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Is Strengths, Weaknesses, Opportunities, and Threats Analysis Effective in Preventing and Controlling Coronavirus Disease-19? A qualitative study

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Abstract

Background: Coronavirus disease-19 (COVID-19) management requires continuous monitoring and evaluation based on various methods and models. This study aimed to evaluate the effectiveness of the strengths, weaknesses, opportunities, and threats (SWOT) analysis in preventing and controlling the COVID-19.

Methods: This study was conducted using directed qualitative content analysis. A total of 15 participants, including 9 patients with COVID-19, a physician, a pharmacist, the head of the department of infectious diseases, a hospital manager, a nurse, and the head of a health center were selected through purposive sampling from May to July 2020. Data were collected using semi-structured interviews, each lasting 45 to 60 minutes and analyzed using Graneheim and Lundman's qualitative content analysis method.

Results: The analysis of the data revealed four main categories including the strengths (use of various media, supporting ideals), weaknesses) low understanding of disease risk, lack of vaccines, lack of appropriate tele-education and tele-medicine programs, infrastructural constraints), opportunities (people's participation, family support, compliance with regulations), and threats (sanctions and poor control, the conflict between doubt and certainty, hidden layers of the disease, corona and social stigma). The internal and external analysis was determined as the main theme.

Conclusion: The results suggest that it is necessary to make optimal use of the strengths and opportunities of the COVID-19 crisis and to develop participation and empathy among people in addition to complying with laws and making appropriate use of educational media. In this regard, the strengthening of tele-education infrastructure and transparency in presenting reports and methods for the prevention and control of the COVID-19 can be effective.

Keywords: COVID-19, Control, Prevention, Qualitative study, SWOT analysis

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Introduction

The coronavirus disease-19 (COVID-19) is a public health emergency of international concern and a challenge to psychological resilience (1). The rapid spread of COVID-19 throughout the world in a very short period and the transformation of the disease into a pandemic led many managers and policymakers to devise practical solutions for preventing and controlling the disease. In this regard, high-level managers and planners in the healthcare system attempt to solve health problems using appropriate methods and solutions. Furthermore, this disease can be managed and controlled appropriately by recognizing the challenges. According to the report of the World Health Organization (WHO), until October 21, 2021, a total of 24 186 635 COVID-19 cases and 4 919 755 deaths were recorded worldwide, and 5 821 737 COVID-19 cases and 124 585 deaths were confirmed in Iran (2).

In the field of health, COVID-19 management requires continuous monitoring and evaluation based on various methods and models. In this regard, the strengths, weaknesses, opportunities, and threats (SWOT) model can analyze the challenges of managing, preventing, and controlling COVID-19. Based on this model, the strengths and opportunities of a program can be maximized and its weaknesses and threats can be eliminated or minimized by choosing an appropriate strategy (3). Xiao et al assessed risk management during the coronavirus pandemic and showed to reduce problems in the family, early warning and the existence of a telephone system to respond to people's problems should be taken into

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consideration. They also emphasized that the first and most important step in preventing and controlling the disease was to restore people's self-confidence (4). Wang and Wang conducted a study on the SWOT model in China and highlighted the importance of taking certain measures including reshaping the emergency system, adding health emergency departments to universities and other institutions, adjusting the economic structure and strengthening international and domestic linkages, strengthening public intervention in responding to public health emergencies, and social support (5).

According to published studies, social isolation, reduced self-confidence, mistrust of other people, environmental factors, physical effects of the disease, side effects of drugs, fear of transmitting the virus to others, the effect of media coverage, loneliness, anger, anxiety, depression, insomnia, and post-traumatic stress symptoms are among the factors that disrupt the social and occupational life as well as the quality of life of individuals afflicted with COVID-19 (6,7).

Due to the rapid spread of the COVID-19 epidemic and despite the experience of the response to the *severe acute respiratory syndrome (*SARS) epidemic and the data from the China Health Statistics Yearbook, there is still a gap between the outbreak of COVID-19 and the healthcare provided. Therefore, the present study was conducted to investigate whether the SWOT analysis is effective in preventing and controlling the COVID-19 pandemic.

Methods

This qualitative study was conducted using directed qualitative content analysis. Qualitative research is an important tool for understanding emotions, perceptions, and information about the complexities of human responses. Content analysis is a systematic coding-and-categorizing approach that involves a process of understanding, interpreting, and conceptualizing the underlying meanings of qualitative data. A qualitative approach is used to directly describe the research area; this approach is based on describing and interpreting the experiences and actions of individuals and groups in a social and cultural context with a focus on 'what' and 'why' during data collection (8). Data were collected using semi-structured interviews and then subjected to content analysis (9).

This study was conducted in 2020 in the south of Iran. The study environment was selected considering the qualitative nature of the study. A total of 15 people (9 patients with COVID-19, a physician, a pharmacist, the head of the department of infectious diseases, a hospital manager, a nurse, and the head of a health center) participated in this study (Table 1). The participants were selected through the purposive sampling method. Based on the inclusion criteria, health officials, caregivers, and patients who were able and willing to share their experiences related to the prevention and control of the disease entered the study. Additionally, maximum variation in terms of age, gender, educational level, occupational status, and residential location was considered to obtain comprehensive and rich data. Sampling continued until saturation of themes was reached.

Data were collected from May to July 2020. First, a list of telephone numbers of patients and caregivers was obtained from the city health center. The objectives of the study, the method of data collection, and the voluntary participation in the study were explained to the participants. The time and place of the interviews were determined by the patients and caregivers. The interviews were conducted in

Table 1. Characteristics of the patients, healthcare providers, and managers participating in the study

Participant code	Gender	Age	Education	Marital status	Occupation	Duration of hospitalization (day)	Work experience (year)
1	Female	33	Illiterate	Single	Housewife	2	-
2	Female	36	Bachelor's degree	Married	Unemployed	7	-
3	Male	38	Diploma	Married	Farmer	10	-
4	Female	45	Primary school	Married	Housewife	25	-
5	Male	53	Associate degree	Married	Retired	4	-
6	Female	30	Bachelor's degree	Single	Employee	6	-
7	Female	34	Diploma	Married	Employee	5	-
8	Male	44	Primary school	Married	Self-employed	9	-
9	Female	28	Bachelor's degree	Single	Employee	5	-
10	Female	51	Physician	Married	Head of the health center	-	24
11	Male	33	Pharmacist	Married	Head of the Department of Food and Drugs	-	10
12	Male	38	Master's degree	Married	Hospital manager	-	10
13	Female	46	Master's degree	Married	Head of the health center	-	20
14	Female	51	Bachelor's degree	Married	Head of the Department of Infectious Diseases	-	29
15	Female	41	Bachelor's degree	Married	Bachelor's degree	-	Nurse

the hospital and health center.

Open-ended semi-structured interviews were employed for data collection. Initially, a few questions designed to acquaint the researchers with the participants and create a friendly environment were asked. Then, the interviews were directed to the study purpose. Some of the questions were: "What supportive problems have you experienced since your disease was diagnosed?", "Would you please describe your experience of caring for patients with COVID-19 in as much detail as possible?" Proportionate to the answers, in-depth and exploratory questions were put forth, like "Could you explain more?" All interviews were conducted by the corresponding author and recorded with the participant's consent. Every interview session ended with the question "Is there anything else you want to add, which I did not ask?" Interviews lasted 45 to 60 minutes, were digitally audio-recorded with participants' permission, and transcribed verbatim. Data were collected until data saturation was reached.

Data analysis was conducted according to the method proposed by Graneheim and Lundman (9). Qualitative content analysis aims to achieve a condensed and extensive description and understanding of the phenomenon (10).

The data were analyzed in 5 steps. First, the transcribed interviews were read separately several times to achieve a general understanding of the entire content. In the second step, the text was divided into meaningful units that were condensed. Each meaning unit consisted of words and sentences that included aspects related to each other. In the third step, the meanings of important propositions were determined and formulated. In the fourth step, the codes were classified into subcategories and categories based on similarities and differences. Finally, the underlying meaning and content of the data were extracted and themes were formulated as expressions of the latent meaning of a text. The reliability of the study was tested based on the study by Speziale et al (11). An example of the analysis process used in this study is shown in Table 2.

Accuracy and reliability of the data were ensured by checking the codes with the participants, revision by supervisors, and long-term involvement with the data, as the researchers were involved with the subject, data, and patients for over a year. Three researchers visited each participant before the interview to build trust and to create the grounds for an in-depth interview. A portion of the text along with the initial coding was shown to the participant, who compared the degree of homogeneity between the ideas extracted by the researchers and his original opinions. Supervisor revision was obtained by presenting the concepts and classifications developed from the data to experts of qualitative research to control the degree of fitness until a consensus was reached.

This study was approved by the Ethics Committee of Jiroft University of Medical Sciences (number: IR.JMU.REC.1399/006). Oral and written informed consent was obtained from participants before beginning the study and before the interviews were recorded. Participants were free to enter and exit the study at will and were assured of the confidentiality of the information.

Results

The current study was conducted with the participation of 9 patients with COVID-19, including 6 women and 3 men. Moreover, a physician, a pharmacist, the head of the department of infectious diseases, a hospital manager, a nurse, and the head of a health center participated in this study (Table 1).

Based on the analysis of the data, initial ideas were defined in a conceptual and abstract manner as four main categories including strengths, weaknesses, opportunities, and threats, each with several subcategories. The main theme identified in the study was *internal and external analysis* (Table 3).

Category 1: Strengths

Use of various media

Health message is effective when conveyed through a variety of educational media.

"In terms of information, they warned us several times through loudspeakers in the city and village. Operators of the 4030 system, also called us" (Participant 10).

Supporting ideals

The healthcare staff reported working more than normal

Table 2. Example of qualitative content analysis process

Category	Subcategories	Meaning units	Open codes
Threats	Sanctions and poor control	If the polymerase chain reaction (PCR) diagnostic kit was available and enough, it could be performed for outpatients from the initial stages of diagnosis. Consequently, the diagnosis was more accurate and definite (p.3).	Poor diagnosis
	The conflict between doubt and certainty	We tried to keep in touch with the patients and suspicious cases. Due to the various false messages and videos, people were skeptical about whether we were really the medical staff and whether we were telling the truth or not. So, they did not answer their phones (p.10).	Positive and negative impacts of cyberspace and distrust of the media
	Hidden layers of the disease	Given the unknown and ambiguous nature of the disease, we thought the virus would die as the weather gets warm. However, we were surprised when the number of patients was increased in warm areas (p.4).	Different symptoms with varying severity in patients
	Corona and social stigma	Although 50 days had passed since I got the disease, my friends were still afraid of me. My co-workers did not come to the room where I worked and this made me upset (p.12).	Being afraid of patients, social stigma

Table 3. Categories and subcategories related to patients, healthcare providers, and managers dealing with COVID-19

Theme	Category	Sub-categories
Internal and external analysis	Strengths	Use of various media
		Supporting ideals
	Weaknesses	Low understanding of disease risk
		Lack of vaccines
		Lack of appropriate tele-education and tele-medicine programs
		Infrastructural constraints
	Opportunities	People's participation
		Family support
		Compliance with regulations
	Threats	Sanctions and poor control
		The conflict between doubt and certainty
		Hidden layers of the disease
		Corona and social stigma

work hours.

"I saw a midwife changed a baby's diaper with corona and did not wait for the service personnel. I also witnessed that a nurse gave a mask to a poor man" (Participant 10).

Category 2: Weaknesses

The subcategories were low understanding of disease risk, lack of vaccines, lack of appropriate tele-education and tele-medicine programs, and infrastructural constraints.

Low understanding of disease risk

Experts thought the virus was weak. This low understanding showed that the necessary precautions were not taken against the disease.

"Many people were unprepared when the disease started. Our crisis headquarters thought this was a small problem and our stockpile of personal protective equipment was running dangerously low. They did not expect such a crisis" (Participant 11).

Lack of vaccines

The lack of vaccines was a big challenge for the prevention and control of the COVID-19.

"We tried to get the vaccine to the people, but the sanctions did not allow the vaccines to arrive on time. A large number of patients died due to lack of vaccine. However, our country was not well prepared against the COVID-19" (Participant 14).

Lack of appropriate tele-education and tele-medicine programs

Tele-education and tele-medicine are the two main arms of preventing and controlling COVID-19.

"At the moment, our biggest problem and weakness is the lack of tele-education and tele-medicine programs. By implementing the tele-education program, we can provide health and medical services to people without asking them to leave their homes and visit the health centers" (Participant 15).

Infrastructural constraints

This subcategory reflected the experts' viewpoints about the inadequacy of infrastructure in terms of physical space, quality deficiencies, and availability of the materials needed to prevent and control the disease.

"*We do not have an isolated room with negative pressure ventilation in our hospital*" (Participant 10).

"*It takes about 48 hours to prepare the test results after sampling in our university. During this period, patients with corona endure a lot of stress*" (Participant 12).

Category 3: Opportunities

People's participation

A large number of people and departments volunteered to cooperate, which reduced the workload on healthcare staff.

"The police, Revolutionary Guard Corps, Red Crescent, benefactors, and people disinfected streets and passages every night. People also made masks benevolently. I think people's belief in God led to a good level of empathy and participation" (Participant 10).

Family support

Family support of patients, especially emotional support, was recognized as the most important factor in preventing and controlling the disease.

"My wife was pregnant when I was admitted to the hospital; she took after me with great effort and patience. Her sacrifice motivated me to try to get better. It was not the medicine that helped me get better, but my wife's love" (Participant 3).

Compliance with regulations

"Nowruz holidays and traffic restrictions in our country were a great opportunity that enabled us to prevent the virus transmission to people. If the traffic restrictions continued for several months after the holidays, maybe we could control the disease" (Participant 11).

Category 4: Threats

Sanctions and poor control

Severe sanctions against Iran slowed the prevention and control of the disease.

"If the PCR diagnostic kit was available and enough, it could be performed for outpatients from the initial stages of diagnosis. Consequently, the diagnosis could be more accurate and definite" (Participant 13).

"People ask about the error rate of the tests; the fact that these tests had an error rate of about 40% made the system very uncertain" (Participant 14).

The conflict between doubt and certainty

The participants' internal struggle about what is right or wrong was one of their major concerns.

"*We tried to keep in touch with patients and suspicious cases, but since there were many fake messages and videos, people were skeptical about whether we were really the medical staff and whether we were telling the truth or not. So, they did not answer their phones*" (Participant 15).

Hidden layers of the disease

Coronavirus is an emerging disease; in other words, something new is discovered about it with each passing day.

"Given the unknown and ambiguous nature of the disease, we thought the virus would die as the weather gets warm. However, we were surprised when the number of patients was increased in warm areas" (Participant 11).

Corona and social stigma

Some factors, such as the community attitude, can explain the vulnerability caused by social support. If social relationships are not maintained at a proper level, they can have the opposite effect.

"Although 50 days had passed since I got the disease, my friends were still afraid of me. My co-workers did not come to the room where I worked and this made me upset" (Participant 4).

Discussion

Poor preparation in the face of crisis, severe sanctions, and economic pressure posed serious challenges to Iran. One of the main challenges was the lack of vaccines due to sanctions. Besides, one of the examples of unpreparedness in the COVID-19 crisis was the lack of tele-education and tele-medicine programs, which interrupted the provision of prevention and control services for this disease. In addition to weaknesses and threats, strengths and opportunities such as supporting ideals, participation and solidarity among people, as well as family support of patients were reported.

The use of diverse media and cyberspace was a strong support for preventing the disease. Announcement of the alert by loudspeakers from mosques and special vehicles, the 4030 self-assessment system, and installing stickers with effective messages in crowded places were among the effective measures. Wang and Wang reported that most people were provided with the preventive recommendations through cyberspace (5). In this regard, Zhou et al also showed that frequent hand washing and the use of protective masks were effective in preventing the disease (12). In the present study, empathy, participation, and support of the patients' families were the most important effective strategies to prevent and overcome the COVID-19 crisis. In the current study, the key to patients' treatment was emotional support not medication. In line with the findings of the present study, Shamloo et al. showed psychological support was considered to be the most important factor (13). Perception of risk is a key component of behavior change theories. In the present study, the risk perception of COVID-19 was low such that the disease was considered the same as influenza. In confirmation of these findings, Wolf et al. reported that 75% of the participants were not worried about their condition and felt that this disease had no effect on their working process (14).

Poverty and low level of education were among the factors that led to a lower perception of risk among the participants (14). Lee et al reported that the risk of COVID-19 was 51%. Therefore, it is necessary to increase organizational and individual preparedness in emergencies caused by the COVID-19 epidemic (15). Evidence shows sicker people, individuals who witnessed the disease in their relatives, and those who were more socially trusted were more sensitive (16). The lack of tele-education and tele-medicine programs was one of the problems and weaknesses in the Iranian healthcare system during the COVID-19. Many people had to go to health and medical centers to receive prevention and treatment services, which continued the chain of disease transmission. However, in Singapore and the United States, patients and healthy people received all counseling and treatment services at home using tele-health (17).

In Iran, the number of healthcare personnel who tested positive for COVID-19 was increasing every day and the number of manpower in hospitals and health centers was decreasing. Mehri et al also complained about the lack of a professional and trained team to face this crisis (18). In a similar vein, Kermanshahi and Parvinian reported that nurses in Iran do not act on evidence due to the shortage of manpower and time (19). In the present study, people's compliance with the rules was also one of the opportunities that could control COVID-19. In the case of Iran, shops, offices, and organizations tried to control the disease by shifting employees and classifying guilds, offices, and contacts. Moreover, Xu et al reported that the healthcare staff cooperated in monitoring, diagnosing, and managing cases rapidly (20).

According to several studies, public awareness about this disease will increase if public health education interventions are extended in the community. As a result, people do not get confused in the face of symptoms (21). The participants of the present study mentioned that they were confused due to the large variety of virtual networks as well as the falsity of news and information in these networks. They also noted the loss of trust between the public and the healthcare staff. According to Mullainathan et al., individuals tended to use credible news sources and personalities in accordance with their political views and believed that the sources of such news were more reliable (22). The findings of the current study showed

that inappropriate social reactions, including stigma and degrading views, reduced social relations. Although COVID-19 is similar to influenza, the labels of COVID-19 have prevented the active presence of these patients in the community (23). Eng et al. also stated that patients who experience social isolation are two to four times more likely to develop illness and mortality than those who experience social communication (24). Hidden layers of the disease along with its stigma and discrimination have facilitated its rapid spread. Due to the emerging nature of the disease and its different mutations, its definitive treatment is not possible. In China, findings showed the lack of definitive diagnosis and treatment for COVID-19, which spread at an unprecedented rate (25).

Stigma and discrimination among the people in southern Iran caused a low willingness to cooperate in completing the questionnaires. Therefore, stigma and discrimination can be reduced with continuous education and provision of educational content through mass media as well as pointing out the extent and speed of the spread of the disease.

Conclusion

The study findings showed that people's efforts, participation, and companionship and their compliance with the regulations issued by the government have provided the ground for the prevention and control of COVID-19. However, participation and advocacy will not be effective without technology (e.g., tele-education tools) and access to vaccines. The experiences of managers, healthcare providers, and patients indicated a gap between the standards and quality of care in southern Iran regarding COVID-19. Therefore, using SWOT analysis can increase the readiness to deal with crises.

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Competing Interests

The authors declare no conflict of interest.

Ethical Approval

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