, these differences are not statically significant p>0.05. Also, no statistically significant difference was found regarding regular visits or routine checkup by other family members p>0.05.

Table 5: Level of awareness of the respondents about screening investigations according to their clinical characteristics

Characteristics		Mean±SD	P
Chronic disease	Yes	3.83±0.43	
	No	3.80±0.52	0.285
Type of the chronic disease	Hypertension (yes/no)	3.85±0.43/3.82±0.50	0.703
	Diabetes mellitus (yes/no)	3.79±0.46/3.84/0.49	0.395
	Bronchial asthma (yes/no)	3.70±0.42/3.84±0.49	0.072
	Thyroid dysfunction (yes/no)	4.01±0.55/3.82±0.48	0.124
	Dyslipidemia (yes/no)	3.94±0.39/3.83±0.49	0.412
Has a medical record in PHC center	Yes	3.86±0.47	
	No	3.77±0.52	0.092
Regular visits to the PHC center (n=281):	Yes	3.85±0.49	
	No	3.86±0.45	0.730
Regular visits to PHC center by other family members (n=281	Yes	3.85±0.47	
	No	3.86±0.47	0.870
Undergone routine checkup before (n=281)	Yes	3.86±0.49	
	No	3.86±0.46	0.983

Other family member undergone routine checkup before (n=281)	Yes	3.88±0.49		
	No	3.84±0.46		0.560

Table 6 shows that the regression model including gender, nationality and education level explains 5% of the changes in the awareness score about screening investigations, and that there are only two factors which significantly predict the level of awareness; gender (β=0.119±052; p=0.023) and education level (β=0.167±054; p=0.002); which indicates that being female with high education level increases the score of awareness about screening investigations.

Table 6: Linear regression for the predictors of the level of awareness of the respondents about screening investigations

	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.323	.194		17.153	.000
Gender	.119	.052	.114	2.275	.023
Nationality	-.141	.074	-.096	-1.909	.057
Education level	.167	.054	.157	3.119	.002

$R^2=0.051$

DISCUSSION

Screening investigations in the primary health care centers are essential component of the comprehensive care services. The proper utilization of these services has potential impact on the efficiency of the health system in terms of cost effectiveness. One facet of the proper utilization depends on the attendants who should be aware about the importance of these services. The current study showed that the attendants of the primary care centers had an good level of awareness about the screening investigations, with a mean score out of five (3.82±0.480) that corresponds to 76.4%. The majority of the attendants were aware about the importance of screening tests in early detection of disease of public health importance, and that the tests are accustomed according to age and gender of the individual, that could help in health seeking behavior.(16) The great majority were aware about the most recommended screening tests as blood pressure, blood sugar and blood lipids, that could be explained by the high prevalence of the relevant diseases (hypertension and diabetes mellitus) among the study group (24.4% and 22.4% respectively) as well as in the Saudi population in general.

As it had been found, through a nationwide survey, that the prevalence of hypertension was 15.4% and 40.6% were borderline hypertensive,(17) and the prevalence of type 2 diabetes mellitus 32.8% in the adult population.(18) The high level of awareness among the attendants was unbalanced by the low frequency of uptake of routine checkup, as only one third of them or one of their family members undergone routine checkup, similar findings was reported before in Saudi Arabia,(19) that had been attributed partly to the provider-related and health system-related factors such as crowdness and busy staff of the primary health care centers.(20) The level of awareness about the routine screening investigation was found to increase

significantly with higher education level, it is expected that the "educated individuals are more likely to understand the importance of preventive services and take action to protect their health before they face sickness".(21) Almost two thirds of the respondents were females, which indicates that they are the most likely to use the primary health care services preventive, either for themselves or for their children, the same was found in previous researches (22,23). The frequent contact with the health care providers could explain the observed significantly higher level of awareness among females in the current study.

CONCLUSION AND RECOMMENDATIONS

The attendants of the primary health care centers have a good level of awareness about the importance and types of routine screening investigation, nevertheless, their utilization of these services is suboptimal. The level of awareness was found to be higher in females and highly educated individuals. It is recommended that the health team should provide health education about the importance of the screening investigations to the attendants of the primary health care centers especially for the low educated individuals. Further researches are needed to investigate barriers to the uptake of routine screening tests in the primary health care centers.

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