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Ischemic Heart Diseases: The unrecognized killer in the Jordanian community

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Abstract

Background: Good knowledge of ischemic heart diseases (IHD), if combined with positive attitudes and correct beliefs, may contribute effectively to patients and bystanders' decisions at the time of cardiac events. Therefore, the aim of this study was to evaluate Jordanian adults' knowledge, attitudes, and beliefs about ischemic heart diseases.

Methods: Descriptive design was used. Convenience sample included 219 adult Jordanians who were oriented and free from mental diseases; were recruited between August and December 2012. The Modified Response Questionnaire was used to measures knowledge, attitudes, and beliefs about ischemic heart diseases as well as intended responses to any future cardiac event.

Results: Fifty-two percent of the participants could name 4–6 cardiovascular risk factors. The average knowledge score for ischemic heart diseases was 63.5%, in which 44% of participants were less than the average score. Out of 20, the average attitude score was 11.9, and 43.5% of participants scored less than the average score. Out of 40, the average beliefs score was 27.14, and 55.7% of participants scored less than the average score. Married, educated, and higher-income participants have more-correct beliefs about IHD.

Conclusions: The critical shortage of cardiac-related knowledge and inappropriate attitudes and beliefs among the majority of Jordanians made IHD the unrecognized killer in Jordan. Results should be utilized in the efficient design of interventional programs that aim to achieve the primary goal of improving peoples' knowledge, attitudes, and beliefs about ischemic heart diseases. Thus, the efforts of nurses, researchers, and policy makers should focus on facing ischemic heart diseases through improvements in primary and secondary prevention, as well as cardiac rehabilitation programs in the Jordanian community.

INTRODUCTION

Although Jordan has a very young population, in which 90% of people are below 50 years [1], cardiovascular diseases (CVD) are responsible for 36% of all deaths in Jordan, and ischemic heart diseases (IHD) are the most common killer of Jordanians [2]. Ischemic heart diseases, cerebrovascular diseases, and hypertension are responsible for 86% of all CVD-related deaths in Jordan (37.8%, 29%, and 19.2%, respectively) [2].

The high prevalence of cardiac risk factors is directly related with high morbidity and mortality rates. A previous study found that nearly half their Jordanian sample (n = 4194) had between two and four cardiovascular risk factors [3]. Later, a national Jordanian survey that included 3688 adults reported a high prevalence of physiological and behavioral cardiovascular risk factors [4].

Literature from all the world revealed that, irrespective of the high global prevalence of cardiac risk factors, recognition of those risk factors is still low [5-8]. A previous study from Pakistan evaluated 720 subjects and reported that only 20% of them could identify modifiable cardiac risk factors [5]. These findings were supported by an Australian study [8], which compared knowledge of risk factors between cardiac

rehabilitation attendants and non-attendants. It reported that 71% of their subjects were unable to identify any cardiac risk factors; additionally, 58% of the cardiac rehabilitation attendants and 75% of the non-attendants could not identify any of their own risk factors [8]. Low levels of awareness about cardiac risk factors were also reported by another study [7], in which 32%, 27%, and 22% of their Canadian sample identified overweight, high cholesterol, and high blood pressure, respectively, as risk factors for IHD [7]. In general, several previous studies revealed critical shortages in cardiac-related knowledge [5-7, 9-11]. For instance, another study from Pakistan [9] indicated that only 14% of their participants could correctly identify the meaning of IHD, and only 36%, 24%, and 15% could identify chest pain, dyspnea, and sweatiness as symptoms of IHD, respectively.

Despite a lack of overall cardiac-related knowledge, some previous studies identified several variables that could be associated with high levels of cardiac-related knowledge. People with better cardiac knowledge are more likely to be educated, be non-smokers, and live in nuclear families [5,7,9]. On the contrary, overweight and lack of interaction with health-care providers were predictors of poor cardiac-related knowledge [11].

Good knowledge of CVD, if combined with positive attitudes and correct beliefs, may contribute effectively to patients and bystanders' decisions at the time of cardiac events [12]. Previous studies indicated that poor cardiac-related knowledge, negative attitudes, and incorrect beliefs were associated with delay in seeking treatment among patients with IHD [12,13], and consequently with bad prognosis [14]. This fact was highlighted by the findings of a Jordanian study, which described patients with acute myocardial infarction who delay seeking medical treatment as lacking cardiac-related knowledge and appropriate attitudes and beliefs about IHD [12].

Attitudes and beliefs are interrelated concepts, which together form personal perceptions. Attitude is a personal evaluation of a particular situation, which determine the way of cognitive, affective, and behavioral reaction to this situation [15]. Whereas beliefs are viewed as personal conclusions regarding issues that are always considered true by the individual [15]. Decisions and actions directly reflect our attitudes and beliefs. Thus, having positive attitudes and correct beliefs might lead to early recognition and better response to symptoms of IHD.

Unfortunately, the findings of previous studies emphasized that people generally hold negative attitudes and incorrect beliefs about CVD [6,10,14,16]. Those findings are consistent with several interventional studies that reported the same problem among participants at baseline [17-19].

The few studies conducted in Jordan consist of reports on Jordanian knowledge, attitudes, and beliefs about IHD, which reflect an incomplete understanding of the dimensions of this problem in the Jordanian community [12, 13]. Understanding Jordanians' knowledge, attitudes, and beliefs about IHD is a vital step in the quest to overcome IHD in Jordan. The findings of this study could open the opportunity to conduct interventional studies that support early recognition and appropriate responses to cardiac events. Additionally, they could guide policy makers, health educators, nurses, and national health organizations in their future health plans.

Moreover, the current study can provide health-care providers worldwide with a strong basis to realize how people in an Arabic Middle Eastern country perceive IHD. Specifically, the results might facilitate the formation of ideas about Arabic Middle Eastern adults' knowledge, attitudes, and beliefs about IHD, which might be imperative in the design of interventional programs targeted to people from the Middle East. Therefore, the aim of this study was to evaluate Jordanian adults' knowledge, attitudes, and beliefs about IHD.

Research Questions

1. What are Jordanian adults' levels of knowledge of IHD as well as its risk factors?
2. Do Jordanian adults have positive attitudes and correct beliefs about IHD?
3. Is there association between knowledge, attitudes, and beliefs regarding IHD among Jordanian adults?
4. What characteristics of Jordanian adults are associated with good knowledge, positive attitudes, and correct beliefs about IHD?

METHODS

Design and Sample

A descriptive design was used, and Jordanian adults who visited three public clinics in Amman were invited to participate in the study. These clinics are primary health care centers that provide health care to local residents, plus following up residents who were diagnosed with chronic diseases (e.g. hypertension, diabetes mellitus, etc).

Convenient sampling technique was used to enroll participants in the study. Participants were enrolled if they satisfy the following inclusion criteria: being Jordanian, and visited the clinics for any reason (not

limited to cardiovascular causes), were older than 18 years, oriented, and free from mental diseases.

Ethical approval was sought from the applicable institutional ethical committees. The overall benefits and risks of participation were discussed with each participant before signing the informed consent forms. Additionally, all procedures in the study complied with the Declaration of Helsinki, and it was made clear to all participants that participation was voluntary and that their anonymity would be assured.

Data Collection and Measurement

Between August and December 2012, participants who agreed to participate were asked to complete a sociodemographic and medical history sheet. Then, participants' knowledge of the risk factors for IHD was evaluated by asking each participant to list all risk factors s/he thought would increase her/his likelihood of having an IHD in the future.

Knowledge, attitudes, and beliefs about IHD were measured through the Modified Response Questionnaire (MRQ). Simons-Morton et al.[20] developed this questionnaire, to collect information on knowledge, attitudes and beliefs about IHD, as well as intended behaviors in response to cardiac ischemic symptoms. Authors of the original Response Questionnaire identified that the questionnaire has good criterion related validity, and high level of test retest reliability.[20] Buckley et al.[17] modified and adapted the Response Questionnaire for their study of the effects of education and counseling on knowledge, attitudes, and beliefs about IHD in patients with acute myocardial infarction. The MRQ measures knowledge, attitudes, and beliefs about IHD as well as intended responses to any future cardiac event. Buckley et al. evaluated the reliability and validity of the MRQ, reporting good levels of both [17]. The MRQ has been previously used in the Jordanian community, and the Arabic version of the questionnaire has moderate internal consistency reliability (Cronbach's alpha (α) = 0.67 [18]. The findings of the current study also indicated moderate internal consistency reliability; the knowledge, attitude, and belief subscales had $\alpha = 0.65$, $\alpha = 0.67$, and $\alpha = 0.64$, respectively.

The MRQ assess *knowledge* of IHD through two sets of questions. The first consists of five sentences about IHD; the participant must respond to each with true or false. The second set of questions consists of a list of 21 symptoms; the participant must state in front of each one whether or not this symptom is associated with the occurrence of myocardial infarction. The final score was turned into a percentage, where higher percentages indicate greater knowledge of IHD.

Participants' *attitudes* about IHD were measured through five Likert-scale questions that reflect their convictions about their ability to help themselves or those around them at during myocardial infarction. Final total scores ranged from 5 to 20; higher total scores reflect more positive attitudes.

Beliefs about IHD were measured through ten Likert-scale questions assessing participants' beliefs about the symptoms of IHD and how to behave when they are experienced. Total scores ranged from 10 to 40, with higher scores indicating more correct beliefs about IHD.

At the end of the questionnaire, there were two additional questions asking the participants to compare themselves with people from the same age group. The first asks about the probability of having a heart attack during the next 5 years, and second question assesses the participants' overall impressions about their own health.

Data Analysis

The Statistical Package for the Social Sciences (SPSS), version 19 was used to analyze the data. After data entry, 20% of the entries were checked randomly by the researcher to ensure accuracy of data entry. Descriptive statistics were used to describe the study sample and to answer the first two research questions. To answer the third research question, Pearson's correlation coefficients was used, whereas chi-square (χ^2) statistics were used to answer the fourth question. The threshold for statistical significance was set at $p < 0.05$.

RESULTS

In total, 219 subjects from three clinics participated in the study. Their mean age was 37.5 years (SD ±13.65), and most of them were female (66.2%; $n = 145$), married (75%; $n = 164$), and educated (59.5%; $n = 130$) (Table 1).

Table 1. Characteristics of the participants' demographical variables (n=219)

Variables	%	(n)
Gender		
Female	66.2	(145)
Male	33.8	(74)
Marital status		
Married	74.9	(164)
Other status	25.1	(55)
Age group		
< 35 years old	49.8	(109)
≥ 35 years old	50.2	(110)
Educational level		
Secondary school and below	40.6	(89)
Higher than secondary school	59.4	(130)
Monthly income		
≤ 500 JD	48.4	(106)
> 500 JD	51.6	(113)

Their previous history revealed that 23.5% (n = 51), 14.2% (n = 31), 14.6% (n = 32), 73.5% (n = 161), and 43.5% (n = 95) suffered from hypertension, had diabetes, were smokers, were not involved in regular physical activities, and had a relative who had suffered from an IHD, respectively (Table 2).

Table 2. Characteristics of the participants' clinical variables (n=219)

Variables	%	(n)
History of hypertension		
No	76.7	(168)
Yes	23.3	(51)
History of diabetes		
No	85.8	(188)
Yes	14.2	(31)
History of smoking		
No	85.4	(187)
Yes	14.6	(32)
Practicing regular activities		
No	26.5	(161)
Yes	73.5	(58)
Family history for IHD		
No	56.6	(124)
Yes	43.4	(95)
Cholesterol level		
Low	38.4	(84)
High	06.8	(15)
Don't know	54.8	(120)

Note. IHD= Ischemic heart diseases

Knowledge of IHD and its Risk Factors

Total overall knowledge scores for IHD, as obtained by the Modified Response Questionnaire, ranged between 1 and 21 out of 26, and the average knowledge score, expressed as a percentage, was 63.5% (SD ±10.2%). Moreover, the knowledge scores of 44% of participants were less than the average score, while only 21% of the participants scored higher than 70%.

Fifty-two percent of the participants could name 4–6 cardiovascular risk factors. Most of the participants recognized diabetes, physical inactivity, and hypertension as the major risk factors for cardiovascular diseases, 73.1% (n = 160), 68.9% (n = 151), and 62.6% (n = 137), respectively (Figure 1).

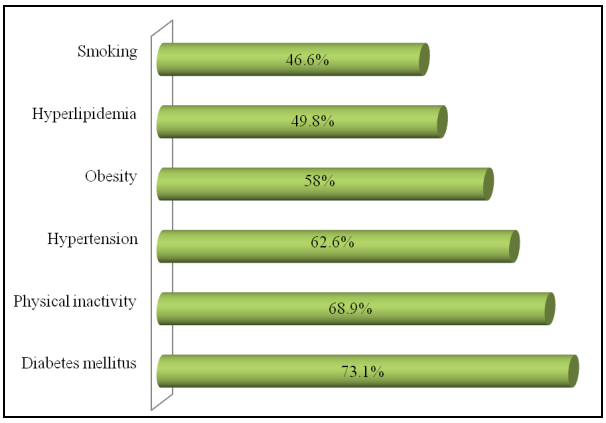

Figure 1. Percentage of participants who correctly identified cardiovascular risk factors.

Participants' Attitudes and Beliefs about IHD

Total attitude scores ranged from 5 to 20 out of 20, and the average attitude score was 11.9 (SD ±2.8). In total, 43.5% of participants scored less than the average score, while only 10% scored 15 or more. Belief scores ranged between 16 and 37 out of 40, and the average beliefs score was 27.14 (±4.5); 55.7% of participants scored less than the average score, while only 6.4% scored 35 or more.

Answers to the two general beliefs questions indicated that the majority of participants considered themselves healthy (89%), and in comparison with others from the same age group, they did not think they were at increased risk for IHD (81%).

Association between Knowledge, Attitudes, and Beliefs

There is a significant positive relationship between knowledge and attitudes. However, this relationship was weak (r = 0.18, p = 0.006), as variation in knowledge about IHD accounted for only 3% of the variation in attitudes. Additionally, there was a significant, weak relationship between attitude and beliefs (r = 0.20, p = 0.003), whereby 4% of the variation in beliefs was explained by the variation in attitudes.

Participants with Better Knowledge and Attitudes about IHD

There was a significant difference between the knowledge levels of men and women (χ^2 = 4.31, p = 0.03) (Table 3). There were significant differences between attitude scores according to participants' age, history of having hypertension, and history of having diabetes (χ^2 = 12.02, p = 0.001; χ^2 = 6.86, p = 0.009; and χ^2 = 6.36, p = 0.01, respectively).

Table 3. Comparing participants' total scores based on gender

Variables	Gender	Mean	Std. Deviation	χ^2	Sig. (2-tailed)
knowledge about risk factors (out of 100)	women	64.64	26.88	1.73	0.08
	men	57.36	30.67		
knowledge about IHD (out of 100)	women	64.56	9.78	4.31	0.03
	men	61.33	10.75		
Total attitude score (out of 20)	women	11.88	2.72	0.79	0.37
	men	11.97	3.02		
Total beliefs score (out of 40)	women	26.89	4.37	2.25	0.13
	men	27.65	4.73		

Note. χ^2 = chi-square test

Participants with More Correct Beliefs about IHD

There were significant differences between participants' belief scores according to the following socio-demographical variables: marital status, educational level, and monthly income (χ^2= 7.34, p = 0.007; χ^2 = 85.68, $p < 0.001$; and χ^2 = 70.97, $p < 0.001$, respectively). Furthermore, there were significant differences between participants' belief scores according to these clinical variables: history of hypertension, history of diabetes, and history of practicing regular physical activities (χ^2= 11.61, $p <$ 0.001; χ^2 = 11.61, $p < 0.001$; and χ^2 = 7.17, p = 0.007, respectively).

DISCUSSION

Knowledge about IHD and cardiac risk factors are essential for successful prevention efforts. The findings of this study revealed a generally low knowledge level about cardiac risk factors plus critical shortages of IHD-related knowledge. A previous Jordanian study also highlighted such alarming findings [18]. In which, they reported that Jordanian participants' score for knowledge about cardiovascular diseases was 63.2% [18], almost the same as that obtained in the current study (63.5%). The Jordanian Ministry of Health has worked diligently to educate people about cardiovascular diseases. The lack of significant improvement in Jordanian people's knowledge about IHD could be attributed to traditional health education techniques that rely mainly on national mass media. Therefore, knowledge deficits about IHD and their related risk factors among Jordanians necessitate evaluation and modification of the health education techniques that have been provided over past decades.

The findings also revealed a significant association between gender and knowledge about IHD, whereby women were more likely than men to know about IHD. Different findings were presented by a previous study [21], which found no significant differences in knowledge between men and women. Other study reported that men were more aware about the effects of smoking and physical activity on cardiac health, whereas women were more aware of the effects of stress, unhealthy diet, obesity, hypertension, and diabetes mellitus on cardiac health [22].

In the current study, the attitudes of older people about IHD were more positive than those of younger people. The differences in attitudes between the two age groups might be driven by increasing age and might be accompanied by gaining experience regarding heart disease; these experiences, accumulated over years, lead individuals to build more positive attitudes about IHD. This finding is comparable with the findings of a previous study, which indicated that older Jordanians had more-informed perception about coronary heart diseases [16].

Contrary to what was expected, the results showed that participants who suffer from hypertension and diabetes mellitus had less-positive attitudes and more-incorrect beliefs about IHD. One possible explanation for this trend is that hypertensive and diabetic patients should have regular appointments with their health-care providers, and they should adhere to daily treatment regimens. Unfortunately, receiving daily treatment and continuous follow-up might generate a sense of false control over health and thus negatively affect the process of developing attitudes and beliefs about IHD.

Congruent with the results of many previous studies [14,16] that have shown associations between sociodemographic factors and perceptions regarding IHD, the current study showed that married, educated, and higher-income people have more-correct beliefs about IHD. People with better social support and those from higher social classes might have better chances to improve their beliefs about IHD. Such improvement in

beliefs might be attributed to their ability to communicate more easily with reliable health resources that correct their beliefs about IHD.

LIMITATIONS

The representativeness of the population was affected by using a non-probability sampling technique. Moreover, the sample consists of predominantly young women, and this might underestimate population's actual knowledge levels, because IHD might be not the first priority for young women to think and know about it. Therefore, generalizability should be verified with respect to this issue.

CONCLUSIONS

Although IHD and their related risk factors have spread widely in Jordan, the majority of Jordanians have a lack of knowledge about IHD combined with negative attitudes and incorrect beliefs. The critical shortage of cardiac-related knowledge and inappropriate attitudes and beliefs made IHD the unrecognized killer in Jordan. If this trend does not change over the next few years, the burden of IHD in Jordan will mount, and suffering from these diseases will extend to a higher proportion of Jordanian people. Thus, the efforts of nurses, researchers, and policy makers should focus on facing IHD through improvements in primary and secondary prevention, as well as cardiac rehabilitation programs in Jordanian community.

Implications and Recommendations

The current study represents an important effort to understand Jordanians' knowledge, attitudes, and beliefs about IHD. In order to derive the maximum benefits from the findings of this study, the results should be utilized in the efficient design of interventional programs that aim to achieve the primary goal of improving Jordanians' knowledge, attitudes, and beliefs about IHD. To achieve this goal, nurses should take advantage of being in direct contact with community members irrespective of their residence area or socioeconomic level. Therefore, nurses must invest in community-based prevention programs that focus on cardiac risk prevention and reduction. Moreover, nurses should focus specifically on the people who appeared to have lower knowledge and inappropriate recognition about IHD in the current study. Thus, the present study yields the following implications for nurses:

1. Invest in health education in order to raise public awareness about IHD, including awareness about the nature of these diseases, risk factors, prevention, and how to deal with them.

2. Show creativity and innovation in providing health education, and do not rely on traditional stereotypes or methods that might reach and influence limited sectors of the community.

3. Augment the general feeling of the seriousness of IHD, which might increase the importance that people associate with improving their knowledge, attitudes, and beliefs about IHD.

4. Involve all family members in educational and interventional programs by designing specialized programs that are appropriate for all age groups.

5. Invest in children and young people in order to prevent IHD by creating a generation that is conscious and aware of IHD.

6. Focus on ambulatory campaigns that meet with people directly in their daily locations, such as schools, factories, and shopping centers.

7. In order to induce change in all required dimensions (i.e. knowledge, attitudes, and beliefs about IHD) enrich interventional campaigns through combination of different interventional styles, such as education, counseling, and cognitive behavioral therapy.

8. Create partnerships between public and private health institutions to support the unified goal of increasing and correct Jordanians' recognition of IHD.

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CONFLICT OF INTEREST

None

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