Health Promoting Behaviors among Family Caregivers of Patients with Heart Failure

นิพนธ์ต้นฉบับ

Original Article

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วารสารไทยเภสัชศาสตร์และวิทยาการสุขภาพ2559;11(2):62-68.

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาความสัมพันธ์ระหว่างปัจจัยส่วนบุคคลที่คัดสรร การรับรู้ความสามารถของตนเอง การรับรู้ประโยชน์ของการปฏิบัติพฤติกรรมส่งเสริมสุขภาพ การรับรู้อุปสรรคของการปฏิบัติพฤติกรรมส่งเสริมสุขภาพ และความรู้สึกนึกคิดที่สัมพันธ์กับพฤติกรรมที่ปฏิบัติ กับพฤติกรรมส่งเสริมสุขภาพของญาติผู้ดูแลผู้ป่วยหัวใจล้มเหลว วิธีการศึกษา: การวิจัยครั้งนี้เป็นการวิจัยบรรยายเชิงความสัมพันธ์ ศึกษาในกลุ่มตัวอย่างคือ ญาติผู้ดูแลผู้ป่วยหัวใจล้มเหลว จำนวน 322 คน โดยกลุ่มตัวอย่างได้มาจากการเลือกตามคุณสมบัติที่กำหนด เครื่องมือที่ใช้ในการเก็บข้อมูลเป็นแบบสอบถามประกอบด้วย 6 ส่วน ได้แก่ 1) แบบสอบถามข้อมูลส่วนบุคคล 2) แบบสอบถามการรับรู้ความสามารถของตนเอง 3) แบบสอบถามการรับรู้ประโยชน์ของการปฏิบัติพฤติกรรมส่งเสริมสุขภาพ 4) แบบสอบถามการรับรู้อุปสรรคของการปฏิบัติพฤติกรรมส่งเสริมสุขภาพ 5) แบบสอบถามความรู้สึกนึกคิดที่สัมพันธ์กับพฤติกรรมที่ปฏิบัติ และ 6) แบบสอบถามพฤติกรรมส่งเสริมสุขภาพ ซึ่งแบบสอบถามผ่านการพิจารณาจากผู้ทรงคุณวุฒิ 3 คน และมีค่าความเชื่อมั่นของแบบสอบถาม 2 – 6 มากกว่า 0.80 ทุกฉบับ วิเคราะห์ข้อมูลโดยใช้สถิติบรรยายแสดงค่าร้อยละ ค่าเฉลี่ยและค่าเบี่ยงเบนมาตรฐาน สัมประสิทธิ์สหสัมพันธ์อีต้า และสหสัมพันธ์เพียร์สัน กำหนดระดับนัยสำคัญทางสถิติที่ **P** < 0.05 ผลการศึกษา: กลุ่มตัวอย่างส่วนใหญ่เป็นเพศหญิง อยู่ในวัยผู้ใหญ่ ระยะเวลาเป็นผู้ดูแลผู้ป่วยภาวะหัวใจล้มเหลว 1 - 4 ปี พบว่าปัจจัยส่วนบุคคลที่คัดสรรส่วนใหญ่และการรับรู้ประโยชน์ของการปฏิบัติพฤติกรรมส่งเสริมสุขภาพไม่สัมพันธ์กับพฤติกรรมส่งเสริมสุขภาพ ในขณะที่การรับรู้ความสามารถของตนเองและความรู้สึกนึกคิดที่สัมพันธ์กับพฤติกรรมที่ปฏิบัติมีความสัมพันธ์ทางบวกกับพฤติกรรมส่งเสริมสุขภาพของญาติผู้ดูแลผู้ป่วย ส่วนโรคประจำตัวและการรับรู้อุปสรรคของการปฏิบัติพฤติกรรมส่งเสริมสุขภาพมีความสัมพันธ์ทางลบกับพฤติกรรมการส่งเสริมสุขภาพของญาติผู้ดูแล สรุป: พฤติกรรมส่งเสริมสุขภาพของญาติผู้ดูแลผู้ป่วยสัมพันธ์ทางบวกกับการรับรู้ความสามารถของตนเองและความรู้สึกนึกคิดที่สัมพันธ์กับพฤติกรรม และสัมพันธ์ทางลบกับการรับรู้อุปสรรคของการปฏิบัติพฤติกรรมส่งเสริมสุขภาพ ข้อค้นพบนี้อาจใช้ชี้นำการส่งเสริมพฤติกรรมสุขภาพของญาติผู้ดูแลผู้ป่วยหัวใจล้มเหลว โดยเน้นส่งเสริมการรับรู้ความสามารถของตนเองในการปฏิบัติพฤติกรรมส่งเสริมสุขภาพของผู้ดูแล

คำสำคัญ: ญาติผู้ดูแล ผู้ป่วยภาวะหัวใจล้มเหลว พฤติกรรมส่งเสริมสุขภาพ

Abstract

Objective: To examine the associations between the health-promoting behaviors among family caregivers of the patients with heart failure and select personnel factors, perceived self-efficacy, perceived benefits of action, perceived barriers to action, and attitude towards action. Methods: This descriptive correlational study recruited a sample of 322 participants. The questionnaires included 1) the Personnel Data Questionnaire, 2) the Perceived Self-Efficacy Questionnaire, 3) the Perceived Benefits of Action Questionnaire, 4) the Perceived Barriers to Action Questionnaire, 5) the Attitude towards Action, and 6) the Health-Promoting Behavior Questionnaire were used for data collection. All parts of a questionnaire have been validated by three experts. The reliabilities of questionnaires parts 2 to 6 yielded a high internal consistency reliability with Cronbach's alpha coefficients greater than 0.80 in each part. Data were analyzed by using descriptive statistics, eta coefficient, and Pearson's product moment correlation coefficient, with **P** < 0.05 as a statistical significance level. Results: Most of the participants were female adults. They reported 1 – 4 years of caregiving experience. Most of the select personnel factors and perceived benefits of action were not associated with the health-promoting behaviors. Although perceived self-efficacy and attitude towards action were significantly positively associated with the health-promoting behaviors, their underlying diseases and perceived barriers to action were significantly negatively associated with the health-promoting behaviors. Conclusion: Health-promoting behaviors among caregivers of heart failure patients were positively associated with perceived self-efficacy and attitude towards action, and negatively related to perceived barriers to action. The findings could guide the intervention to enhance health-promoting behaviors among these caregivers by promoting their perceived self-efficacy to perform health-promoting behaviors.

Keywords: Family caregivers, patients with heart failure, health-promoting behaviors

Introduction

As an incurable chronic illness, heart failure greatly affects lives of the patients and their family members. About half of the patients with poor prognosis died within four years.[1,2] Those who survive face various physical limitations including physical labor and daily activity living. These limitations can be so severe that the heart failure patients do not adhere to the treatment plan[2-4], and this leads to increasing rates of mortality and hospitalization.[4] To alleviate the hospitalization incidents among patients with heart failure, strict care including medications, diet, fluid, exercise, and daily activity

living is needed to be in place.[2-5] As most heart failure patients are the elderly, their physical limitations call for a greater need of caregivers. There has been an increasing need for caregivers for heart failure patients world-wide.[6] In Thailand, the patients' family members, the people close to the patients, and the patients' significant others are considered family caregivers.[7] As informal caregivers without payment[7], these family caregivers sometimes spend as much as 16 – 24 hours a day taking care of heart failure patients.[8] Family caregivers are responsible for assisting the patients in daily activity living. They also monitor, advise, and take care of all aspects of the patients' well-being. Specifically, they observe and monitor for signs of heart failure exacerbation, and strict compliance to medication schedules and treatment plans.[9] Previous studies show that care and support from family caregivers help improve well-being and could lessen disease progression in patients with heart failure.[10] Therefore, it has been suggested that family caregivers' indispensable role has a great impact on the quality of life of the heart failure patients.[8-11] In addition, the unpredictable physical instability leads to unstable moods and affects, which make them need a high level of psychological and emotional support.[12,13] Therefore, family caregivers are affected by inevitably facing unpredictable exacerbation of heart failure and the patient's emotional instability that comes along with it.[14,15]

As a consequence of taking care of heart failure patients, a previous study reported that family caregivers encountered a considerably high level of emotional stress and pressure. The closer the patient, the more stress and pressure.[16] The more dedication in taking care of heart failure patients causes less self-care of the family caregivers. As a consequence, the physical health of family caregivers deteriorates and illnesses such as hypertension and other cardiovascular diseases develop. In addition, since their immune status is defected, the family caregivers face higher risks of mood disorders, cardiovascular disorders, and cancers.[15,17-19] The family caregivers of patients with heart failure therefore deserve attention as much as the patients from healthcare providers. Health promoting behavior among these family caregivers should be more understood to provide them better health care and support.

According to Pender's health promotion model,[20] health-promoting behaviors involve various factors. As guided by the model, family caregivers would perform health-promoting behaviors such as taking appropriate physical activity, stress management techniques, diet control, and exercise, if they perceive their efficacy that they can organize and execute each of these particular health behaviors successfully. In addition to perceived self-efficacy, health-promoting behaviors are related to perceived benefits of action and perceived barriers to action. The more the perceived benefits of action, which are perceptions on the positive consequences of undertaking a health behavior, the more likely the health-promoting behavior is performed. On the other hand, the more perceived barriers to action which refer to perceptions of the blocks, hurdles, and personal costs of undertaking a health behavior, the less likely the health-promoting behavior is carried out.[18,20]

There has been a lack in research in health-promoting behaviors among family caregivers of the patients with heart failure either worldwide or in Thailand. Previous studies emphasized the importance of the family caregiver's roles and responsibilities to the patients and the impact on the caregivers, but not health-promoting behaviors of the caregivers. We expected that if the family caregivers had appropriate health-promoting behaviors, their physical and mental health could be strengthened and further ready for coping with problems in taking care of the heart failure patients and other problems in their lives. This pointed to the need to explore health promoting behaviors of the family caregivers of heart failure patients. The findings could be used as the basic information to develop competencies and health-promoting behaviors in the context specific to the heart failure family care. Ultimately, mental health and well-being of the family caregivers of the patients with heart failure could be strengthened, and the care for their patients could in turn be much more effective.

With the purposes mentioned above, specific objectives of this study were 1) to determine relevant health-promoting behaviors of the family caregivers of the patients with heart failure including 6 dimensions: perceived self-worth, health responsibility, physical activity, nutrition, quality of interpersonal relationship, and stress management, and 2) to examine the associations between health-promoting behaviors and select personal characteristics (gender, age, marital status, relationship with the patient, educational level, illness, experience in years of taking care of the patient),

perceived self-efficacy, perceived benefits of action, perceived barriers to action, and attitude towards action. As for a descriptive correlational study purpose, we hypothesized that health-promoting behaviors were related to select personal characteristics (gender, age, marital status, relationship with the patient, educational level, illness, and experience in years in taking of the patient), perceived self-efficacy, perceived benefits of action, perceived barriers to action, and attitude towards action.

Methods

In this descriptive correlational research, study population was family caregivers of the heart failure patients receiving care at the medicine clinic or hospitalized in medicine wards in a university hospital in the central region of Thailand. The family caregiver was defined as an individual or relative who was significant to the patient, living together, and taking care of the patient for at least 4 days per week and at least an hour for each time. They did not receive any forms of payment or rewards for providing care to the patient.

Since the size of the number of family caregivers of the patients with heart failures was not known, we estimated the sample size based on the formula of Cochran[19] with a confidence level of 0.05, and a low-to-moderate estimated proportion of all caregivers that was presented in the population of 0.30. As a result, 322 family caregivers of heart failure patients were needed. They were recruited by the convenience sampling method from July 2015 to September 2015.

The study was approved by the Ethic Committee for Human Research of Srinakharinwirot University (Approval number SWUEC/E-057/2558, Issue date: April 1, 2015 to April 1, 2016). Participants were caregivers of heart failure patients who met the study inclusion criteria and agreed to participate. We informed the participants about their right to withdraw at any time from the study without any drawbacks on the care their patients received. With a voluntary nature of the participation, we asked those willing to participate to sign an informed consent form. We asked the participants to answer a set of questionnaire which took about 45 - 60 minutes to complete.

Research instruments

The data collection tool was a questionnaire consisting of 6 parts. This tool was developed from the information gained from literature review and questionnaires developed in previous researches.[20-22] The first part of a questionnaire was the personal information questionnaire created by the researchers to obtain the participant's demographic characteristics including gender, age, marital status, relationship with the patient, educational level, the illness, experience in taking care of the heart failure patient (as a number of years). The second part of the tool was the Perceived Self-efficacy questionnaire consisting of 33 items asking how much the participant was confident in each aspect of taking care of the patient. The response was a 4-point Likert-type scale ranging from 1-disagree to 4-highly agree. With a possible range of the total score of 33 to 132, a higher total score indicates a higher level of perceived self-efficacy. The third one was the Perceived Benefits of Action questionnaire which consisted of 33 items asking how much they agreed on the perceived benefit of performing each health behavior. The response was a 4-point Likert-type scale ranging from 1-disagree to 4-highly agree. The interpretation of the total score was identical to that of the Perceived Self-efficacy questionnaire. The fourth tool was the Perceived Barriers to Action questionnaire which was also a set of 33 questions asking how much they agreed on perceived barrier to each behavior. With a response of a 4-point Likert-type scale ranging from 1-disagree to 4-highly agree, its total score was 33 to 132 where a higher score indicates a higher level of perceived barriers. The fifth tool was the Attitude towards Action Questionnaire which consisted of 33 questions asking how much they agreed on perceived positive attitude towards each behavior. With a response of a 4-point Likert-type scale ranging from 1-disagree to 4-highly agree, its total score was 33 to 132 where a higher score indicates a higher level of positive perceived attitudes. Finally, the Health-Promoting Behaviors questionnaire was a set of 33 items asking how much they performed each health behavior. These items were classified into 6 aspects including perceived self-worth (for example, I always take care of my health very well, therefore, I have never been hospitalized), health responsibility (for example, I always follow news on health via various media), physical activity (for example, I take an exercise as recommended by physicians), nutrition (for example, I have breakfast on time), quality of interpersonal relationship (for example, I can have a consultation with health care providers

whenever I need), and stress management (for example, when I feel uncomfortable, I can leave for relaxation). With a response of a 4-point Likert-type scale ranging from 1-disagree to 4-highly agree, its total score was 33 to 132 where a higher score indicates a higher level of health-promoting behaviors. The total score of each of the second to sixth part of questionnaires was also categorized into low (33.00 – 57.75), moderate (57.76 – 82.50), high (82.51 – 107.25), and very high (107.26 – 132.00). In addition to these rating scale questionnaires, open-ended questions were also provided for the participants to express additional opinions, if any.

In terms of quality of the tool, the second to sixth parts were adapted from previous research.[21-22] These five questionnaires altogether were found to have a high level of internal consistency reliability (Cronbach's alpha coefficients of 0.84, 0.95, 0.93, 0.97, and 0.93, respectively). In this research, we also had the questionnaire examined for content validity by the three experts including two nursing faculty members, and a university instructor in health behavior. Once improved upon the experts' suggestions, the questionnaires were tested for internal consistency reliability using 30 subjects comparable to the actual participants. It was found that the questionnaire had high levels of reliability with Cronbach's alpha coefficients[19] of 0.85, 0.90, 0.88, 0.90 and 0.88 for the Perceived Self-efficacy questionnaire, the Perceived Benefits of Action questionnaire, the Perceived Barriers to Action questionnaire, the Attitude towards Action questionnaire and the Health-Promoting Behavior questionnaire, respectively.

Data collection procedure

Data collection using a questionnaire was carried out after the project was approved by the Ethic Committee for Human Research of Srinakharinwirot University. The potential participants were informed about the objective, procedure and benefit of this study. To maintain confidentiality and privacy of the participants, anonymity was present. Moreover, all participants perceived they could withdraw at any time. Participants who could read and write completed the questionnaire by themselves. The researcher read the questionnaire to those who needed help.

Statistical analysis

For select demographic variables, frequency, percent, range, and mean with standard deviation were calculated as appropriate. For the perceived self-efficacy, perceived benefits of action, perceived barriers to action, attitude towards action, and health-promoting behavior, their scores were calculated and presented as mean with standard deviation.

To test the association between the caregiver's health-promoting behaviors and selected nominal personal factors including the participant's gender, marital status, relationship with the patient, and their illness, eta correlation coefficient (η) was calculated. To examine the association between the caregiver's health-promoting behaviors and select continuous variables including the participant's age, years of caregiving experience, perceived self-efficacy, perceived benefits of action, perceived barriers to action, and attitude towards action, Pearson's product moment correlation coefficient was calculated. Statistical significance for all tests was set at a type I error of 5%.[19]

Results

Of the 322 participants, all completed the questionnaire (100% response rate). The majority of the participants was women (73.3%), with an average age of 47.8 $\pm$ 11.9 years (range of 21 - 69 years), having high-school education or equivalent (64.3%), married (79.5%), having no diagnosed illness (39.7%), and son or daughter of the patient (50.6%). Smaller proportions of the participants were spouse (23.3%), and sibling (18.3%) of the patient. Finally, about 7.8% reported they were taking care of their spouse's parent. They had been taking care of the patient from 1 to 4 years with an average of 2.67 $\pm$ 0.97 years. Most of them reported that they took care of the patient in every aspect (Table 1).

It was found that perceived self-efficacy, perceived barriers to action, attitude towards action, and health-promoting behavior of the caregivers of heart failure patients were in a moderate level (M = 79.7 $\pm$ 15.6, 80.8 $\pm$ 14.6, 64.0 $\pm$ 18.6 and 63.2 $\pm$ 18.3, respectively) while perceived benefits of action was in a high level (M = 87.0 $\pm$ 15.1) (Table 2). In addition, they reported that the most important barrier to health-promoting behaviors was unavailable since they spent a large amount of time taking care of the patient. They reported spending about 16 to 20 hours daily.

Table 1 Demographic characteristics of the caregivers (N = 322).

Demographic Characteristics	Number	%
Gender		
Female	236	73.3
Male	86	26.7
Age (yrs) M =47.8 ± 11.9		
21 – 30	22	6.8
31 – 40	62	19.3
41 – 50	114	35.4
51 – 60	70	26.7
> 60	54	16.8
The participant's Illness		
No illness	128	39.7
At least 1 illness	102	31.7
- Cardiovascular disease	51	50.0
- Gastrointestinal disease	22	21.6
- Diabetes	18	17.6
- Osteoarthritis	6	5.9
- Respiratory disease	5	4.9
More than 1 illness	92	28.6
Education level		
Elementary school	35	10.8
High-school or equivalent	207	64.3
Bachelor's degree	76	23.6
Master degree	4	1.3
Marriage status		
Marital status		
Single/separate	66	20.5
Married	256	79.5
Relationship with the patient		
Son or daughter	163	50.6
Spouse	75	23.3
Sibling	59	18.3
Spouse's parent	25	7.8
Experience as a caregiver M = 2.67 ± 0.97 years		
1 year	41	12.7
1 - 2 years	96	29.8
2 - 3 years	104	32.3
3 - 4 years	81	25.2

Table 2 Scores of health behavior related opinions from the caregivers of heart failure patient as mean and standard deviation and level of the opinions (N = 322).

Health behavior related opinions	Score (Mean ± SD)	Level of the opinion
perceived self-efficacy	79.7 ± 15.6	Moderate
perceived benefits of action	87.0 ± 15.1	High
perceived barriers to action	80.8 ± 14.6	Moderate
attitude towards action	64.0 ± 18.6	Moderate
health-promoting behavior	63.2 ± 18.3	Moderate

In terms of health-promoting behaviors, quality of interpersonal relationship was in a high level (M = 83.5 ± 16.1), while physical activity, nutrition, and perceived self-worth was in a moderate level (M = 80.0 ± 14.1, 69.4 ± 18.6 and 74.3 ± 17.3, respectively). The two aspects that were in a low level were health responsibility and stress management (M = 52.6 ± 18.4 and 47.3 ± 16.3, respectively). As a result, the overall health-promoting behavior score was in a moderate level (M = 63.2 ± 18.3).

In addition to the numeric results of the health-promoting behaviors, taking care of the patient was perceived as exercise because they constantly moved their body. As for health responsibility, caregivers with illness reported forgetting taking their medications because they put the patient's needs first. Only five of them reported taking their medications with the patients. So their medications were rarely missed. However, they usually missed their follow-up appointment with the doctors. Hence they bought medications from drug stores and their medications were out of supply more frequently. It was also found that 1.55% of these caregivers reported they were hospitalized for hypertension, food poisoning, indigestion, and dengue fever.

The associations between health-promoting behaviors and select factors (age, gender, marital status, relationship with the patient, illness, education level, and caregiving experience in years), perceived self-efficacy, perceived benefits of action, perceived barriers to action, and attitude towards action are as follows (Table 3). It was found that illness, perceived self-efficacy, perceived barriers to action,

Table 3 Correlations between health-promoting behavior and select factors among caregivers of heart failure patients (N = 322).

Factors	Correlation with health-promoting behavior		
	r	r_η	**P**-value
Selected personal factors			
Gender		-.09	.08
Marital status		.09	.10
Illness		-.12	.03
Relationship with the patient		.08	.14
Age	.07		.18
Education level	.02		.68
Experience as a caregiver	-.08		.15
Perceived self-efficacy	.15		.007
Perceived benefits of action	.09		.11
Perceived barriers to action	-.12		.033
Attitude towards action	.11		.047

Note: r = Pearson's correlation coefficient; r_η = eta correlation coefficient

and attitude towards action were significantly associated with health-promoting behavior at a **P** < 0.05. Illness and perceived barriers to action were negatively related to health-promoting behavior of the caregivers with statistical significance (r = -0.12, **P** = 0.03 and r = -0.12, **P** = 0.033, respectively). Perceived self-efficacy and attitude towards action were significantly positively related to health-promoting behavior (r

= 0.15, **P** = 0.007 and r = 0.11, **P** = 0.047, respectively) (Table 3). In addition, perceived self-efficacy was significantly positively associated with perceived benefits of action (**P** = 0.001).

Discussion and Conclusions

Our study found that illness was negatively related to health-promoting behaviors of the caregivers of heart failure patients. Among these caregivers, more than 50% of them had at least one illness. These illnesses were chronic in nature and needed continuous care. However, these caregivers paid little attention to take care of themselves, but much more attention to the patients. This was because heart failure is a severe illness with unpredictable exacerbation, unstable symptom and poor prognosis.[1-5] This reality led to our finding that these caregivers spent 16 to 20 hours daily taking care of the patient. This devotion to their most beloved one left caregivers less time for their own health-promoting behaviors. These included missing the medication schedule, taking medications late, missing follow-up appointment, and having less time to prepare themselves appropriate diet and to engage in physical activity. This resulted in a moderate level of physical activity and nutrition aspect of health-promoting behaviors. This finding was consistent with previous studies where caregivers had less time for themselves if the patients had unstable diseases with poor prognosis. These caregivers also faced more stress and pressure caused by fear. This sometimes led caregivers to depression eventually.[8,23,24] This is consistent with our findings that caregivers perceived the benefit of health-promoting behavior but could not perform the behaviors. The inability to perform the health-promoting behaviors led to a low score in health responsibility and stress management.

Our findings showed that since some of the caregivers were spouse of the patient, this left the caregivers no one to turn to for family help and support. They were also stressed out because of their loved one's illness. However, we found no association between health-promoting behavior and marital status. This finding was different from previous studies which found that being married and having extended family were associated with better caregiver's health behavior.[23,24]

Our results showed that perceived benefits of action was in a high level but not associated with health-promoting behaviors. Meanwhile perceived barriers to action was at a moderate level, and negatively associated with health-promoting behaviors. This could be attributable to the special relationship between the caregiver and the patient. Since patients were either the parent or spouse of the caregivers, their bonds were strong.[16] Even though perceived benefits of health-promoting behaviors was at a high level, they did not perform such health-promoting behaviors even though they perceived the benefit. This could be due to the fact that the strong bond led them to the devotion for the patient. They keep a constant eye on the patient for a fear of any mishap. They hardly had time for their own deeds. From a long experience in taking care of the patient, they had learned and recognized the unpredictable nature of heart failure exacerbation.[1-5] This explanation was consistent with our finding that caregivers spent more than 16 hours daily to take care of the patient. A previous study showed that heart failure patients needed as much as three-fold of the time to take care of them, compared to patients with other heart diseases.[4]

In addition, we found that most caregivers finished high-school. Their knowledge about heart failure could have been insufficient to make a rational decision when to temporarily leave the patient alone. As a result, they decided to keep the patient insight at most of the time. The caregivers chose to miss taking care of themselves including missing the follow-up appointment with physician and not having their prescriptions filled. Therefore, their score of health-promoting behavior was at a lower moderate level. This could be a reason for a negative relation between perceived barriers to action and health-promoting behavior.[25]

On the other hand, a positive relationship could be explained as followed. Because of their adulthood and a long caregiving experience of more than 2 years on average, the caregivers could have learned the poor prognosis of heart failure and learned how they could have promoted better behavior in health. Moreover, the participants took care of their loved one in all aspects of life, more than 16 hours per day. This experience could have enhanced the caregiver's self-efficacy to promote their own health. Based on this evidence, although more than 50% of the caregivers were diagnosed with illness, only 1.55 % of them were hospitalized. Therefore, it is not surprising that perceived self-efficacy and attitude towards action were significantly positively related to health-promoting behaviors. This finding was congruent with previous studies.[20, 26]

In conclusion, the findings of this study have implications for health care providers' practice and research. Based upon these findings as guidelines for enhancing health-promoting behaviors, health care providers should focus on promoting the caregivers' perceived self-efficacy and attitude towards action in order to perform health-promoting behaviors. As for further research, health promotion program for caregivers' patients with heart failure should be conducted in order to encourage their well-being.

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