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The effect of pecha-kucha training on fear and belief in myths of COVID-19 in elderly women

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A B S T R A C T

Adequate and accurate information reduces pandemic fear in elderly women with chronic disease, one of the risk groups for COVID-19. We aim to determine the effect of pecha kucha pandemic training on the fear and belief in myths of COVID-19 in elderly women. This prospective, randomized controlled experimental study with pre- and post-tests employed a total of 64 elderly women, including 32 for each of experimental and control groups. The data were collected using an introductory information form, the Questionnaire for Beliefs in COVID-19 Myths, and the Fear of COVID-19 Scale. Women in the experimental group were informed about COVID-19, using a pecha kucha presentation via smart phone. Those in the control group were given the same information using classical lecture method. The data were collected before, just after, and 3 months after the training and analyzed using Pearson's chi-square, Mann-Whitney U, Friedman, Wilcoxon Signed Ranks tests. Elderly women in the experimental group had significantly lower fear and belief in myths of COVID-19 both just after and 3 months after the training (p < 0.05, p < 0.05). A pandemic training by pecha-kucha presentation, which is a short, clear, understandable and memorable method of teaching, can reduce both fear and belief in myths of COVID-19 in elderly women.

1. Introduction

The COVID-19 pandemic is a vital global infection issue, spreading rapidly and causing massive increase in cases and deaths. The World Health Organization (WHO) declared an international public health emergency on January 30, 2020 due to the COVID-19 pandemic [1]. Increased chronic diseases by advanced age and aging are considered as poor prognostic factors for COVID-19 disease, making chronic patients more susceptible to the pandemic [2,3]. Therefore, COVID-19 deaths were reported more commonly among the elderly and those with underlying chronic diseases. This information alone has created stress and fear among the elderly [4]. After the first COVID-19 case in Turkey, a curfew was applied to people aged 65 years and over as a COVID-19 measure on March 21, 2020, causing them to have a controlled social life on certain week days [5]. This measure was reported to be effective in slowing the rapid COVID-19 pandemic and protecting the physical health of elderly people. However, its short- and long-term negative consequences on both psychological well-being and mental health of elderly people unfortunately emerged as an inevitable reality [6,7].

One study has reported that elderly women are a group at risk for both fear of COVID-19 and lack of companionship [8]. Another study has determined that older women may experience more fear of COVID-19, therefore should be provided with accurate and suffi-
cient information about the pandemic, which is of great importance for and has a significant effect in reducing the fear of COVID-19 [5]. Because, just as the COVID-19 pandemic spread rapidly all over the world, false information and myths about the pandemic spread at the same rate [9]. Older adults, who are particularly vulnerable to the pandemic, are often confused about the accuracy of COVID-19 information [10]. Therefore, unprecedented efforts should be considered immediately to address the impact of COVID-19 pandemic on well-being and health in individuals, particularly older adults [6,7,11]. Accordingly, specially designed resources should be created to debunk COVID-19 myths among older adults, who are a vulnerable demographic group in the pandemic, so that an active effort should be exerted to provide true and actual information on COVID-19 disease [12]. As the fear of COVID-19 more affects older women in Turkey [5] and increases due to the rapidly spreading false misinformation in all media types [13], health professionals and authorities should exert active efforts to provide effective and creative training on this issue.

Pecha kucha is a new innovative global presentation style used in trainings [14,15]. It is a presentation method developed to attract and maintain the attention of the audience over a series of different presentations [15]. Derived from the Japanese word for “chat”, pecha kucha (P–K) helps to present creative work in visual images [14,16,17] Pecha kucha is a practical presentation method consisting of 20 slides in which information is structured simply and naturally, each shown for 20 s, lasting 6 min and 40 s in total [15]. The present study planned to provide elderly women with training to eliminate their fear and belief in myths of COVID-19 by using the pecha kucha technique. This training is given to elderly women with chronic diseases, who are reported to have high mortality and morbidity rates during the COVID-19 pandemic, are exposed to safety measures and procedures such as social isolation for a long time, and are at risk for the fear of COVID-19.

1.1. Aim

This study aimed to determine the effect of pecha kucha pandemic training on fear and belief in myths of COVID-19 in elderly women aged 65 years and over with chronic diseases. The hypotheses of the study are as follows;

- **H1**: Compared to classical lecture, a pecha kucha training reduces more the belief in myths of COVID-19 in elderly women aged 65 years and over with chronic disease.
- **H2**: Compared to classical lecture, a pecha kucha training reduces more the fear of COVID-19 in elderly women aged 65 years and over with chronic disease.

2. Methods

2.1. Trial design

This experimental, randomized controlled study was carried out in a hospital in Elaziğ, a province in eastern Turkey, between May and July 2021.

2.2. Sample size and randomization

The population of the study consisted of chronically ill and older women who referred to a hospital in Elaziğ, Türkiye. The sample size was calculated by G-Power 3.1.9.7 analysis program. Based on a study using the pecha kucha presentation method [18], the sample size was calculated as a minimum of 27 for each group, considering effect size (Cohen’s d): 1.005, α: 0.05 and power (1-β) = 0.95. Due to the possibility of data loss, 72 elderly women who met the study inclusion criteria were assigned to the experimental (36) and control (36) groups. The groups were formed using the simple randomization method.

The women were chosen for the groups by randomly casting lots. Even numbers were assigned to the control group and odd numbers to the experimental group. During the study, four women in the experimental group and four in the control group were excluded from the study because they did not want to continue the experiments or failed to fill out the forms accurately. The study was completed with 64 women, 32 in the experimental group and 32 in the control group (Fig. 1).

2.3. Participants

The study inclusion criteria are as follows: being a woman aged 65 years and over, being diagnosed with a chronic disease such as diabetes, hypertension, and referring to the hospital for chronic disease, having no serious life-threatening disease such as cancer, having no mental and/or psychological disease such as Alzheimer's depression, and agreeing to participate in the study, being able to read and write in Turkish and speak Turkish, remaining in the study until the end of the study process, and filling in the questionnaires. Women who did not meet the specified criteria were excluded from the study.

2.4. Ethical considerations

A permission to use the scale, an ethics committee approval (GO2021/059) and a written permission of the institution were obtained to conduct the study. An informed consent was obtained from all women included in the study. The study was performed in accordance with the ethical principles for medical research involving human subjects of the Helsinki Declaration.

2.5. Data-gathering tools

The data were collected using an introductory information form, the Questionnaire for Beliefs in COVID-19 Myths, and the Fear of COVID-19 Scale.
2.5.1. Personal information form

This form was prepared by the researchers in line with the literature and included questions about women's socio-demographic characteristics such as age and education level [1–10].

2.5.2. Fear of COVID-19 scale

The scale was developed by Ahorsu et al. [19]. It is a one-dimensional scale. It consists of 7 items. It has a 5-point Likert-type rating system (1: Strongly disagree, 5: Strongly agree). The item factor loading of the original scale ranged from 0.66 to 0.74, and the total item correlations ranged from 0.47 to 0.56. The Cronbach's alpha internal consistency coefficient of the scale is 0.82. The Turkish validity and reliability study of the scale was conducted by Haktanir, Seki, & Dilmac [20], suggesting the scale as a valid and reliable tool for Turkish society. In this study, the Cronbach's alpha internal consistency coefficient of the scale was calculated as 0.74.

2.5.3. Questionnaire for beliefs in COVID-19-related myths

This form was prepared by the researchers in line with the literature and consists of 21 questions as follows:

1. COVID-19 can be transmitted by goods produced in countries where transmission continues.
2. COVID-19 can be transmitted through mosquitoes.
3. Our clothes can spread the COVID-19 virus.
4. Drinking alcohol can help prevent COVID-19.
5. COVID-19 is transmitted in a cold climate, not a hot and humid climate.
6. Digital thermometers are 100% effective in detecting COVID-19 patients.
7. Ultra Violet bulbs used for disinfection can be used to kill COVID-19 in our body.
8. Spraying alcohol or chlorine on your body can kill the virus inside.
9. Eating garlic can prevent COVID-19.
10. Pneumonia vaccine can prevent COVID-19.
11. Washing your nose with regular saline solution can prevent COVID-19.
12. There is medicine that can cure COVID-19.
13. Smoking reduces the risk of catching COVID-19 as hot air is inhaled.
14. COVID-19 is a biological weapon.
15. COVID-19 vaccine is sterile.
16. There is no disease called COVID-19, it is a fabrication.
17. COVID-19 does not infect children.
18. Those who die from COVID-19 are only the elderly and those with chronic diseases.
19. Consuming hot boiling drinks prevents catching COVID-19.
20. COVID-19 vaccine contains poisonous additives such as mercury aluminum and is harmful to health.
21. People can be chipped by the COVID-19 vaccine, so that all their information can be stolen and their behaviors can be controlled [21–24].

2.6. Interventions

Women in the experimental group were trained with the pecha kucha method using a smart mobile phone. Those in the control group were trained by means of classical lectures. The training content consisted of myths and facts about COVID-19 and was prepared using the website of the World Health Organization (WHO) [21] and the studies of Pickes et al. [22], Sahoo et al. [23], Gómez et al. [24], on COVID-19 myths. Accurate information about the COVID-19 myths, which were mentioned in the questionnaire that was used as a data collection tool, was presented in the training. In addition, mask, distance and hygiene rules and basic COVID-19 information, which are introduced for public health by the WHO [25] and can help reduce fear of COVID-19, were given to the women. Elderly women in the groups were also trained without changing the content of the training. Only the training method was different.

The data were collected before, just after, and 3 months after the training by self-reports of elderly women in both experimental and control groups. After the training, feedback on the training subjects was received for both groups, reminders were made to them, and their questions were answered, if any. Both face-to-face theoretical explanation and question-answer method were used as the training techniques for those in the control group. The pecha kucha presentation was used as the training technique for those in the experimental group. The content of the training was prepared in accordance with the pecha kucha technique and supported by intense visual materials, using minimal text. The training consisted of 20 slides prepared in visual intensity and minimal text in accordance with the pecha kucha technique and presented to those in the experimental group by a smartphone. Each slide was shown and explained for 20 s. The presentation lasted 6 min and 40 s. A feedback and question-answer session was held for both the experimental and control groups after the training.

2.7. Statistical analysis

The data were analyzed using the SPSS 20.0 package program (SPSS Inc., Chicago, IL, USA). The Kolmogorov-Smirnov test was used to check whether the data had normal distribution. The Pearson's chi-square test was used to compare the participants' descriptive characteristics, the Mann-Whitney U test to evaluate the difference between the groups' scale mean scores, and the Friedman test to assess the difference between the intra-group pretest, posttest and retention test scale mean scores. In addition, the Wilcoxon Signed Ranks test was used to determine which group caused the significant difference found in the Friedman test. A p value less than 0.05 were considered statistically significant.

3. Results

3.1. Participant flow, baseline data

Table 1 compares the socio-demographic characteristics of women in the experimental and control groups. There was no statistically significant difference between the groups in terms of socio-demographic characteristics (p > 0.05).

Table 2 compares the COVID-19 experiences of women in the experimental and control groups. There was no statistically significant difference between the groups in terms of COVID-19 experiences (p > 0.05). In addition, 43.8% of those in the control group and 40.6% of those in the experimental group reported to feel poor mood. Again, 40.7% of those in the control group and 43.7% of those in the experimental reported to have poor physical condition. Moreover, 34.4% of those in the control group and 31.2% of those in the experimental group reported that the COVID-19 pandemic had a very negative effect on their daily energy. Again, 40.6% of those in the control group and 46.9% of those in the experimental group reported that the Covid 19 pandemic changed their hospital/physician decisions.

The difference between the intra-group pre-test, post-test and retention test fear of COVID-19 mean scores of women in the experimental group was statistically significant (p = 0.000). This difference was between their pre- and post-test scores (Z = −4.946, p = 0.000), between their pre-test and retention test scores (Z = −4.712, p = 0.000), and between their post-test and retention test scores (Z = −3.941, p = 0.000). The difference between the intra-group pre-test, post-test and retention test fear of COVID-19 mean scores of women in the control group was also statistically significant (p = 0.000). This difference was between their pre- and post-test scores (Z = −4.398, p = 0.000) and between their pre-test and retention test scores (Z = −2691 p = 0.000).

In addition, the difference between the inter-group pretest fear of COVID-19 mean scores of women in the experimental and control groups was not statistically significant (p > 0.05). The difference between the inter-group post-test and retention test fear of COVID-19 mean scores of women in the experimental group was statistically significant (p = 0.000) (see Table 3).

The difference between the intra-group post-test, post-test and retention test belief in myths of COVID-19 mean scores of women in the experimental group was statistically significant (p = 0.000). This difference was between their pre- and post-test scores (Z = −0.4.370, p = 0.000) and between their pre-test and retention test scores (Z = −4.048, p = 0.000).

The difference between the intra-group post-test, post-test and retention test belief in myths of COVID-19 mean scores of women in the control group was also statistically significant (p = 0.000). This difference was between their pre- and post-test scores (Z = −3.689, p = 0.000) and between their pre-test and retention test scores (Z = −2.488, p = 0.013).
In addition, the difference between the inter-group pretest belief in myths of COVID-19 mean scores of women in the experimental and control groups was statistically significant (p = 0.005). The difference between the inter-group post-test and retention test belief in myths of COVID-19 mean scores of women in the experimental and control groups was also statistically significant (p = 0.000) (see Table 4).

| Table 1 | Comparison of the socio-demographic characteristics of women in the experimental and control groups. |
|---------|-----------------------------------------------------------------------------------------------------|
| Socio-demographic characteristics | Control group | Experimental group | Test and p value |
| | n | % | n | % | |
| Age | | | | | |
| 65–70 years | 23 | 71.9 | 22 | 68.8 | $X^2 = 0.075$ |
| 71–76 years | 9 | 28.1 | 10 | 31.2 | p = 0.784 |
| Education | | | | | |
| Primary school | 14 | 43.8 | 11 | 34.4 | $X^2 = 1.619$ |
| Secondary school | 11 | 34.4 | 16 | 50.0 | p = 0.445 |
| High school | 7 | 21.8 | 5 | 15.6 | |
| Employment status | | | | | |
| Employed | 27 | 84.4 | 23 | 71.9 | $X^2 = 1.463$ |
| Unemployed | 5 | 15.6 | 9 | 28.1 | p = 0.226 |
| Social security | | | | | |
| Yes | 19 | 59.4 | 21 | 65.6 | $X^2 = 0.267$ |
| No | 13 | 40.6 | 11 | 34.4 | p = 0.606 |
| Type of family | | | | | |
| Nuclear | 22 | 68.8 | 24 | 75.0 | $X^2 = 0.309$ |
| Extended | 10 | 31.2 | 8 | 25.0 | p = 0.578 |
| Marital status | | | | | |
| Married | 21 | 65.6 | 23 | 71.9 | $X^2 = 0.291$ |
| Single | 11 | 34.4 | 9 | 28.1 | p = 0.590 |
| Total | 32 | 100 | 32 | 100 | |

$X^2 = $ Pearson's chi-square test.

| Table 2 | Comparison of the COVID-19 experiences of women in the experimental and control groups. |
|---------|-----------------------------------------------------------------------------------------------------|
| COVID-19 experiences | Control group | Experimental group | Test and p value |
| | n | % | n | % | |
| How do you feel mentally in general? | | | | | |
| Very good | 2 | 6.2 | 2 | 6.2 | $X^2 = 0.180$ |
| Good | 3 | 9.4 | 4 | 12.6 | p = 0.981 |
| Moderate | 13 | 40.6 | 13 | 40.6 | |
| Poor | 14 | 43.8 | 13 | 40.6 | |
| How do you feel physically in general? | | | | | |
| Very good | 2 | 6.2 | 1 | 3.1 | $X^2 = 0.521$ |
| Good | 5 | 15.6 | 4 | 12.5 | p = 0.914 |
| Moderate | 12 | 37.5 | 13 | 40.7 | |
| Poor | 13 | 40.7 | 14 | 43.7 | |
| Have you given up going to the hospital when you have complaints and/or hospital controls due to the Covid 19 pandemic? | | | | | |
| Yes | 14 | 43.8 | 14 | 43.8 | $X^2 = 0.001$ |
| No | 18 | 56.2 | 18 | 56.2 | p = 1.000 |
| Has the Covid 19 pandemic changed your hospital/physician decision? | | | | | |
| Yes | 13 | 40.6 | 15 | 46.9 | $X^2 = 0.254$ |
| No | 19 | 59.4 | 17 | 53.1 | p = 0.614 |
| Has the Covid 19 pandemic affected your daily energy level? | | | | | |
| No | 3 | 9.4 | 1 | 3.1 | $X^2 = 2.333$ |
| Slightly adversely affected | 8 | 25.0 | 6 | 18.8 | p = 0.506 |
| Affected adversely | 10 | 31.2 | 15 | 46.9 | |
| Affected very negatively | 11 | 34.4 | 10 | 31.2 | |
| Total | 32 | 100 | 32 | 100 | |

$X^2 = $ Pearson's chi-square test.
Table 3
Intra- and Inter-group comparisons of the pretest, posttest and retention test COVID-19 fear scale mean scores of women in the experimental and control groups.

|                | Pre-test | Post-test | Retention test |
|----------------|----------|-----------|----------------|
|                | Mean ± SD (Min-max) | Mean ± SD (Min-max) | Mean ± SD (Min-max) | X2 | p     |
| Experimental group | 28.59 ± 2.51 (23-32) | 20.53 ± 3.37 (12-26) | 22.28 ± 3.48 (15-28) | 57.575 | 0.000 |
| Control group (23-32) | 28.46 ± 2.22 | 27.25 ± 2.30 (23-32) | 26.93 ± 3.15 (20-35) | 16.506 | 0.000 |
| Z* | −0.312 | −6.424 | −4.547 |
| p | 0.755 | 0.000 | 0.000 |

* Friedman Test.

Table 4
Intra- and Inter-group comparisons of the pretest, posttest and retention test belief in myths of COVID-19 mean scores of women in the experimental and control groups.

|                | Pre-test | Post-test | Retention test |
|----------------|----------|-----------|----------------|
|                | Mean ± SD (Min-max) | Mean ± SD (Min-max) | Mean ± SD (Min-max) | X2 | p     |
| Experimental group | 10.31 ± 2.57 (5-16) | 7.50 ± 2.22 (3-11) | 7.78 ± 2.43 (4-13) | 34.298 | 0.000 |
| Control group (5-16) | 11.93 ± 2.51 (3-16) | 11.34 ± 2.33 (3-15) | 10.81 ± 2.99 (3-17) | 11.022 | 0.004 |
| Z* | −2.833 | −5.434 | −4.100 |
| p | 0.005 | 0.000 | 0.000 |

* Friedman Test.

4. Discussion

This study was conducted to determine the effect of pecha kucha pandemic training on fear and belief in myths of COVID-19 in elderly women aged 65 years and over with chronic diseases. As a result, the hypothesis 1 (H1) was accepted, suggesting that compared to classical lecture, a pecha kucha training reduces more the belief in myths of COVID-19 in elderly women aged 65 years and over with chronic disease. The training given to elderly women in both the experimental and control groups decreased the belief in myths of COVID-19 among them. However, those in the experimental group had lower rates of belief in myths of COVID-19 than those in the control group. Mistry et al. [9] have reported that misconceptions about COVID-19 are common in the elderly. Considering increased vulnerability of the elderly to morbidity and mortality due to COVID-19 disease, the authors have emphasized how important effective intervention and education is to understand what myths of COVID-19 elderly people believe in and to correct these misunderstandings [9]. Chen et al. [26] have stated that the elderly are vulnerable during the pandemic period and should be provided with the right use of information and technology. Both Mistry et al. [9] and Chen et al. [26] show us how important effective education methods are to reduce the belief in myths of COVID-19 among the elderly. Again, Gökseven et al. [5] found that the fear of COVID-19 was higher in elderly women and those with partial knowledge about COVID-19 disease. The authors has also emphasized that the accuracy of such information has a significant effect on fear and is of great importance for elderly people [5]. Therefore, sufficient, understandable and accurate information about COVID-19 disease to can decrease both fear and belief in myths of COVID-19 in women over 65 years of age with chronic diseases. Our study has shown how effective pecha kucha training can be in this regard.

In addition, the hypothesis 2 (H2) was accepted, suggesting that compared to classical lecture, a pecha kucha training reduces more the fear of COVID-19 in elderly women aged 65 years and over with chronic disease. The training given to elderly women in both the experimental and control groups decreased the fear of COVID-19 among them. However, those in the experimental group had lower fear of COVID-19 than those in the control group. Turkish studies on the fear of COVID-19 found higher level of COVID-19 fear in women than in men [27,28]. Similarly, Lo Coco et al. [8] reported higher levels of COVID-19 fear in older women. Again, Cihan and Durmaz [29] examined COVID-19 phobia in the geriatric age group and reported that the psychological symptoms were higher in women and those with chronic diseases. Gökseven et al. [5] conducted a study on the fear of COVID-19 on the elderly and stated that older women were at a greater risk of COVID-19 fear. People who try to access information to understand what is happening in times of crisis, such as a pandemic, may be exposed to misleading information from the media or their close circle when the information in official sources is incomplete or irregular [30]. Incorrect or insufficient information can increase the level of fear of COVID-19 in people [5]. Therefore, providing accurate information with an effective education method can reduce the fear of COVID-19 in women over the age of 65 years with chronic diseases. As the pecha kucha training presented the correct, clear and concise information about COVID-19 using visual materials, it has reduced the level of fear of COVID-19 more than the training with classical lecture method.

4.1. Implications for practice

It is valuable for healthcare professionals to provide pandemic training for vulnerable groups at risk, by trying effective and innovative methods such as pecha kucha. A pandemic training with pecha kucha method via a smart phone can reduce the workload of
health professionals both in the clinic and in the field. Thanks to this effective training, the fear and belief in myths of COVID-19 can be reduced. A pecha kucha presentation makes accurate information more memorable even 3 month after the training. This result may help prevent the transmission of COVID-19. Because accurate information can save lives in a crisis. An emphasis by health care providers and health policy makers on accurate and effective information methods in pandemic conditions can help change the course of the pandemic.

4.2. Limitations and strengths of the study

As the research is a randomized controlled experimental study, it is based on a strong research design. This is a single-centered study. The data were obtained only from the relevant sample. Since there is no valid and reliable scale for myths about COVID-19 in the literature, questions about the myths of COVID-19 were created by the researchers in line with the literature. It is important for future studies to eliminate this limitation by developing a scale for myths of COVID-19.

5. Conclusion

The pandemic training with pecha kucha method decreased the fear and belief in myths of COVID-19 in women of 65 years of age and older with chronic diseases, compared to the classical lecture method. Accordingly, both hypotheses (H1 and H2) were accepted. The study shows that this innovative application can be a good alternative to the classical lecture method. Especially in the pandemic process, the pecha kucha method provides an advantage in terms of reducing the time people spend indoors and avoiding their contact. Thanks to today's technology, the integration of smart phones with pecha kucha method can be used to provide more effective and memorable trainings in the pandemic.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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