Assessing Publics' Knowledge About Hypertension in a Community-Dwelling Sample

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Background: Hypertension is one of the major risk factors for cardiovascular diseases that affect a high proportion of people worldwide. Understanding people's levels of knowledge about hypertension might contribute effectively to nurses' efforts to prevent, treat, and control the disease. **Objectives:** The objectives of this study were to identify the levels of knowledge about hypertension disease among Jordanian adults and to identify differences in knowledge about hypertension on the basis of sociodemographic and clinical variables. **Methods:** A convenience sample was used in this descriptive comparison design as was the Hypertension Knowledge-Level Scale, which measures 6 dimensions of knowledge about hypertension (definition, treatment, drug compliance, lifestyle, diet, and complications). **Results:** There were 284 participants, and the mean total knowledge about hypertension was 73.65. The participants had higher levels of knowledge about lifestyle and complications; lower scores were recorded for definition of hypertension as well as the relationship between diet and hypertension. Participants with higher education levels, who watched health programs, exercised regularly, visited their physicians regularly, and had other chronic diseases, had greater knowledge about hypertension. **Conclusions:** Although the total level of knowledge about hypertension is good among the participants, more efforts are needed to improve all dimensions of hypertension-related knowledge. Sociodemographic and clinical variables have significant relationships with levels of knowledge about hypertension. This necessitates the importance of considering these variables when designing and providing health educational programs.

KEY WORDS: cardiovascular, hypertension, Jordanian, knowledge

Introduction

Hypertension is a serious health problem that is defined in the Seventh Report of the Joint National Commission[1] as having systolic and diastolic blood pressure greater than 120 mm Hg and 80 mm Hg, respectively. Hypertension is one of the major risk factors for cardiovascular diseases (CVDs) that affect a high proportion of people worldwide.[2,3] To raise awareness about its seriousness, it has been described by many researchers as a "silent killer."[2] According to the World Health Organization, 47% of people in low- and middle-income countries as well as 49% of people in high-income countries expe-

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rience hypertension.[4] In the Middle East, 48% of people have hypertension.[4] Unfortunately, hypertension is responsible for 22% of all CVD deaths in Jordan.[5] It was indicated in a large survey featuring 13,000 families that hypertension is the most prevalent chronic disease in Jordan. Hypertension constitutes 39% of all chronic diseases affecting Jordanian people,[6] with 5% of all Jordanians and 11% of people older than 25 years have hypertension.[6]

Knowledge involves information and skills acquired through experience and education. Educators define *knowledge* as the extent of actual awareness about specific subjects and personal efficiency in completing a task.[7] Previous investigators reported that increasing knowledge about hypertension and its treatment relates to higher adherence to the treatment regimen[8,9] as well as to the overall success in managing this disease.[10–12] Authors of other studies have assessed knowledge about hypertension by measuring participants' recognition of the meaning of hypertension, level of blood pressure, treatment regimens, lifestyle modifications, possible complications, risk factors, as well as possible signs and symptoms of hypertension.[13,14]

It is vital for healthcare providers to work on improving public knowledge about hypertension. Authors

of previous studies revealed contradictory findings regarding people's levels of knowledge about hypertension.[15–18] A lack of knowledge about hypertension in each of the following dimensions has been reported: treatment regimen, importance of compliance, risk factors, and possible complications.[18] For instance, it was revealed in a community-based survey conducted in the rural Karen community that almost half of the participants had never heard of hypertension and that the majority did not fully understand what hypertension meant or know of risk factors for hypertension, despite approximately one-third of participants being hypertensive.[18] Most were unaware that they were hypertensive.[18]

The relationship between sociodemographic variables and the level of knowledge about hypertension has been highlighted in previous studies.[13,16,19–21] People with low levels of education and those older than 60 years commonly have lower levels of knowledge about hypertension.[13,16] Higher levels of knowledge were reported among men as well as people with higher levels of education.[20,21] Those having cardiovascular risk factors (eg, diabetes, obesity, and smoking) had greater knowledge about hypertension.[18,20–23] Moreover, hypertensive patients had greater knowledge about risk factors, signs and symptoms, as well as complications of hypertension than nonhypertensive participants.[14]

Understanding the level of Jordanian people's knowledge about hypertension might contribute effectively to healthcare providers' efforts to prevent, treat, and control the condition. However, only a limited number of Jordanian studies identifying knowledge about hypertension among Jordanian adults could be found. Therefore, the authors of the current study aimed to identify the level of knowledge about hypertension among Jordanian adults. The following research questions were addressed in the study:

1. What is the level of knowledge about hypertension among Jordanian adults?
2. Are there differences in knowledge about hypertension between hypertensive and nonhypertensive Jordanian adults?
3. Are there differences in knowledge about hypertension based on sociodemographic and clinical variables?

Methods

Design and Sample

A cross-sectional descriptive comparison design was used, and Jordanian adults constituted the target population. The required sample size was estimated through the Cohen tables by setting a medium-effect size of 0.40 and α of 0.05 (power = 0.80). Therefore, 196 participants were needed to achieve the necessary power.[24]

Participants were recruited through convenience sampling and were included in the study if they satisfied the following inclusion criteria: a Jordanian, aged older than 18 years, no official background in any of the medical sciences, and mentally healthy.

Data Collection and Procedures

From July to December 2013, the authors collected data from 2 settings located in Zarqa City, Jordan. The first setting was a healthcare center belonging to the United Nations Relief and Work Agency (UNRWA), and the second setting involved several homes (home visits) located in the area around the healthcare center.

Healthcare is provided to Jordanian people through governmental, military, private, and UNRWA agencies. Among these agencies, UNRWA has healthcare centers that provide primary healthcare and follow-up to Jordanians of Palestinian origin. These healthcare centers are equivalent to governmental healthcare centers and provide the same level of care as well. In fact, people residing around the UNRWA healthcare center are receiving healthcare services from this centre if they need it. Moreover, Jordanian people receiving healthcare services from UNRWA clinics have the right to seek medical help from any governmental healthcare services also.

The participants were interviewed by the researchers regarding sociodemographic data and to complete the study questionnaire. These interviews took place either at the UNRWA clinic or through home visits. The participants had the choice of reading and completing the questionnaire by themselves, or the interviewer would assist them by reading the questionnaire aloud and recording their responses.

Ethical Considerations

Appropriate ethical approvals were sought from Zarqa University and UNRWA. The proposal was presented to the official committees at both institutions. All ethical principles were ensured. All individuals who met the inclusion criteria were invited to participate in the study. Benefits and risks of participation as well as information about the study and its purposes were discussed with all possible participants. All participants were informed that data would be kept and managed carefully and that their anonymity would be preserved. Verbal agreement from the participants was considered consent to participate in the study.

Measurements

To assess the participants' knowledge about hypertension, the researchers used the Hypertension Knowledge-Level Scale (HK-LS), which reflects 6 dimensions of knowledge about hypertension (ie, definition, treatment, drug compliance, lifestyle, diet, and complications). This scale was chosen because it was used extensively in previous studies to assess knowledge about hypertension

and because it was originally developed by Erkoc et al[25] to assess the knowledge about hypertension in a Turkish community. Evidence from the study of Erkoc et al[25] supports the instrument's validity and reliability. A high level of face, content, and construct validity was found, and both internal consistency and stability were assessed through Cronbach α and test-retest, respectively.[25]

The original HK-LS consists of 22 statements, each requesting participants to respond with "correct," "incorrect," or "don't know." Each true response was coded as 1 point, and the false responses were coded as zero (maximum score, 22); and scores were presented in the current study in grade point average out of 100, the higher the score, the higher the knowledge about hypertension.[25]

The English version was translated into Arabic by 2 independent nurses who were fluent in both English and Arabic. Both translators discussed the 2 Arabic versions and provided the researchers with 1 unified Arabic version. The Arabic version was then translated back to English by other translators, and the subsequent version was compared with the original English scale. In the final step, the researchers met with all translators and established the final Arabic version. After ensuring that the final Arabic version reflected the same dimensions presented in the original scale, this version was assessed through a pilot study. Ten adult Jordanians completed the Arabic HK-LS, and the researchers used the knowledge that emerged from the pilot testing to assess the Arabic version's suitability and feasibility for future application to the Jordanian community. It was suggested in the pilot test findings the suitability of all statements listed in the final Arabic version, and only simple rewording of some statements was undertaken to clarify some statements suggested by the participants.

Data Analysis

The Statistical Package for Social Sciences version 19 was used to analyze the data. Descriptive statistical tests were used to describe the sample and major study variables as well as to answer the first research question. Independent t tests were used to test differences in knowledge on the basis of sociodemographic categories and on hypertensive status to answer the second and third research questions. Assumptions of all statistical tests were assessed and ensured, and α was < 0.05.

Results

There were 284 participants, with a mean age of 48.7 (18–80) years; 44% were in the age group of 46 to 60 years. Most participants were women, married, noneducated, nonworking, nonsmokers, did not exercise regularly, and had a low monthly income (Table 1). Through their clinical history, it was revealed that most participants were already hypertensive, regularly visiting their

TABLE 1 Participants' Sociodemographical Data (n = 284)	
Variables	**% (Frequency)**
Gender	
Male	33.8 (96)
Female	66.2 (188)
Marital status	
Married	88.0 (250)
Other status	12.0 (34)
Age groups, year	
<25	06.3 (18)
26–45	31.0 (88)
46–60	43.7 (124)
≥61	19.0 (54)
Educational level	
Illiterate	19.0 (54)
Below secondary	41.2 (117)
Above secondary	24.6 (70)
Higher education	15.1 (43)
Current job	
Working	25.7 (73)
Not working	74.3 (211)
Watching health educational programs on television	
Yes	54.2 (154)
No	45.8 (130)
Monthly income	
Less than $700	81.0 (230)
More than $700	19.0 (54)

physicians, had a positive family history of hypertension, were free from other chronic diseases, and were medically insured (Table 2).

Level of Knowledge About Hypertension

The mean (SD) total knowledge about hypertension was 73.65 (16.00). It was reflected in the results higher levels of *knowledge about lifestyle* (μ = 84.22; SD, 18.77) and *complications of hypertension* (μ = 82.46; SD, 25.62). The participants were not knowledgeable about the *definition of hypertension* (μ = 58.09; SD, 41.24) or the *relationship between diet and hypertension* (μ = 52.11; SD, 40.26) (Table 3).

Knowledge Differences: Hypertensive Versus Nonhypertensive

The mean *total knowledge* about hypertension among the hypertensive participants (μ = 76.17; SD, 14.06) was significantly higher (t = 3.61, P = .001) than it was for the nonhypertensive participants (μ = 68.23; SD, 18.49). The mean *knowledge about medical treatment* for the hypertensive participants (μ = 75.38; SD, 20.27) was significantly higher (t = 3.10, P = .002) than it was for the nonhypertensive participants (μ = 64.44; SD, 30.44). The mean *knowledge about drug compliance* for the hypertensive participants (μ = 73.19; SD, 27.58) was significantly higher (t = 2.48, P = .005) than it was for the nonhypertensive participants (μ = 62.22; SD, 31.4).

TABLE 2 Participants' Clinical History (n = 284)	
Variables	% (Frequency)
Smoking	
Yes	18.7 (53)
No	81.3 (231)
Practicing regular exercise	
Yes	28.5 (81)
No	71.5 (203)
Experiencing hypertension	
Hypertensive	68.3 (194)
Nonhypertensive	31.7 (90)
Family history of hypertension	
Yes	68.7 (195)
No	31.3 (89)
Diagnosed with other chronic diseases	
Yes	32.4 (92)
No	67.6 (192)
Visiting physicians regularly	
Yes	66.9 (190)
No	33.1 (94)
Medical insurance	
Insured	86.6 (246)
Not insured	13.4 (38)

Knowledge Differences: Sociodemographic Variables

The mean *knowledge about the definition of hypertension* among the female participants (μ= 61.98; SD, 40.45) was significantly higher ($t = -2.22$, $P = .027$) than it was for the male participants (μ = 50.52; SD, 41.35). The mean *knowledge about complications of hypertension* among the female participants (μ = 85.63; SD, 21.69) was also significantly higher ($t = -2.64$, $P = .009$) than it was for the male participants (μ = 76.25; SD, 31.16).

The nonmarried participants had mean *knowledge about medical treatment for hypertension* (μ = 81.6; SD, 24.85) that was significantly higher ($t = 2.48$, $P = .013$) than it was for the married participants (μ = 79.6; SD, 24.14). The nonmarried participants' *knowledge about drug compliance* (μ = 79.41; SD, 23.41) was also significantly higher ($t = 2.48$, $P = .016$) than it was for the married participants (μ = 68.40; SD, 29.74).

The educated participants had a significantly higher mean (*total knowledge about hypertension, knowledge about the definition of hypertension, knowledge about drug compliance*, and *knowledge about diet and hypertension*) than the noneducated participants did (Table 4). The participants who watched health education programs on television also had significantly higher means (*total knowledge about hypertension, knowledge about the definition of hypertension, knowledge about medical treatment for hypertension,* and *knowledge about complications of hypertension*) than those who did not watch such programs (Table 4).

The mean *knowledge about complications of hypertension* among the participants with higher income (μ = 80.55; SD, 19.22) was significantly higher ($t = -4.05$, $P = .001$) than it was for the participants with lower income (μ = 76.17; SD, 30.61).

Knowledge Differences: Clinical Variables

It was indicated in the results that the participants with chronic diseases had significantly higher means (*total knowledge about hypertension* and *knowledge about lifestyle*) than the participants free from chronic diseases (Table 4). The participants who exercised regularly had significantly higher means (*total knowledge about hypertension, knowledge about the definition of hypertension,* and *knowledge about complications of hypertension*) than those who did not exercise regularly (Table 4).

The mean *knowledge about complications of hypertension* for the nonsmokers (μ = 84.4; SD, 22.52) was significantly higher ($t = -2.06$, $P = .034$) than it was for the smokers (μ = 73.96; SD, 35.21). The mean *knowledge about lifestyle* among the non-smokers (μ = 85.54; SD, 18.19) was also significantly higher ($t = -2.48$, $P = .013$) than it was for the smokers (μ = 78.49; SD, 20.32). The mean *knowledge about the definition of hypertension* of the medically insured participants (μ = 60.97; SD, 40.67) was significantly higher ($t = 3.03$, $P = .003$) than it was for the noninsured participants (μ = 39.47; SD, 40.53).

Moreover, the mean *total knowledge about HTN, knowledge about the definition of hypertension, knowledge about lifestyle*, and *knowledge about complications of hypertension* were significantly higher among the participants who regularly visited their physicians than it was for the participants who did not (Table 4).

TABLE 3 Total Knowledge About Hypertension and Its Subdimensions			
Variables	Hypertensive mean (SD), n = 194	Nonhypertensive mean (SD), n = 90	All Participants mean (SD), n = 284
Total knowledge	76.17 (14.06)	68.23 (18.49)	73.65 (16.00)
Knowledge about definition of hypertension	62.62 (40.49)	48.33 (41.36)	58.09 (41.24)
Knowledge about medical treatment	75.38 (20.27)	64.44 (30.44)	71.91 (24.45)
Knowledge about drug compliance	73.19 (27.58)	62.22 (31.40)	69.71 (29.24)
Knowledge about lifestyle	85.56 (17.45)	81.33 (21.15)	84.22 (18.77)
Knowledge about diet	53.60 (39.58)	48.88 (41.71)	52.11 (40.26)
Knowledge about complications	84.22 (24.01)	78.66 (28.56)	82.46 (25.62)

TABLE 4 **Significant Differences in Hypertension Disease-Related Knowledge Based on Specific Sociodemographic and Clinical Data**

Variables		Total Knowledge About Hypertension and Its 6 Subdimensions						
		Knowledge About Definition of Hypertension	Knowledge About Medical Treatment	Knowledge About Drug Compliance	Knowledge About Lifestyle	Knowledge About Diet	Knowledge About Complications	Total Knowledge
Educated participant								
Yes vs No	Mean	64.1 vs 54.1	NS	75.4 vs 65.9	NS	57.9 vs 48.2	NS	76.3 vs 71.8
	t test	−2.024		−2.829		−2.002		−2.322
	P	.044		.005		.046		.021
Watching health programs on television								
Yes vs no	Mean	64.9 vs 50.0	74.5 vs 68.8	NS	NS	NS	85.3 vs 79.1	76.1 vs 70.7
	t test	3.086	1.956				2.002	2.756
	P	.002	.051				.046	.006
Practice regular exercise								
Yes vs no	Mean	67.9 vs 54.2	NS	NS	NS	NS	87.4 vs 80.4	76.9 vs 72.3
	t test	2.555					2.335	2.448
	P	.011					.021	.015
Diagnosed with other chronic diseases								
Yes vs no	Mean	NS	NS	NS	88.1 vs 82.3	NS	NS	76.7 vs 72.2
	t test				2.392			2.257
	P				.017			.025
Regularly visit physician								
Yes vs. No	Mean	62.3 vs 49.4	NS	NS	86.3 vs 80.0	NS	85.4 vs 76.3	75.5 vs 69.8
	t test	2.503			2.697		2.600	2.646
	P	.013			.007		.010	.009

Abbreviation: NS, no significant differences.

In conclusion, the *total level of knowledge about hypertension* was significantly higher if participants were hypertensive, well educated, diagnosed with other chronic diseases, watched health education programs on television, practiced regular exercise, and regularly visited their physicians (Table 5).

Discussion

In this study, we aimed to identify the level of knowledge about hypertension among Jordanians. Good public knowledge about hypertension supports health professionals' efforts to prevent and treat this disease. Results of the current study are consistent with the following studies in which good levels of knowledge about hypertension were reported.[12,17,22,26] On the other hand, this study is in contradiction to several other studies,[11,12,14,18–20] in which limited knowledge about hypertension was found. The sample characteristics in those studies, in which the majority of participants were recruited from rural areas, were older, had lower levels of education, and were not visiting their physicians regularly, might contribute to those lower levels of knowledge about hypertension than what was seen in our study.

It was revealed in our findings that hypertensive participants had higher levels of knowledge about the connection between *lifestyle and the disease complications* as well as *compliance to medications*. These findings are consistent with previous findings in which nonhypertensive participants had a better understanding about blood pressure than hypertensive participants.[16] It was reported in another study that knowledge about hypertension was not affected by the history of having this disease.[15] Conversely, findings were reported in several previous studies that were similar to those in our study and it was indicated in those findings that having hypertension was associated with higher levels of knowledge about the disease.[14,20,27] The reason for this could be that patients who have any disease might be motivated to learn more about their own disease and its treatment plan to have greater control over the disease and prevent its complications.

Regarding the specific dimensions of knowledge about hypertension, the highest level of knowledge was regarding *lifestyle*, followed by *complications*, and then *medical treatment*. The Jordanian Ministry of Health, in conjunction with UNRWA and other healthcare sectors, knows the danger of CVDs, which are the primary cause of death in Jordan; therefore, their continuous efforts to educate people about CVD might have enhanced participants' knowledge in this area. We should also consider that the majority of our participants (68%) are hypertensive patients and regularly visit their physicians in healthcare centers where they receive direct instruction from healthcare providers and obtain printed health education materials. Moreover, the majority of

TABLE 5 Summary of All Significant Differences in Hypertension Disease–Related Knowledge Based on Sociodemographic and Clinical Data

Variables	Knowledge About Definition of Hypertension	Knowledge About Medical Treatment	Knowledge About Drug Compliance	Knowledge About Lifestyle	Knowledge About Diet	Knowledge About Complications	Total Knowledge
Gender	√					√	
Marital status							
Age group	√						
Educational level	√	√	√				√
Watching health programs on television	√	√	√		√	√	√
Monthly income		√	√				
Experiencing hypertension			√				√
Smoking history			√	√			
Practice regular exercise	√			√			√
Family history of hypertension				√		√	
Diagnosed with other chronic diseases				√		√	√
Visiting physician regularly	√			√		√	√
Medical insurance	√						

Abbreviation: √, significant differences.

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What's New and Important

- Knowledge of hypertension among Jordanian adults was higher than expected, particularly when they had hypertension.
- Women were more knowledgeable about hypertension than men.

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our participants watched health education programs on television. Any of these techniques might be responsible for the increased level of knowledge about hypertension among the participants.

Regarding educational level, it was documented in this study that a higher level of education was associated with higher levels of knowledge about the *definition of hypertension and diet* as well as *medication compliance*. Although this finding is consistent with previous studies,[18–20] it contradicts the findings of others.[13,14,22] Nonetheless, a commonality is that higher levels of knowledge about the disease among people with higher levels of education are expected, and this might be related to the ability of educated people to read and understand health educational materials. Furthermore, they might be able to find and use additional resources to learn about hypertension.

Although it was revealed in some studies that the level of knowledge about hypertension is not affected by gender,[14] in our study, women showed higher levels of knowledge regarding the *definition* and *complication* of hypertension. This is inconsistent with other studies in which lower levels of knowledge were reported among women.[22,23] In Jordan, women are mainly responsible for following up family health issues, and authors of previous Jordanian studies have documented that women have a higher sense of responsibility than men regarding health.[19,27,28]

Although it was reported in a previous study[23] that nonmarried individuals had lower levels of knowledge about hypertension, nonmarried participants in this study showed higher levels of knowledge regarding *medical treatment* and *drug compliance*. This finding might be related to the mean age of the nonmarried participants being lower than the mean age of the married participants. Thus, the higher levels of knowledge about hypertension among nonmarried participants might be moderated by their age and, consequently, the level of education among those participants.

Diagnosis with other chronic diseases was associated with higher levels of knowledge about hypertension as reported in previous studies.[23,29] In this study, higher levels of *total knowledge about hypertension* and higher levels of *knowledge about lifestyle* were noticed in the participants diagnosed with other chronic diseases. Patients with other chronic diseases would be exposed to more health information while visiting their healthcare providers. They also might be motivated to learn more about other health issues to avoid having additional diseases.

Limitations

Convenience sampling and recruiting participants from UNRWA healthcare center and the area around it were considered as threats to the generalizability of the findings. Other limitations were that the majority of the participants have hypertension, had a positive family history of hypertension, and regularly visited healthcare providers.

Conclusions

Although the total level of knowledge about hypertension was good among the participants, greater effort is needed to improve the level of knowledge about *diet*, *definition of hypertension*, and *drug compliance*. Sociodemographic and clinical variables have significant relationships with levels of knowledge about hypertension. This necessitates the importance of considering patients' characteristics when designing and providing health educational programs.

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