Original Article

Comparison of Perceived Self-efficacy, Benefits, and Barriers of Hypertension Control between Male and Female Patients Referred to Rajaie Cardiovascular Medical and Research Center in Tehran

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Abstract

Background: *Hypertension is a health problem. The purpose of the present study was to compare perceived self-efficacy, benefits, and barriers of hypertension control between male and female patients.*

Methods: *This cross-sectional study was carried out on 400 patients referred to Rajaie Cardiovascular Medical and Research Center in Tehran from August 2020 through March 2021. The convenience sampling method was used. The data collection tools consisted of a digital sphygmomanometer, a demographic form, and a researcher-made questionnaire of perceived benefits, barriers, and self-efficacy of hypertension control, whose validity and reliability were obtained.*

Results: *The mean age of the male and female patients was 54.02±12.93 years and 56.48±12.10 years, respectively. The mean score of perceived barriers in women was lower than that in men, and the mean perceived self-efficacy in women was higher than that in men (P<0.001). According to the regression test, history of smoking in men and family history of hypertension and age in women were predictors of perceived benefits. Further, occupation and history of smoking in men and education level, family history of hypertension, and history of smoking in women were predictors of perceived barriers. Additionally, marital status, education level, and disease duration in men and education level, family history of hypertension, history of smoking, and age in women were predictors of perceived self-efficacy (P<0.050).*

Conclusion: *In men, the mean score of perceived barriers was higher and the mean score of perceived self-efficacy was lower. Additionally, the predictors of each of these perceptions were determined.*

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Keywords: *Self-efficacy; Benefits; Barriers; Perception; Hypertension; Gender*

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Introduction

Hypertension is a chronic disease whose high prevalence and deleterious effects on the body organs have turned it into a serious global health concern.[1,2] Hypertension is the principal independent risk factor for cardiovascular diseases, renal complications, and stroke and the third most common cause of death worldwide, accounting for approximately 13% of global mortality.[3,4] The World Health Organization (WHO) reported that in 1975 and 2015, respectively, 594 million and 1.13 billion people suffered from hypertension.[5] The prevalence of this disease in Iran was also reported to be 25% in 2018.[6] A prior study reported that the prevalence rate of hypertension was 37.3% in men and 34.7% in women.[7] In another investigation, the prevalence rate of hypertension in men was reported to be 1.3% less than that in women.[8] Statistics have shown that the prevalence of this disease differs between the genders. The dissimilarity in the prevalence of hypertension between men and women can be attributed to various factors, such as the different levels of awareness and control between the genders.[9]

Hypertension control is vital if the chance of ensuing complications is to be minimized.[10] Nonetheless, blood pressure control in patients suffering from this chronic disease is low around the world.[11,12] The uncertainty regarding hypertension symptoms has caused people to ignore the risk of this disease,[13] although the disease is preventable and controllable.[14] The control of this chronic disease is through choosing a healthy lifestyle and, if necessary, pharmaceutical interventions.[15]

The concepts of perceived self-efficacy, benefits, and barriers have been introduced in many theories concerning health behavior, including the health belief model, the transtheoretical model, and the Pender health promotion model.[16,17] As crucial factors affecting behavior, these constructs form the core of interventions.[17] Perceived benefits are beliefs about the advantages of proposed methods to reduce the risk or severity of illness or harmful conditions as a result of a particular behavior, and perceived barriers are beliefs related to the actual or imagined costs of performing the proposed behavior. Perceived self-efficacy is a person's confidence in his or her ability to acquire a new behavior.[16] An individual performs or refrains from performing a behavior based on the examination and analysis of the benefits minus the barriers to action.[17] Various studies have underscored the direct relationship between perceived benefits and the inverse relationship between perceived barriers and self-care behaviors in diseases.[18-20] Greater perceived self-efficacy also reduces perceived barriers and enhances positive feelings toward the behavior; moreover, when positive feelings or emotions are related to a behavior, the probability of commitment and maintaining the behavior increases.[17] In the process of managing chronic diseases, including hypertension, augmenting self-efficacy is crucial.[21] Various types of studies have assigned a significant role to self-efficacy in controlling blood pressure.[20,22,23]

Identifying health beliefs play a salient role in individuals' willingness to participate in health-related behaviors.[24] On the other hand, gender can affect choices related to health-related beliefs and behaviors.[25,26] Chen et al[27] showed that health differences between the genders were more subjective and were caused by the different attitudes of men and women. A meticulous examination of the differences between men and women in attitudinal and behavioral dimensions can be beneficial in recognizing the impact of psycho-social and cultural factors on healthy lifestyles and health-related behaviors.[28,29] Since human behavior is a reflection of various factors, the best educational strategies can be designed to change and adjust current behaviors by knowing the most important factors affecting them.[30] Accordingly, in the present study, we aimed to compare perceived self-efficacy, benefits, and barriers regarding hypertension control between male and female patients referred to Rajaie Cardiovascular Medical and Research Center in Tehran, Iran.

Methods

The present study was cross-sectional. The research population consisted of male and female patients with primary hypertension (30 years and older) who were referred to the Internal Cardiology Clinic (for adults) of Rajaie Cardiovascular Medical and Research Center in Tehran and were eligible to enter the study between August 2020 and March 2021. The required sample size was calculated to be 197 people in each group according to the type of study and based on the standard deviation of the self-efficacy score in a study by Hatef et al[31] and taking into account a confidence level of 95% and a statistical test power of 80% to discover at least a 0.42 difference score using the relevant statistics formula, considered to be 200 people in each group due to the possibility of dropping samples. To ensure more certainty, we estimated the total sample size required for this study to be 400 people.

This study was implemented after permission was obtained from the Faculty of Health and the Ethics Committee of Iran University of Medical Sciences and following coordination with the hospital authorities. Written consent was obtained from the patients prior to the study commencement. The convenience sampling method was used here. The inclusion criteria were composed of a definitive diagnosis of hypertension by a specialist, the lapse of at least 6 months from the diagnosis of the disease by a specialist, age 30 years and older, the use of medication to control hypertension, the absence of other cardiovascular

or chronic diseases, and willingness to participate in the study. Patients who did not meet the above conditions and were not able to understand the questions and answer the questionnaire were excluded from the study.

The methods of data collection in this research were questionnaire administration and interviews with patients. The scientific validity of this questionnaire was confirmed using the face validity method based on the opinions of 13 patients and 5 experts, content validity through the calculation of a content validity index of 0.90 and a content validity ratio of 0.84 based on the opinions of 17 experts in the field of health, and construct validity via an exploratory factor analysis of 300 patients. Further, the scientific reliability of this questionnaire was determined and confirmed using Cronbach's alpha of 0.91 on a sample of 30 people and a retest with a value of 0.99 on 30 people in 2 stages with a 2-week interval. The patients participating in the validity and reliability stages of the questionnaire were not included in the sample size of the main study. The final researcher-made questionnaire consisted of 2 parts. The first part featured demographic information with 10 questions about age, gender, occupation, education level, marital status, economic status, blood pressure level, family history of hypertension, disease duration, and history of smoking. The second part contained questions related to perceived benefits constructs with 5 questions, perceived barriers with 12 questions, and perceived self-efficacy with 7 questions. The scale of responding to all the questions pertaining to the constructs was a 5-point Likert scale in the form of "completely agree, agree, no opinion, disagree, or completely disagree", with the scores of the questions ranging from 1 to 5. In terms of scoring, 1 was given to the answer "completely disagree", 2 to "disagree", 3 to "no opinion", 4 to "agree", and 5 to "completely agree". Except for the perceived barriers, in which a higher score expressed a negative and unfavorable attitude, in the other 2 constructs, a higher score indicated a positive and favorable attitude. In the perceived benefits section, the minimum score was 5, and the maximum score was 25; in the perceived barriers section, the minimum score was 11, and the maximum score was 55; and in the perceived self-efficacy section, the minimum score was 6, and the maximum score was 30. One question in the perceived barriers section and 1 question in the self-efficacy section were related to smoking, which only people with a history of smoking had to answer, so they were not included in the score calculations.

Another instrument employed in this study was a calibrated Mark Omron M6 Comfort digital arm blood pressure monitor made in Vietnam (under a Japanese license).[32,33] Blood pressure was measured according to blood pressure measurement instructions after 10 minutes of rest in a sitting position with the palms facing upwards and the right arm placed at the level of the heart and uncovered. The patients were asked not to place their feet on top of each other, not to move, and not to talk during the measurement. Nevertheless, patients who declared having had intense activity; having consumed coffee, tea, or heavy food; or having smoked tobacco products in the last few minutes were given at least 20 minutes of rest. This measurement was conducted twice at 5-minute intervals, and their mean was considered and recorded as the individual's blood pressure.

The data were entered into the SPSS software, version 24. After describing the information and according to the normal distribution of the data, we carried out statistical analyses based on parametric tests, including a t test of 2 independent groups, the 2-way analysis of variance, the Pearson correlation coefficient, and generalized linear model regression to analyze the data according to the achievement of the research objectives and the quantitative and qualitative nature of the variables. The significance level was considered 0.05 for all the statistical tests. The response rate was 100% (all 400 patients responded).

Results

The study participants consisted of 400 patients: 200 men and 200 women. The mean±standard deviation of the study population's age was 54.02±12.93 years in the male patients and 56.48±12.10 years in the female patients. Other demographic information of the participants is listed in Table 1.

The results of the independent t test showed that the mean score of perceived benefits between women and men was not statistically significant (22.29±2.58 vs 22.13±2.47; P=0.540). However, the mean score of perceived barriers in men was significantly higher than that in women (31.41±6.85 vs 25.46±7.15; $P<0.001$). The mean perceived self-efficacy in women was significantly higher than that in men (22.77±4.42 vs 20.57±4.64; $P<0.001$).

Among the examined items for both genders, the highest mean score of perceived benefits was related to the item "Hypertension control prevents the occurrence of heart and brain strokes." (men: 4.63 and women: 4.59), and the lowest mean score was related to the item "Hypertension control prevents visual impairment." (men: 4.22 and women: 4.30). In men, the highest mean scores of perceived barriers were related to the items "The cost of a doctor visit is high." (3.60), "The cost of hypertension control drugs is high." (3.23), and "I get tired of the long-term use of blood pressure control drugs." (3.19). In women, the highest mean scores were related to the items "I don't have enough time to do physical activity." (2.95), "The cost of a doctor visit is high." (2.81), and "The cost of hypertension control drugs is high." (2.69). The lowest mean scores in both genders were related to the items "It is difficult for me

to quit smoking to control high blood pressure." (men: 1.02 and women: 0.24) and "The side effects of hypertension control drugs, including dizziness, dry mouth, and nausea, make me not use them." (men: 2.02 and women: 1.71). In both genders, the highest mean perceived self-efficacy was related to the item "Despite being very busy, I can take my medications regularly and on time and according to the doctor's prescription." (men: 3.85 and women: 4.30). In men, the lowest mean scores were related to the items "Despite the pleasure I get from smoking, I can quit it." (1.19) and "Even if my family does not help me, I can observe a suitable diet to control blood pressure." (3.06). In women, the lowest mean scores were related to the items "Despite the pleasure I get from smoking, I can quit it." (0.34) and "Despite the problems in life, I can manage my daily stress." (2.95).

The results of the 2-way analysis of variance, including the interaction effect of gender and occupation, economic status (by self-reported), education, and marital status, showed that the interaction effects were not significant. Nonetheless, the main effects of occupation and economic status were significant in perceived barriers and self-efficacy, indicating that the mean scores of these 2 main variables in different occupations and levels of economic status, regardless of gender, had statistically significant negative and positive differences, respectively (P<0.050). The main effect of education was also significant in all 3 variables of perceived benefits, barriers, and self-efficacy, denoting that the mean scores of the 2 main variables of perceived benefits and self-efficacy, as well as the mean score of perceived barriers in different education levels, regardless of gender, had statistically significant positive and negative differences, respectively (P<0.050). The main effect of marital status was also significant on self-efficacy, indicating that the mean score of this main variable had a statistically significant positive difference in different marital status levels, regardless of gender (P=0.018).

Based on the results of the independent t test, no significant differences were found between the mean scores of perceived benefits, barriers, and self-efficacy in men with a history of hypertension in the family and those without it (P>0.050). In contrast, in women, statistically significant positive and negative differences were found between the means of perceived benefits and self-efficacy, as well as the mean score of perceived barriers in those with a history of hypertension in the family and those without it, respectively (P<0.050). According to the results of the independent t test, in men, there were statistically significant negative and positive differences between the mean scores of perceived benefits and self-efficacy, as well as the mean score of perceived barriers, in those with a history of smoking and those without it, respectively (P<0.050). However, in women, only the mean score of self-efficacy showed a statistically significant negative difference in those with and without a history of smoking (P=0.007).

The results of the Pearson correlation test showed that in men, among the 3 main research variables, only self-efficacy had a statistically significant negative relationship with age (P=0.022). Still, both perceived benefits and self-efficacy had statistically significant negative relationships with systolic and diastolic blood pressure and disease duration, and perceived barriers had a statistically significant positive relationship with systolic and diastolic blood pressure and disease duration (P<0.050). In women, among the 3 main research variables, only perceived benefits had a statistically significant negative relationship with age (P=0.001); nonetheless, both perceived benefits and self-efficacy had statistically significant negative relationships with systolic and diastolic blood pressure, and perceived barriers had a statistically significant positive relationship with systolic and diastolic blood pressure (P<0.050). Perceived barriers and self-efficacy also had statistically significant positive and negative relationships with disease duration, respectively (P<0.050). In both genders, the correlation between perceived self-efficacy with systolic and diastolic blood pressure was higher than that in the other 2 constructs (Table 2).

Finally, the relationships between perceived benefits, barriers, and self-efficacy and the demographic characteristics of the patients, as well as the relationships between these 3 main variables with systolic and diastolic blood pressure, were investigated using generalized linear regression models. Based on the results of regression analysis, history of smoking negatively for men and family history of hypertension positively and age negatively for women were determined as predictors of perceived benefits (P<0.050). Occupation negatively and history of smoking positively for men and education level and family history of hypertension negatively and history of smoking positively for women were determined as predictors of perceived barriers (P<0.050). Marital status and education level positively and disease duration negatively for men and education level and family history of hypertension positively and history of smoking and age negatively for women were determined as predictors of perceived self-efficacy (P<0.050) (Table 3). Additionally, among the 3 main variables, perceived barriers positively and perceived self-efficacy negatively for men and only perceived self-efficacy negatively for women were identified as predictors of both systolic and diastolic blood pressure (P<0.050). As can be seen, perceived self-efficacy was a strong predictor of systolic and diastolic blood pressure in both genders.

Table 1. Demographic characteristics of the patients by gender*

Qualitative Variable/ Level	Men (n=200)	Women (n=200)
Occupation		
Housewife	0 (0)	152 (76.0)
Governmental	56 (28.0)	23 (11.5)
Self-employed	93 (46.5)	8 (4.0)
Retired	29 (14.5)	11 (5.5)
Unemployed	22 (11.0)	6 (3.0)
Education		
Uneducated	32 (16.0)	66 (33.0)
Elementary school	29 (14.5)	33 (16.5)
Secondary school	18 (9.0)	23 (11.5)
Diploma	46 (23.0)	28 (14.0)
University qualification	75 (37.5)	50 (25.0)
Marital Status		
Married	180 (90.0)	158 (79.0)
Single	15 (7.5)	11 (5.5)
Divorced /Widowed	5 (2.5)	31 (15.5)
Economic Status		
Weak	35 (17.5)	41 (20.5)
Medium	116 (58.0)	118 (59.0)
Good/Excellent	49 (24.5)	41 (20.5)
Family History of HTN		
Yes	148 (74.0)	173 (86.5)
No	52 (26.0)	27 (13.5)
Smoking History		
Yes	65 (32.5)	17 (8.5)
No	135 (67.5)	183 (91.5)
Quantitative		
Age (y)	54.02 (12.93)	56.48 (12.10)
Systolic BP (mmHg)	138.69 (13.10)	133.52 (11.02)
Diastolic BP (mmHg)	87.72 (6.80)	84.99 (6.26)
Disease duration (y)	7.30 (6.69)	6.92 (4.59)

*Data are presented as mean±SD or n (%).
HTN, Hypertension; BP, Blood pressure; SD, Standard deviation

Table 2. The Pearson correlations between quantitative demographics and the main study variables of the patients by gender

	Mean±SD	Perceived Benefits	Perceived Barriers	Perceived Self-Efficacy
Gender				
Men				
Age (y)	54.02±12.93	r= −0.109	r=0.100	r= −0.162
		P=0.125	*P*=0.159	*P*=0.022
Systolic BP (mmHg)	138.69±13.10	r= −0.254	r=0.553	r= −0.673
		P<0.001	*P*<0.001	*P*<0.001
Diastolic BP (mmHg)	87.72±6.80	r= −0.294	r=0.300	r= −0.465
		P<0.001	*P*<0.001	*P*<0.001
Disease duration (y)	7.30±6.69	r= −0.171	r=0.185	r=−0.256
		P=0.015	*P*=0.009	*P*<0.001
Women				
Age (y)	56.48±12.10	r= −0.228	r=0.118	r= −0.128
		P=0.001	*P*=0.095	*P*=0.072
Systolic BP (mmHg)	133.52±11.02	r= −0.184	r=0.472	r= −0.600
		P=0.009	*P*<0.001	*P*<0.001
Diastolic BP (mmHg)	84.99±6.26	r= −0.166	r=0.271	r= −0.456
		P=0.019	*P*<0.001	*P*<0.001
Disease duration (y)	6.92±4.59	r=0.019	r=0.145	r= −0.176
		P=0.794	*P*=0.041	*P*=0.012

BP, Blood pressure; SD, Standard deviation

Table 3. Generalized linear regression model of factors predicting the main study variables in the patients by gender

Independent variable (baseline)		Men				Women			
	Levels	Regression coefficient (B)	Wald statistic	Df	*P*	Regression coefficient (B)	Wald statistic	Df	*P*
Perceived Benefits									
Family history (no)	Yes	−0.19	0.207	1	0.649	1.46	7.662	1	0.006
Smoking history (no)	Yes	−0.94	7.168	1	0.007	−0.25	0.156	1	0.693
Age	-	−0.01	0.335	1	0.563	−0.05	4.721	1	0.030
Perceived Barriers									
Occupation (unemployed)	Housewife	–	–	–	–	−0.82	0.068	1	0.795
	Governmental	−3.64	2.856	1	0.091	0.45	0.022	1	0.883
	Free-job	−1.13	0.352	1	0.553	−0.87	0.049	1	0.825
	Retired	−4.46	5.01	1	0.025	−0.36	0.009	1	0.925
Education (College)	Uneducated	2.58	1.515	1	0.218	5.36	5.277	1	0.022
	Elementary/ secondary	1.78	1.088	1	0.297	4.25	4.868	1	0.027
	Diploma	0.64	0.228	1	0.633	3.44	2.98	1	0.084
Family history (no)	Yes	−1.24	1.262	1	0.264	−5.27	13.72	1	<0.001
Smoking history (no)	Yes	2.83	8.611	1	0.003	3.37	3.94	1	0.047
Perceived Self-efficacy									
Marital status (divorced/ widowed)	Married	4.16	4.508	1	0.034	−0.25	0.078	1	0.779
	Single	4.34	3.436	1	0.064	−1.37	0.396	1	0.529
Education (College)	Uneducated	−4.80	12.45	1	<0.001	−5.03	13.135	1	<0.001
	Elementary/ secondary	−1.33	1.426	1	0.323	−3.53	9.586	1	0.002
	Diploma	−0.59	0.452	1	0.501	−2.08	3.101	1	0.078
Family history (no)	Yes	0.22	0.088	1	0.767	2.55	8.57	1	0.003
Smoking history (no)	Yes	−1.11	3.085	1	0.079	−3.79	14.065	1	<0.001
Age	-	0.06	2.010	1	0.156	0.08	4.577	1	0.032
Duration of disease	-	−0.14	8.075	1	0.004	−0.08	1.533	1	0.216

Df, Degrees of freedom

Discussion

In the present study, we found no significant differences in terms of perceived benefits between men and women. It means that gender does not affect the perceived benefits of adopting blood pressure control behaviors. This finding is consistent with the results of most studies in this field.[34-38] The perceived benefits most frequently mentioned by both genders were related to the positive effects of hypertension control on heart and brain stroke prevention, whereas the least frequently cited perceived benefits were related to the positive effects of hypertension control on the prevention of visual impairment. Similar results were obtained by Gibson et al[39] and Ford et al.[40]

The mean score of perceived barriers in women was significantly lower than that in men. In other words, there were few barriers to performing blood pressure self-care behaviors in women. This result is inconsistent with the studies conducted by Edwards,[37] Poudel and Sumi.,[38] Weston,[35] and Khorsandi et al.,[34] while it is consistent with the studies performed by Farmer et al[41] and Zareban et al.[42] This finding of the present study also chimes with the results of an investigation by Parvizy et al.[43] showing that Iranian men had more incorrect lifestyles than women and paid less attention to their health, with the main causes attributed to cultural, economic, and social factors. It seems that attitudes and occupational and financial concerns could be barriers to following healthy behaviors in men. The main barriers mentioned in men were related to the high cost of doctor visits, the high cost of blood pressure control drugs, and fatigue from the long-term intake of drugs, while the main barriers in women were lack of time for exercise, the high cost of doctor visits, and the high cost of blood pressure control drugs. The most notable barriers cited by both men and women were related to economic items. It could be because hypertension is a chronic disease requiring frequent visits to the doctor to obtain prescriptions. Indeed, financial wherewithal is one of the significant predictive factors of

treatment regimen adherence in these people.[40,44] hence the importance of paying particular attention to economic issues to reduce disease burden at individual and social levels.

In the current study, women had a higher mean perceived self-efficacy score than men. This finding is inconsistent with the results of the studies conducted by Edwards,[37] Khairy et al,[45] Hatef et al,[31] Khorsandi et al,[34] Wang et al,[46] and Goldmann et al,[47] while it is consistent with the results of the studies performed by AlHadlaq et al,[48] Zareban et al,[42] De Pasquale et al,[49] and Mularcik.[50] This finding can be explained by the fact that in the present investigation, the majority of women were housewives and perhaps had more free time and were less involved with economic concerns than men and, as a result, were more self-efficacious. Another explanation for the better condition of women in this field is that they may have fewer perceived barriers. In this study, the lowest perceived self-efficacy in women was related to the ability to manage daily life stress. In the studies conducted by Pérez and Matud[51]and Mašina et al.,[52] the ability to manage stress was lower in women than in men. Thus, given that women are more likely to be vulnerable in stressful life situations, more attention to education for this group will be effective in controlling hypertension in society. In men, the lowest self-efficacy was related to the ability to follow a proper diet to control hypertension without the help of the family. This finding could indicate that the role of family support is more important for men than women. Several articles have discussed the impact and role of family support on blood pressure control.[53-56] Consequently, family support in material and spiritual dimensions is essential for empowering people with hypertension, and the existence of a person who encourages and cooperates with the patient plays a significant role in observing the recommended diet. More concrete conclusions concerning patient education require sufficient heed to such issues by planners.

Regarding demographic variables, the mean scores of perceived barriers and self-efficacy in different occupations and various economic status levels had significant differences regardless of gender. Similar results can be observed in the studies of Weston,[35] Hatef et al,[31] and Fan and Lv.[57] The mean scores of all 3 variables of perceived benefits, barriers, and self-efficacy in different education levels, regardless of gender, had significant differences, which were similar to the results of the studies by Weston[35] and Wang et al.[46] The mean self-efficacy score was significantly different in various marital status levels, regardless of gender. Similar situations were observed in the studies carried out by Hatef et al[31] and Mularcik.[50]

Also, only females, the mean scores of variables of perceived benefits and perceived self-efficacy in people with a family history of hypertension were significantly higher, and the mean variable of perceived barriers was lower in these people. These findings are not in line with the studies performed by Thanavaro et al.,[58] and Endicott.[59]

In men, the mean scores of variables of perceived benefits and perceived self-efficacy were higher in people without a history of smoking, and the mean variable of perceived barriers was lower in these people. In women, even though the mean scores of perceived benefits and self-efficacy in those without a history of smoking were higher, and the mean score of perceived barriers was lower, only the mean score of perceived self-efficacy in those without a history of smoking was statistically significant. These findings are consistent with the studies of Mohammadi et al.,[60] Oluma et al.,[61] Lin et al.,[62] and Moore et al.[63]

The results of this study showed that in men, self-efficacy had a statistically significant negative relationship with age, which is consistent with the results of an investigation by Wang et al[46] and inconsistent with a study by Francois.[64] In women, perceived benefits had a negative and significant relationship with age, which is contrary to the results of the studies of McGuire et al.,[65] and Karimy et al.[18]

In men, perceived benefits and self-efficacy had statistically significant negative relationships with the disease duration, and perceived barriers had a statistically significant positive relationship with disease duration. In female patients, perceived self-efficacy had a statistically significant negative relationship with disease duration, and perceived barriers had a statistically significant positive relationship with disease duration. In contrast, Zareban et al[42] found no significant relationships between the 3 constructs of perceived benefits, barriers, and self-efficacy with the duration of hypertension. The contradiction in the results shows that this issue needs a more comprehensive investigation.

Moreover, in both genders, all 3 variables of perceived benefits, barriers, and self-efficacy had significant correlations with systolic and diastolic blood pressure, so that perceived benefits and self-efficacy had statistically significant negative relationships with systolic and diastolic blood pressure, and perceived barriers had a statistically significant positive relationship with systolic and diastolic blood pressure. In this context, several studies are in line with the results of the present study.[18,20,34,42,66,67]

Finally, based on the results of the regression model, among all the studied demographic variables, history of smoking negatively for men and family history of hypertension positively and age negatively for women were determined as predictors of perceived benefits. Occupation negatively and history of smoking positively for men and education level and family history of hypertension negatively and history of smoking positively for women were determined as predictors of perceived barriers. Marital status and education level positively and disease duration negatively for men and education level and family history of hypertension positively and history of smoking and age negatively for women were determined as

predictors of perceived self-efficacy. Further, among the 3 main variables, perceived barriers positively and perceived self-efficacy negatively for men and only perceived self-efficacy negatively for women were identified as predictors of blood pressure. Indeed, perceived self-efficacy was a strong predictor of blood pressure in both genders. A higher self-efficacy score denoted lower blood pressure. In line with this result of the present study, most studies have emphasized the role and significance of self-efficacy in predicting behavior.[20,34,42,55,66,68]

Some of the limitations of the present study include the impossibility of random sampling, the difficulty of sampling and follow-up due to the coincidence with the special conditions of the Coronavirus epidemic, the completion of questionnaires through interviews and self-reporting, and the lack of similar studies to compare the differences between genders, especially concerning demographic variables. In addition, since the present study was conducted only among patients referred to Rajaie Cardiovascular Medical and Research Center in Tehran, the generalization of the results must be performed with caution.

Conclusion

The results of the present study showed that perceived barriers and self-efficacy were worse in men than in women, so they should be given more attention in educational planning. Additionally, the results of our regression analysis showed that some demographic factors in men and women affected the 3 constructs of perceived benefits, barriers, and self-efficacy. There were also significant relationships between perceived barriers and self-efficacy in men and only perceived self-efficacy in women with blood pressure, with self-efficacy determined as a strong predictor of blood pressure in both genders. This finding indicates the significance of this construct and the need for a specific focus on improving it in patients to control blood pressure. Therefore, to draw better conclusions vis-à-vis patient education, planners should focus on these influencing factors in men and women. The findings of the present research can be used in designing and implementing educational programs aimed at more effective blood pressure control with emphasis on influential factors appropriate for each gender. We suggest further similar research in different geographical regions and cultures, as well as in other chronic diseases, with more detail and accuracy in women and men to achieve a more accurate and comprehensive understanding in this field.

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