

Original Article

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Study of COVID-19 Protective Behaviors Based on the Precaution Adoption Process Model PAPM in Women (Marivan, Iran)

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Abstract

Background & Aims: people's responsibility for protection behaviors against COVID-19 has a vital role in stopping chaining of transmission and, Adherence to preventive measures can be affected by psychosocial factors. The aim of this study was to investigate the survey of corona protection behaviors based on the precaution adoption process model (PAPM) in women referred to Marivan health centers in 2021, Iran.

Materials and Methods: This descriptive (cross-sectional) study, were carried out between 380 women referring to health centers in Marivan in 2021. The samples were selected by the random cluster sampling method. The research tool was a researcher-made questionnaire consisting of two parts of demographic information and the construct of PAPM.

Results: Results showed that people in the fifth and sixth stages of the model obtained higher scores in the model construct and the second and fourth stages of the model received the lowest scores.

Conclusion: Uniform education for the general public may not have the expected results for protective behaviors and prevention of diseases, so education should be based on step-by-step models of health education and variables affecting individual decisions. **Keywords:** COVID-19, Protective, Behavior, Women

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1. Introduction

The World Health Organization announced the new coronavirus as a public health emergency with international concern (PHEIC) On January 30, 2020. On February 11 of that year, the World Health Organization officially named the disease the coronavirus disease (COVID-19) [1]. The reason for the importance and necessity of preventing the spread of COVID-19 right now is that, coronavirus has a high transmission power compared to SARS and Middle East respiratory syndrome coronavirus (MERS-CoV) and has unique properties [2], which makes it much more difficult to control and treat people than previous coronaviruses. Identifying ways of transmitting the virus plays an important role in controlling it. COVID-19 is transmitted through droplets, coughing, sneezing, touching things and surfaces [3].

Coronavirus can be transmitted through coughing a from one to two meters. In this study, two essential strategies are to reduce the risk of COVID-19, the first is to take preventive activities, and the second is to adopt an active lifestyle. Prevention strategies that are widely accepted in the world includes of: proceedings of personal protection, social distance, personal hygiene, and cleaning the environment [4]. Collections of preventive behaviors are recommended to minimize the risk of COVID-19 infection in the general population [5]. Teymouri et al. indicated that among the preventive behaviors, hand washing regularly with soap and water (54.8%) and using a mask when leaving the house at all times (46%) were the most common preventive behaviors [6]. Planning and preparing for the COVID-19 crisis is a national and international necessity and adoption of preventive behaviors at the community level to control the COVID-19 epidemic should be given special attention by policymakers and health officials [7]. Due to the lack of standard treatment and effective vaccine for new coronavirus, the best way is to prevent the spread of infection and use effective public education for prevention [8].

The aim of the models in health education is to increase awareness, change people's attitudes, and help them to change their behavior. From these models, the stage of change theory is one of the most important theoretical frameworks that are helpful in assessing an individual's readiness to act on healthy behavior. This theory acknowledges that people are different in their readiness



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to accept new behaviors. The precaution adoption process model (PAPM) is a model of health education and health promotion that can affect psychological variables such as awareness, perceived severity, perceived sensitivity, perceived benefits, perceived barriers, perceived selfefficacy, and social norms.

The PAPM attempts to explain how a person makes his decision and how he makes this decision a practice. The adopting of a new precaution or cessation of a risky behavior requires deliberate steps unlikely to occur outside of conscious awareness. The PAPM a stage-based model and has seven stages as follows: Stage 1 unaware of issue, stage 2 unengaged by issue, stage 3 deciding about action, stage 4 decided not to act, stage 5 deciding to act, stage 6 acting, stage 7 maintenance [9]. It should be noted that this model has been used to adopt behaviors such as Pap smear [10], prevention of osteoporosis and many other cases [11]. Stage models are characterized by the fact that people move through a sequence of different stages qualitatively, which means that it is assumed that people in various phases are other in terms of importance and relevant factors. This means that people at different stages are supposed to be different regarding important and relevant factors. In other words, the state of changes between stage I and stage II were different with between stage II and stage III. As a result, individuals in the various stages of change derive the most benefit from interventions that conform to these stages-specific factors for stage transition [12]. According to Carico and colleagues' study, preventive behaviors against corona disease (for example, using a mask, washing hands regularly with soap and water, social distance and staying at home, etc) is considered the only way to fight against coronavirus [13]. But according to Mphande's study, despite the existence of preventive actions, most people are still severely affected by the corona disease [14]. At present, due to the adverse effects of corona disease on people's lives and the fear of getting the disease and the existence of few studies on the Predictor factors of the disease that have the most significant impact on having or not having the disease, Therefore, this study aims to use a PAPM, which is one of the educational and health promotion models, to predict corona disease protection behaviors in women referring to health centers in Marivan in 2021.

2. Methods

This study is a descriptive (cross-sectional) study, whose statistical population was women referring to health centers in Marivan in 2021. Assuming 50% knowledge and 5% accuracy and Cochran's formula, the sample size was determined to be 380 people, which was a random cluster sampling method. Thus, according to the population, first, a quota was given to each of the health centers and then samples were randomly selected from the women referring to each of the health centers. The inclusion criteria were women referring to comprehensive health centers in Marivan in 2021 and exclusion criteria were unwilling to participate in research or incomplete completion of questionnaires. The data collection tool was the use of two questionnaires.

In the first, demographic information (age, level of education, place of residence, marital status and economic status) was collected and the second questionnaire made by the researcher, included 42 questions related to the model and its structures, including model stages (5 questions), individual awareness (10 questions) (yes, no and I do not know), perceived sensitivity (5 questions), perceived intensity (8 questions), Perceived benefits (4 questions), perceived barriers (5 questions) and perceived social norms (5 questions) In which psychological variables affect the stages of passing the model of the process of the precaution adoption process and also how each person is placed in each of the stages of the model and the answers to each question based on the Likert scale from (strongly agree score 1, agree score 2, Neutral score 3, disagree score 4 and strongly disagree score 5). The range of high and low scores was in awareness (0-14), sensitivity (6-30), intensity (25-5), benefits (4-24), barriers (8-40), and social norms (5-25). Specified, For the validity of the questionnaire, the opinion of 7 experts was evaluated using the index of Lawshe table in all items, the calculated values of content validity ratio (CVR) higher than 85.8 and content validity index (CVI) values higher than 0.8 was obtained and for internal reliability of the questionnaire, 30 questionnaires were completed as a pilot and using Cronbach's alpha test and Cronbach's alpha coefficient was determined 0.72. This model included seven stages and due to all participants having heard the name of corona disease, and maintenance and continuity of behavior in this study was not considered, therefore the first and seventh stage was excluded from the study.

In order to collect the desired information, after coordination with the Marivan Health Network, according to the quota set for each health center, mothers were randomly selected on different days of the week. After explaining the objectives of the study and gaining their satisfaction in such a way that the participants were assured that the answers to the questions of the questionnaire were wholly confidential and a numeric code will be given to each person entering the data. The questionnaire was completed by the interview method, Then the collected data were analyzed using SPSS version 22 software and descriptive statistics (absolute and relative frequency, mean and standard deviation).

3. Results

Out of 380 women participating in the study, 52.1% lived in rural areas and 47.9% lived in urban areas. The mean age of the studied women was 32.0 ± 7 7.0 years with a range (20-55), 73.2% housewives and 67% had a university

education, 33.9% were single and 58.4% were childless, and 32.6% had an excelent economic status (Table 1).

In terms of awareness, women who were in the sixth stage of the model or doing corona protection methods received the highest score (8.5 ± 1.1 out of 14 points) and women who received the lowest score in the fourth stage of the model or the decision not to do corona protection methods with a score of 6.6 ± 1.9 (Table 2).

In terms of perceived sensitivity, women who were in the second stage of the model or not thinking about corona protection methods received the lowest score $(14.6 \pm 1 \text{ out of } 30 \text{ points})$ and women who were in the sixth stage of the model or doing corona protection methods with a 19.8 ± 1.7 scored, obtained the highest score (Table 3).

In terms of perceived severity, women who were in the second stage of the model or did not think about corona protection methods received the lowest score (12.4 ± 2.4 out of 25 points) And women who were in the sixth stage of the model or doing corona protection methods with a 17.7 ± 0.5 scored, obtained the highest score (Table 4).

In terms of perceived benefits, women who were in the fourth stage of the model or decided not to do corona protection procedures received the lowest score (9.0 ± 2.5 out of 20 points) And women who were in the sixth stage of the model or doing corona protection methods with an 11.4 ± 1.9 scored, obtained the highest score (Table 5).

In terms of perceived barriers, women who were in the second stage of the model or did not think about corona protection methods received the highest score with a $(29.0\pm2.9 \text{ out of } 40 \text{ points})$ And women who were in the sixth stage of the model or doing corona protection methods with a 21.9 ± 2.9 scored, obtained the lowest score (Table 6).

In terms of social norms, women who were in the sixth stage of the model or doing corona protection methods obtained the highest score $(15.9 \pm 4 \ 1.4 \ out \ of \ 25 \ points$ (Table 7).

4. Discussion

The aim of this study was to investigate the state of

 $\label{eq:table_table_table_table} \ensuremath{\textbf{Table 1.}}\xspace{1.5mm} \ensuremath{\textbf{Frequency}}\xspace{1.5mm} \ensuremath{\textbf{studied}}\xspace{1.5mm} \ensuremath{\textbf{studied}}\xspace$

Variable		Number	Percent
11-1-2-4	Urban	182	47.9
Habitat	Rural	198	52.1
Occupation	Housewife	278	73.2
Occupation	Practitioner	102	26.8
Education	Diploma and less	126	32.2
Education	Collegiate	254	67.8
	Single	129	33.9
Marital status	Married	251	66.1
	No children	242	60
Number of children	Have children	158	40
	Up	124	32.6
The economic	Intermediate	245	64.5
	Low	11	2.9

Table 2. The average score of Awareness in the women studied based on the precaution adoption process model

Model structures	Stage	Number	Mean and standard deviation
Awareness, Score range (0-14)	Not thinking about corona protection methods	24	6.7 ± 1.7
	Decided to do or not to do corona protection methods	140	6.8 ± 1.5
	Decided not to do corona protection methods	107	6.6 ± 1.9
	Decided to do corona protection methods	96	6.9 ± 1.7
	Doing corona protection methods	13	8.5 ± 1.1

Table 3. The average score of perceived sensitivity in the women studied based on the precaution adoption process model

Model structures	Stage	Number	Mean and standard deviation
Perceived sensitivity, Score range (6-30)	Not thinking about corona protection methods	24	14.6±1
	Decided to do or not to do corona protection methods	140	15.4 ± 2.6
	Decided not to do corona protection methods	107	15.7±3.3
	Decided to do corona protection methods	96	18.5 ± 3.5
	Doing corona protection methods	13	19.8 ± 1.7

Table 4. The average score of perceived severity in the women studied based on the precaution adoption process model

Model structures	Stage	Number	Mean and standard deviation
perceived severity Score Range (5-25)	Not thinking about corona protection methods	24	12.4 ± 2.4
	Decided to do or not to do corona protection methods	140	12.9 ± 3.2
	Decided not to do corona protection methods	107	13.4 ± 3.1
	Decided to do corona protection methods	96	14 ± 2.2
	doing corona protection methods	13	17.7±.5

Table 5.	The average score of	perceived benefits in	the women studied based	on the precaution ad	option process model
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Model structures	Stage	Number	Mean and standard deviation
Perceived benefits, score range (4-20)	Not thinking about corona protection methods	24	9.3 ± 5
	Decided to do or not to do corona protection methods	140	9 ± 2.5
	Decided not to do corona protection methods	107	9.2 ± 2.5
	Decided to do corona protection methods	96	10.1 ± 2.4
	Doing corona protection methods	13	11.4±1.9

Table 6. The average score of perceived barriers in the women studied based on the precaution adoption process model

Model structures	Stage	Number	Mean and standard deviation
Perceived barriers, score range (8-40)	Not thinking about corona protection methods	24	29 ± 2.9
	Decided to do or not to do corona protection methods	140	27.6 ± 4.9
	Decided not to do corona protection methods	107	25.5 ± 4.9
	Decided to do corona protection methods	96	24.5 ± 3.9
	Doing corona protection methods	13	21.9 ± 2.9

Table 7. The average score of perceived social norms in the women studied based on the precaution adoption process model

Model structures	Stage	Number	Mean and standard deviation
Perceived social norms, score range (5-25)	Not thinking about corona protection methods	24	12.5 ± 4.6
	Decided to do or not to do corona protection methods	140	12.4 ± 2.7
	Decided not to do corona protection methods	107	12.5 ± 2.8
	Decided to do corona protection methods	96	12.8 ± 3.3
	Doing corona protection methods	13	15.9 ± 1.4

coronavirus disease protection behaviors based on the PAPM in women referring to health centers in Marivan in 2021. The modeling stages was conducted according to: 24 person in the second stage (not thinking about corona protection methods), 140 person in the third stage (decision to do or not to do corona protection methods), 107 person in the fourth stage (decision not to do corona protection methods), 96 person in the fifth stage (decision to do corona protection methods) 13 person in the sixth stage (doing corona protection methods). According to the results, 3.5% of the participants used corona protection methods and about 35% of the participants did not believe in corona protection methods and did not even think about the disease. Considering that more than a year has passed since the spread of the corona disease among people, this caution and non-observance of protective methods is spreading. In this regard, psychological studies have shown that human behavior in exposure to stressors in the long run or exposure to stressors of ambiguous nature is different compared to sudden or short-term stressors and humans in longterm stress may Towards fatigue and apathy or increasing anxiety [15]. Another concept is the long-term impact of bad news on human beings, which is likely to cause indifference over time, so that the person is indifferent to what has happened around her and gradually reduces the reaction to various issues and topics in that area. However, it should be noted that indifference to any event will have many consequences such a loss of sense of responsibility in society for various events [16].

In this study in terms of awareness, women who were in the sixth stage of the model (doing corona protection methods) with a score of 8.5 ± 1.1 out of 14 scores obtained the highest score and women who were in the fourth stage of the model (Decided not to do corona protection methods) and the second stage of the model (not thinking about corona protection methods) with a score of 6.6 ± 1.9 and 6.7 ± 1.7 received the lowest score. This is in conformity with a study conducted in Myanmar, in this study the reason for the low protective behaviors against coronavirus disease was the low level of public awareness [17]. In another study conducted on 240 medical students in Iran, only 5.8% of participants scored lower on preventive behaviors and the study, researchers cited the level of literacy and greater awareness of the group as one of the reasons for this [18]. Therefore, increasing public awareness can lead to more protective behaviors against with coronavirus disease and more serious planning in this area especially by politicians should be done.

In this study, people who were in the second stage of the model (not thinking about corona protection methods) had the lowest perceived sensitivity (14.6 ± 1.01) in contrast, people in the sixth stage of the model (doing protection methods in corona) had the highest perceived sensitivity (19.8 ± 1.7) .

Clark et al showed that the higher perceived sensitivity

was due to an increased protective behaviors, and vice versa [19]. These results are consistent with the findings of this study. The high level of perceived sensitivity in people indicates that they believe that the risk of disease is high.

In the present study, people who were in the sixth stage (doing corona protection methods) and the fifth stage of the model (deciding to do corona protection methods) were 17.7 ± 0.5 , 14 ± 2.2 had the highest perceived severity and people, who in the second stage of the model (not thinking about corona protection methods) had the lowest perceived severity of 12.4 ± 2.4 . In general, the perceived severity by people in this study was moderate, which in similar studies in other parts of the world was perceived as high [20, 21]. Perhaps the reason for the perceived severity moderate of the subjects in this study is the perception that the disease is similar to the common cold, and given that many people are asymptomatic, as a result, they did not consider the disease severity and understanding of the disease's complications was moderate.

Regarding the perceived benefits reported by individuals in the sixth and fifth stages of the model, they obtained the highest score of 10.1 ± 2.4 and 11.4 ± 1.9 respectively. On the other hand, those in the third and fourth stages of the model obtained the lowest score of 9.2 ± 2.5 and 9.0 ± 2.5 respectively. The high perceived benefits represent the increased understanding of the benefits of doing preventative behaviors for coronavirus disease, which can be achieved through extensive information through national and social media, with the description that the only way to overcome the disease observance of personal hygiene is to the extent that it prevents disease.

In the present study, people who were on the second stage of the model had the highest (29 ± 2.9) and people who were in the sixth stage of the model had the lowest perceived barriers of 21.9 ± 2.9 . Perceived barriers are one of the most essential construct with the power to predict a behavior, so that fewer people understand the risk of a disease, the perceived barriers increase [22]. It should be noted that the low perceived barriers are a privilege because people believe that they face fewer barriers in adopting preventive behaviors and have fewer problems in this way, also the costs of doing the behavior, so it is possible to reduce the barriers to doing the behavior as such as doing a series of interventions and anticipating appropriate policies.

In this study, regarding the perceived social norms, the highest score was related to the sixth stage of the 15.9 ± 1.4 model and the lowest score was related to the third stage of the model 12.4 ± 2.7 . Positive feedback from close friends can play an important role in the health and performance of individuals and can be effective in reducing stress and increasing satisfaction in life [21]. In a study conducted by de Vet et al. in increasing the absorption of fruit based on the PAPM, the results of the study emphasized the

importance of perceived social norms in performing the operation and introduced one of the influential factors [12]. The limitation of this study includes a lack of motivation for participants. Therefore, it is suggested that future researchers will also be considered stimulating resources.

5. Conclusion

The findings can help health policy makers to find the right to facilitate people's participation in preventive behaviors related to the coronavirus disease, and it would be beneficial to use educational models such as the PAPM, which most people associate with the decision-making process in higher education. Also, in the preparation, compilation and implementation of educational programs, factors such as increased sensitivity and perceived awareness should be addressed, and facilities should be provided to facilitate or remove obstacles to preventive behaviors related to the corona disease as much as possible.

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Authors' Contributions

Conceptualization: Afshin Bahmani. Data Curation: Narges Ahmadipour. Formal Analysis: Fardin Gharibi. Funding Acquisition: Afshin Bahmani. Investigation: Afshin Bahmani. Methodology: Afshin Bahmani. Project Administration: Afshin Bahmani. Resources: Narges Ahmadipour. Supervision: Afshin Bahmani. Validation: Parvaneh Taymoori. Visualization: Parvaneh Taymoori. Writing—original draft: Narges Ahmadipour. Writing—review & editing: Parvaneh Taymoori, Afshin Bahmani.

Competing Interests

The researchers have not reported any conflict of interest in this article.

Ethical Approval

This article was derived from a research project approved by the Research and Technology Deputy of Kurdistan University of Medical Sciences under the code of IR.MUK.REC.1400.129.

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