

Designing and Implementing Health Concerns Caused by the COVID-19 Pandemic: Explorative Study

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Abstract

Background Coronavirus and its psychological impacts on people have been taken into attention by scholars due to the psychosocial crisis. Fear, worry, and psychological agitation are common experiences due to uncertainties in the context of the COVID-19 pandemic. This study is a comprehensive research for finding the methods of intervention to these psychological health issues based on presumable concerns.

Method a multi-stage mixed study conducted in 3 stages. Stage one was a qualitative study to prioritizing and determining concerns about coronavirus with an in-depth semi-structured interview. Stage two was another qualitative study to design an appropriate intervention through the Nominal group technique (NGT) by collecting the brainstorming's health specialists or expert panel. Stage three was a quantitative study to determine the effect of BETTER therapy; the counseling method as a clinical intervention for high-risk populations who were randomly assigned to experimental or intervention and control groups.

Results In stage one, participants expressed five main concerns about COVID-19. In stage two, the health concern like inaccurate information and unpredictable disease were identified as the priority concerns preceded in designing the intervention. In stage three, a significant difference between the two groups presents the clinical intervention was effective in improving performance, marital intimacy, and reducing the subjects' distress.

Introduction

Health is one of the vital pillars of life as well as the basic human rights (Neurol, 2008) requires awareness of the issues on which is based. One of the key categories in human health is to pay attention to health dimensions and its components such as physical, mental, social, and environmental health (Cieza, et al., 2016). These dimensions are influenced by environmental conditions by which changes in each dimension cause changes in others, end to health concerns (WHO, 2006). Environmental stressors as one of these conditions (WHO, 2014) lead to various negative feelings that in turn would affect health quality and promotion (WHO, 2010). Contagious diseases as a shocking stressor throughout history have had serious effects on social and psychological features (Alizadeh, Keshavarz, Mirghafourvand, & Zayeri, 2018).

Nowadays, one of the world issues which has been a global epidemic is COVID-19 arose from epidemic to pandemic, which has been prevailed since the beginning of 2020 and is a public health emergency with international concern and a challenge for psychological resilience (Wang, Pan, Wan, & et al., 2020). It has painful physical symptoms up to the point that the lungs and airways become dysfunctional (Huang C. et al., 2020) and place people in the stage of mental disorders due to the way of transmission and community conditions. In the study of Wang and their colleagues (2020) in China, more than half of the participants reported the symptoms of obsessive-compulsive disorder and about one-third symptoms of anxiety disorders (Wang, Pan, Wan, & et al., 2020) that can be because of fear of getting sick and disease

transmission, longer quarantine, fear of infection, despair, boredom, inadequate resources, insufficient information, and financial loss (Brooks, et al., 2020).

Fatzer & Hermle, based on global data analyzed the destructive effects of this pandemic to create universal fear of economic failure, and jeopardize psychological and social security. In the same study, participants' predictions of mortality and contagiousness of the Coronavirus were significantly higher than official statistics, which represents a lack of sufficient knowledge about this disease, as well as control of participants' mindset upon their concerns (Fetzer & Hermle, 2020). They proposed public education as a useful way of reducing economic issues and anxiety. Given the psychological problem, Lin (2020) suggested that the coronavirus pandemic has even led to discriminatory and hostility between nations (Lin, 2020). Therefore, to design and implement programs and effective interventions to control the psychological health issues of the COVID-19 pandemic and its global effects, it is necessary to identify people's concerns about it. Especially when efforts are focused on improving public health in limited resource conditions.

Methodology

Since the goal of the present study was to determine the health concerns caused by the coronavirus pandemic and design the intervention based on their health concerns, a multistage mixed-method approach was used in three stages. Stage one, an initial qualitative study was conducted to explain the health concerns. Later, in stage two, following the findings of the first stage, by implementing the Nominal Group Technique (NGT) and reviewing the literature, an appropriate intervention was designed. In the final stage (quantitative study), the clinical intervention was tested.

Stage One:

In qualitative studies, participants were the 18 average people aged 21-43 who lived in Hamadan who had enough, sufficient, and first-hand information about the COVID-19 pandemic. Qualitative data has consisted of informant interviews (Holloway & Wheeler, 2013). The criteria for entering the interview of the study were as follows: Living in the same city (due to the impact of culture on the concerns and the type of concerns), being able to speak and understand Persian and Turkish, willing to participate in the study and retell their experiences related to COVID-19 pandemic, as well as having first-hand experiences of culture, social process, or this phenomenon (Cresswell; & Plano Clark, 2011) by which actively participate in the study and provide a better description of this phenomenon (Holloway & Wheeler, 2013). Considering the nature of this study, the number of interviews was related to saturation of data. After 21 interviews, the data was saturated, so that the classes and sub-classes were completed and no new information appeared in the new class, and the data analysis ended with the same number of interviews. The 21 interviews were conducted with 18 people (three participants were taken into it two times). The 18 participants were 8 women (4 married and 4 single), and 10 men (6 single and 4 married) with different ages and education were selected for participating at this stage of the study.

In-depth semi-structured interviews were used to collect data. The duration of the interviews ranges from 35 to 90 minutes with an average of 60 minutes depending on the participants' willingness to the response. The interviews were conducted individually by using Skype and WhatsApp video calling with participants' permission and maintaining their privacy. Participants' psychological security was provided so that they could freely express their experiences, thoughts, feelings, and perceptions. They were assured that their information would be kept confidential and unnamed. As for the beginning, demographic data and disease questionnaire was filled by all participants. Moreover, the concept of health and concern with intelligible language briefly explained. Later, the interview began with the question "What do you know about corona disease?" Subsequent questions were asked based on the individuals' initial answers and the interview guide. Also Probing Questions such as "What does this mean" or "If you can please explain more" were used as needed in the interviews. As there was an interview guide, the interviewer started with simple and general questions, and if the participants were responding as it was expected, the interview was continued with the specific and more detailed questions. When interview questions were done, the participants were given time to ask if they want to know about something that had not been explained. As the study was going further interview questions were completed. All interviews were recorded on the voice recorder with the permission of the participants. The interview was stopped wherever it was necessary and then the interview and re-recording began. The researcher kept the contact number of each participant so that they could be contacted again if needed, and provided the participants with their number so that they could call if necessary. As for qualitative data analysis, content analysis was used in this stage. Content analysis is one of the research methods for analyzing textual data. It goes beyond the manifest content of the text but also analyzes the latent content (Graneheim & Lundman, 2004). In qualitative content analysis, three different approaches were used to interpret the text content. In this study, conventional content analysis was used. This method is usually used in designing a study in which its primary goal is describing a phenomenon. This method is applicable when it is facing the dearth of literature, theories, or knowledge on a phenomenon.

Researchers refuse to use pre-defined classes and instead allow classes and their names to be derived from data to form new insights (Elo & Kyngäs, 2008).

In this study, qualitative content analysis was performed through the method of Graneheim and Lundman (2004) as follows:

1. Implement the entire interview just after each interview
2. Read the text to a rich understanding of the whole content
3. Identifying the meaning units and preliminary codes
4. Classification of homogenous preliminary codes in more comprehensive classes
5. Identifying the main themes of the classes (Graneheim & Lundman, 2004)

To establish the trustworthiness of qualitative data, the data was checked in term of five aspects of credibility, dependability, transferability, confirmability, and authenticity.

In the present study, the interview scripts were typed in Microsoft Word at the earliest opportunity. Then to get a rich understanding, it was read several times word by word, line by line, paragraph by paragraph. Thus, the meaning units were identified in the text of each interview that formed the study analysis units. The meaning units, or in other words, the set of words or phrases that carried a particular meaning and concept related to the research purpose, were summarized as "code." The original codes which were around a central concept were placed inside a subcategory. Then the subcategories were reviewed several times and compared based on similarities and differences, and categories and themes were formed. Attempts were made to have the most homogeneity within the categories and the most heterogeneity between the categories. Texts and codes were managed using the 2018 MAXQDA software.

Stage Two:

In the second phase of the study, a four-step process was developed to design an intervention based on the health concerns caused by the COVID-19 pandemic. In the first stage, a group of health experts who had a background in various fields of health care, or treatment, were selected to review the list of priorities and rated them to determine priorities again. Since the Nominal Group Technique (NGT) is a useful method for extracting the society's health priorities (Latimer, 1994) this technique was applied to evaluate the health concern priorities caused by the COVID-19 pandemic. NGT is a structured small group discussion that uses to extract and prioritize a list of answers to a specific question. It provides an equal chance for all to express their opinions. The nominal group technique is implemented in four steps, including idea generation, recording of ideas, discussion of ideas, and voting.

In step one, participants expressed a list of health concerns about the COVID-19 pandemic in a format of categories. The list was equipped with the participants' opinions about the most important concerns obtained in the first qualitative study. In step two, for better understanding the prevalence of these mentioned health concerns, the relevant literature was reviewed for preparing extra information for the expert panel. Later, experts in the panel were given the list of concerns from the qualitative study and they were asked for adding new health concerns to the list if necessary. In step three, discussion in the expert panel started and consequently, similar concerns were identified and merged. Moreover, Members of the panel discussed the significance of each item of the list of concerns and health issues based on the degree of prevalence (prevalence), Impact rate (Impact), and the possibility of reducing that concern by the intervention (Intervention). They reached a compromise unanimously on the most important concerns including lack of accurate and sufficient information and unpredictability of the disease. Consequently, the last part of NGT or step four which is the voting with the card to categorize the concerns was not administered. Moreover, the members were asked for working with researchers to figure out an appropriate intervention for the concerns. Counseling was chosen as an appropriate and applicable intervention.

As the results of the meeting, the lack of information support (such as insufficient information, contradictory statistics, no follow-up by the hospital, and inadequate knowledge of physicians) was identified as the most important priority concern to start work and design the intervention. Hence, the

primary goal of the quantitative study or stage three was to identify the effect of an intervention on the following concerns such as information support, psychological security, physical health, mental health, and social health.

After determining health concerns and information support as the first and most important priority, the relevant literature in the same field in Iran and other countries was reviewed to figure out the effective intervention. By using keywords like health keywords, mental health, physical health, social health, psychological security, and information support, the known database was surfed such as SID, Embase: Pubmed Science Direct, Cochrane Library, and Google Scholar; Magiran; Medline.

All articles published in 2018 to 2020 were transferred to Mendeley software and duplicate articles were deleted, hence, the remaining articles include: 1) Articles that its purpose was to design or implement an intervention for psychological security, information support, physical, mental, and social health at least as one of the objectives 2) Articles that its participants were people during PTSD at least as part of the study population; 3) all articles were either in English or Persian. While the requirements and the goal of the current study were fulfilled, only their abstracts were reviewed otherwise the full text of papers was scrutinized. A total of 8 articles were reviewed to determine the appropriate intervention for health concerns caused by the COVID-19 pandemic.

The analysis showed that 6 papers out of 8 were doctoral dissertations in the fields of health promotion, medical and social health from overseas, and 2 papers from Iran. The type of study was 7 randomized clinical trials (87.5%) and 1 non-randomized clinical trials (12.5%). The study samples were the general population of people who suddenly developed a specific disease. The number of the interventional sessions was between 2 to 6 sessions but mostly 5 sessions. In this study, the number of interventional sessions was 4 sessions.

It was difficult to decide about the effectiveness and intensity of specific intervention to rectify the health concerns caused by the COVID-19 pandemic because reviewed studies have been different in the method of collecting data, administration period, type, and intensity of intervention, research tools, and follow-up methods. However, the World Health Organization has emphasized counseling programs that increase information supports for non-pharmacological approaches for chronic disease. Therefore, counseling method was chosen to be suitable for dealing with health concerns caused by the coronavirus pandemic because of time-consuming, easy to implement, acceptable results from this intervention in similar studies, researchers enough experience in counseling, panel expert advice, and that is why it was improving psychological and social security.

Stage Three:

The third stage was a quantitative study of randomized clinical trials (RCT) with a control group. The primary aim was to determine the effect of educational counseling with an emphasis on increasing information support as an intervention method on health concerns caused by the coronavirus pandemic. The population of this stage was 400 members of Telegram, Instagram, and WhatsApp groups joined the

research through the created link and answered the questionnaires. Of those with a standard deviation above average, 248 were selected and the rest were eliminated. They were then invited to participate in the study, of which only 72 were joined with their consent. The standard deviation in women was $S = 15$ as estimated in similar studies (Daneshfar, et al., 2017) and (Zamani, Tavoli, Khasti, Sedighimornani, & Zafar, 2017). To test if the effect of preventive counseling statistically significant, along with the acceptable error rate $d=10$, confidence level 95%, and the power 80%, the sample was divided into two groups intervention and control including 36 people aged 21-43 years. In this way, all qualified people were participated in the study after providing complete explanations about the study purpose and getting conscious written consent. The samples were divided into two groups of intervention and comparison by the Blocked Randomization method and 72 participants were assigned to those two groups randomly.

Quantitative data were collected through the following questionnaires:

1. Demographic information questionnaire
2. Psychological security questionnaire
3. Physical health questionnaire
4. Mental health questionnaire
5. Social health questionnaire
6. Data support questionnaire

To analyze the data of this quantitative section, frequency distribution tables from descriptive statistics were used to present data. Moreover, Ki-Square and Independent t-test was used to examine demographic variables and clinical features of the two groups. Besides, to study physical health, mental health, and social health in two groups, repeated measures were used. The analyses were performed using SPSS software version 25 by considering Intention to treat (ITT) analysis and a significant level $P < 0.05$.

Findings

In the first stage of study or qualitative part, 18 normal individuals aged 21-43; 8 women (4 married and 4 single), and 10 men (6 single and 4 married) with different education levels were selected for interview. First, 89 codes were extracted from the meaning units and after deleting duplicate codes ended to the following codes such as psychological security, information support, physical health, mental health, and social health. Later, to achieve the objectives of stage three of the study or quantitative part, the data from 72 participants in both intervention and control groups was prepared by using descriptive and analytical tests and diagrams, respectively.

Table 1: Frequency Distribution of Age Groups

Age group	Group	Control		Intervention	
		Number	Percentage	Number	Percentage
<30		6	16.67	6	16.67
30-33		6	16.67	4	11.11
34-37		6	16.67	8	22.23
38-41		8	22.23	6	16.66
> 41		10	27.78	12	33.33
Total		36	100	36	100
Results		Independent t-test : No Significant			
		t = -0.43	dr = 70	p = 0.489	

Table 2: Frequency Distribution of Psychological Security in the Intervention and Control Groups

Age group	Group	Control		Intervention	
		Number	Percentage	Number	Percentage
High Security		6	16.66	4	11.11
High Moderate Security		10	27.78	8	22.23
Moderate Security		8	22.23	10	27.78
Low Moderate Security		6	16.66	6	16.66
Low Security		6	16.66	8	22.23
Total		36	100	36	100
Results		Independent t-test : No Significant			
		t = -1.08	dr = 70	p = 0.203	
		NNn			
		NNnnnnnn			

Table 2 showed that the psychological security score in more than half of the participants was moderate to high in both groups. The independent t-test also showed that there is no significant difference in

mental security between two groups and they were homogeneous in terms of severity.

Table 3: Frequency distribution of fatigue intensity, Physical health, Mental Health, Social Health

		Control		Intervention	
		Number	Percentage	Number	Percentage
Physical Health	1-2.8 (Mild fatigue)	18	50	20	55.56
	2.8-5 (Medium fatigue)	18	50	16	44.44
	Total	36	100	36	100
Independent t-test : No Significant t = 0.789 dr = 70 p = 0.021					
		Control		Intervention	
		Number	Percentage	Number	Percentage
Mental Health	High Mental Health	8	22.23	6	16.67
	Moderate Mental Health	14	44.44	16	44.44
	Low Mental Health	14	44.44	14	38.88
	Total Mental Health	36	100	36	100
Independent t-test : No Significant t = 1.03 dr = 70 p = 0.265					
		Control		Intervention	
		Mean ± SD		Mean ± SD	
Social Health	Before Intervention	94.11 ± 18.97		94.47 ± 18.64	
	2 weeks after Intervention	92.35 ± 19.21		97.35 ± 18.02	
	3weeks after intervention	93.84 ± 20.32		97.54 ± 18.26	
	Results	F = 0.56 P = 0.198		F = 11.23 P = 0.013	

Table 3 represented the majority of the participants in the intervention group were at a mild level of physical fatigue. In mental health, more individuals had moderate to low mental health in both groups. In social health, the average was higher in the intervention group than in the control group. It is mentioned

that the results of the independent t-test showed that both groups were homogeneous in terms of fatigue severity and health before treatment or intervention.

Table 4. Frequency of index of information support before and after intervention

		Control	Intervention
		Mean± SD	Mean ± SD
Information support	Before intervention	24.11 ± 3.64	24.85 ± 3.65
	2 weeks after Intervention	25.30 ± 3.38	29.74 ± 2.89
	3 weeks after intervention	24.30 ± 3.19	28.54 ± 2.31
	Results	F = 0.37 P < 848400	F = 111.98 P < 0.001

Table 4 indicated the findings of repeated measures ANOVA by which the mean of the index of information support in the intervention group was different before intervention with two weeks or three weeks after intervention ($p < 0.001$), whereas in the control group there was no significant difference ($p < 0.840$). Moreover, the mean of the index of information support was significantly different between the intervention and control group ($p < 0.001$).

Since the result of Repeated Measures showed the significant differences and to prevent data from mistakenly appearing to be statistically significant, the Bonferroni test was applied to compare the items.

Table 5: Comparison of index of information support before and after the intervention

Group	Time	Intervention	
		Mean difference	p - value
Before Intervention	2 weeks after intervention	-4.56	p < 0.001
	3 weeks after intervention	-4.78	p < 0.001
2 weeks after intervention	3 weeks after intervention	-0.22	p = 0.420

According to the Bonferroni test, there was a statistically significant difference between the mean of information support, before the intervention and two weeks ($p < 0.001$) and 3 weeks after the intervention ($p < 0.001$). In other words, the mean of information support before the intervention was less than after intervention. It shows intervention caused in increasing the information support score increased after the implementation of the intervention, but there was no statistically significant difference between two and three weeks after the intervention implementation ($p = 0.420$).

Discussion

The qualitative part of this study identified five dimensions of health concerns caused by the COVID-19 pandemic. In this section, the researcher has tried to compare the concerns arisen from the qualitative part of this study with other studies. This part of the study was conducted to determine the effect of the counseling-based intervention on reducing health concerns caused by the COVID-19 pandemic.

Li et al. (2020) in their study on the progression of mental health services during the COVID-19 Outbreak in China explained that not only patients and medical professionals, but all individuals are facing overwhelming psychological pressure and to serious psychiatric disorders secondary to COVID-19. They emphasized psychological intervention as an essential step to control the disease. Thus, the National Health Commission of China and the other mental health organizations built professional teams to prepare guidelines for psychologists and psychiatrists and educational texts/videos along with online mental health services for the general public. These interventions are consistent with this study finding

that psychological concerns and information supports are the main concerns that should be taken into attention (Li, et al., 2020).

In another study, Fiorillo and Gorwood (2020) studied the consequences of the COVID-19 pandemic on mental health and implications for clinical practice and found the COVID-19 pandemic caused in mental health issues seriously for four groups of people. One of them was "people who are following the news through numerous media channels" and accordingly in this study, the participants were chosen from members of Telegram, Instagram, and WhatsApp groups to be consistent with the abovementioned study. Moreover, the mean age of participants was almost the same as the mean age in the study of Merghati-Khoei et al. (2013)

This study showed there were several concerns about COVID-19 which three main concerns were psychological security, information support, and mental health. This finding was in harmony with what Fiorillo and Gorwood (2020) findings that people's health concerns about COVID-19 generate serious mental health issues especially when it is prolonged. They also suggested the current information overload is "infodemic " and unable to reduce people's health concern but exacerbates worries and in turn psychological distress. Therefore, as an intervention, they recommended providing genuine information to the general public, which is consistent with this study finding that showed participants were concerned with insufficient information (Fiorillo & Gorwood, 2020).

In the present study, the comparison of means shows the intervention group got a higher score in psychological, social, and physical security significantly ($p < 0.001$). This significant difference between the two groups continued even though the time duration of intervention was changed. This significant difference between means of intervention and control groups in security indexes was confirmed again by repeated measure ANOVA that shows the positive effect of the designed intervention on improving psychological security. These findings are consistent with Quinn and Happell (2013) investigated the impact of a health improvement program or the BETTER model in mental health nurse participants in Queensland, Australia so that they reported the model is effective and assists them in their performance (Quinn & Happell, 2013).

Our findings are also consistent with the results of qualitative studies by Ayaz and Kubilay (2009), Browne et al. (2011), and Quinn and Happell (2013) on the role of the BETTER model as information and supportive counseling among health care providers. They perceived the BETTER model as satisfactory guidance in solving either health care providers or patients' concerns (Quinn & Happell, 2013; Browne, Happell, & Quinn, 2011; Ayaz & Kubilay, 2009).

Declarations

Announcing conflicts of interest

There is no conflict of interest with the rights of authors.

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Conflict of interest

The authors declare that there is no conflict of interest in the present study.

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