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Effects of a Brief Psychosocial Intervention in Patients With Cancer Receiving Adjuvant Therapy

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Although cancer survival has improved with the advancement of technology in diagnosis and treatment, being diagnosed and living with cancer still are regarded as life-threatening and stressful events that may profoundly affect multiple aspects of an individual's life (Kim & Kwon, 2007). Studies have reported that about 30% of patients with cancer have been diagnosed with a psychiatric disorder; most had an adjustment disorder or major depression (Trask, 2004). Numerous investigators also have reported that patients with cancer have many psychological concerns, such as anger, denial, fear of dying, anxiety, depressive mood, loneliness, isolation, and helplessness or hopelessness (Badger, Segrin, Dorros, Meek, & Lopez, 2007; Greer & Watson, 1987; Rawl et al., 2002). The psychological issues can influence cancer recovery (Badger et al., 2007). Patients with cancer with psychological distress such as anxiety and depression often experience increased physical side effects and more difficulty managing their self-care and may experience overall reduced quality of life (Badger, Segrin, Meek, Lopez, & Bonham, 2004; Giese-Davis & Spiegel, 2003). In addition, psychological issues can significantly increase the risk for cancer mortality (Schou, Ekeberg, Ruland, Sandvik, & Karsen, 2004). Therefore, maintaining psychological well-being is an important issue among patients with cancer.

Many psychosocial interventions have been conducted to alleviate psychological distress in patients receiving cancer treatment. Although somewhat mixed in their results, previous studies have supported beneficial outcomes, with patients in the intervention groups often showing lower mood disturbance (Akechi et al., 2007; Fukui et al., 2000), lower anxiety (Greer et al., 1992; Kam, Lee, Kim, & Shin, 2003; Kim, Hur, Kang, & Kim, 2006), higher fighting spirit (Fukui et al., 2000; Greer et al., 1992), less helplessness (Edmonds, Lockwood, & Cunningham, 1999; Greer et al.,

Purpose/Objectives: To test the effects of a brief psychosocial intervention using CD-ROM (BPIC) on psychosocial (fighting spirit, helplessness or hopelessness, anxiety, and depression) and behavioral (self-care behaviors) outcomes in patients with cancer receiving adjuvant therapy.

Design: Quasi-experimental.

Setting: A comprehensive cancer center in Seoul, South Korea.

Sample: 71 patients undergoing adjuvant therapy.

Methods: The study participants were assigned to either BPIC or a control group. The experimental group underwent a two-week psychosocial intervention via CD-ROM, booklet, and telephone counseling.

Main Research Variables: Fighting spirit, helplessness or hopelessness, anxiety, depression, and self-care behaviors.

Findings: After BPIC, the experimental group showed significantly higher scores than the control group for fighting spirit ($p = 0.005$) and self-care behaviors ($p < 0.001$). However, the groups showed no significant differences in helplessness or hopelessness ($p = 0.42$), anxiety ($p = 0.279$), and depression ($p = 0.068$).

Conclusions: BPIC use improved fighting spirit and self-care behaviors in study participants. The results partially support the effectiveness of BPIC for adaptation among patients with cancer receiving adjuvant therapy.

Implications for Nursing: A brief psychosocial intervention using multimedia can be used effectively in clinical oncology settings to accelerate adaptation among patients with cancer in the adjuvant phase.

1992), greater satisfaction with treatment (Kissane et al., 2003), better self-care behaviors (Kam et al., 2003; Oh, Lee, Tae, & Um, 1997), or enhanced quality of life (Jacobsen et al., 2002; Lev et al., 2001; Nelson et al., 2008; Wilson, Taliaferro, & Jacobsen, 2006). However, the interventions were time and resource intensive, with durations longer than six weeks and the need for various professionals such as psychiatrists, psychologists, oncologists, or oncology nurses. Therefore, the

Quick Facts: South Korea

Geography and population: Korea is located in Northeast Asia near Japan, the Russian Far East, and China. Korea encompasses a total of 223,098 km²—almost the same size as the United Kingdom. The Korean Peninsula is divided into two separate states: North Korea and South Korea. Seoul is South Korea's capital city. South Korea's total population was estimated to be 50 million in 2009.

Development: South Korea has developed rapidly since the 1960s, fueled by high savings and investment rates and a strong emphasis on education. The nation became the 29th member of the Organization for Economic Cooperation and Development in 1996.

Healthcare system: Health care in the form of medical insurance and medical assistance was first introduced in 1977. As of December 2005, 96.4% of the population had access to health insurance, with the remaining 3.6% able to receive direct medical assistance.

Cancer incidence: Cancer has been the leading cause of death in South Korea since 1983. To date, cancer deaths account for 26.7% of all deaths annually. Stomach, lung, liver, and colorectal cancer are the four most common cancers in Korean men. Breast, stomach, colorectal, cervical, lung, and liver cancer constitute 66.7% of cancers in Korean women.

Cancer research: The National Cancer Center was founded in 2000 as a government-funded institution devoted to research, patient care, education, and training in cancer.

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interventions were limited in their routine application to the clinical setting.

Computer-based technologies that draw on the teachings of human behavior offer an opportunity for innovative health education, skill-building activities, and support (Cousineau et al., 2004). Importantly, a clinician-delivered program that previously required substantial staff time and effort can be supplemented and enhanced via computer. Therefore, computer-assisted intervention is an effective adjunct to routine clinical care and extends the ability of providers to play an important role in educating their patients, particularly those who must travel long distances for medical services (Cousineau et al., 2004).

Theory-guided intervention is necessary to enhance effectiveness. Self-efficacy is a psychological concept derived from Bandura's social learning theory (Bandura, 1986) and was found to contribute to the alleviation of negative emotion and the enhancement of health behaviors (Bekkers, van Knippenberg, van den Borne, & van Berge-Henegouwen, 1996). By strengthening the patient's self-efficacy, the adaptation process of cancer may be accelerated and the psychological burden can be lessened.

As a result, the authors developed a brief psychosocial intervention using CD-ROM (BPIC), which involved alleviating helplessness or hopelessness, anxiety, and depression; enhancing fighting spirit; and improving self-care behaviors by strengthening patients' self-efficacy. BPIC can be applied to clinical oncology settings to accelerate the adaptation of patients with cancer. The study aimed to test the effects of the BPIC on psychosocial (fighting spirit, helplessness or hopelessness, anxiety, and depression) and behavioral (self-care behaviors) outcomes in patients with cancer receiving adjuvant therapy.

Methods

Study Design

The authors used a quasi-experimental design to evaluate BPIC's effect on patients' fighting spirit, helplessness or hopelessness, anxiety, depression, and self-care behaviors. Patients in the experimental group were compared with patients receiving standard care during adjuvant therapy. Measurements were made prior to and four weeks after completion of the intervention.

Participants

Participants were recruited from the outpatient or inpatient population of the Oncology-Hematology Division of the Korea Institute of Radiological and Medical Sciences in Seoul, South Korea, from August 2006–March 2007. Inclusion criteria for the study were having histologically, cytologically, or clinically proven cancer; receiving chemotherapy or radiotherapy; being informed of cancer diagnosis; and having a performance status of 0, 1, or 2 according to Eastern Cooperative Oncology Group criteria. Exclusion criteria were having cognitive impairment, being too ill to participate, being treated for any psychiatric disorder by mental health professionals, and being unable to use the telephone.

Twenty-six participants were needed in each group to detect a large effect ($d = 0.8$) in the primary outcome, with a power of 0.8 and a two-tailed alpha less than 0.05 (Cohen, 1988). To compensate for nonassessable participants because of the drop-out rate of about 30%, 34 participants were needed in each group.

Intervention

The intervention tested was based on self-efficacy theory, which provides a framework for selecting intervention strategies to improve psychological and behavioral outcomes. Self-efficacy is defined as a belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Bandura, 1986). Self-efficacy is a key determinant to the performance of specific behavior. Therefore, self-efficacy theory has been used in nursing interventions to

improve self-care behaviors (Kam et al., 2003; Oh et al., 1997). According to the theory, self-efficacy is enhanced by four factors: successful performances, vicarious experiences, verbal persuasion, and emotional arousal (Bandura, 1986). The BPIC also used the four factors.

The intervention consisted of health education, coping skills, and stress management. The contents were based on a literature review and a needs assessment conducted among 20 patients with cancer receiving adjuvant therapy. The intervention was administered at one-week intervals over a two-week period via CD-ROM, a booklet, and telephone counseling. In the first session, participants viewed a 15-minute instructional CD-ROM and were provided with a booklet titled *Fighting Spirit and Health Care Among Cancer Patients*. The researchers provided 20 minutes of health education based on the booklet. The CD-ROM and booklet were in Korean language at an elementary school graduate comprehension level. After one week, participants received telephone counseling from one of the researchers. The specific contents of the intervention are described in Figure 1.

CD-ROM flash contents: The CD-ROM flash contents were developed based on the strategy of vicarious experience in self-efficacy theory (Bandura, 1986). An actor playing a patient diagnosed with small cell lung cancer showed how to cope with a cancer diagnosis, finish cancer therapy successfully, and manage health care after completing the cancer treatment. The contents consisted of coping with the cancer diagnosis, symptom management during adjuvant therapy, increasing fighting spirit and hope, overcoming feelings of helplessness or hopelessness and anxiety, stress management, achieving functional wellness through healthy lifestyle after completion of cancer treatment, and strengthening social relationships.

First Session

- Introduction of the intervention
- Watching the CD-ROM
 - Coping skills
 - Symptom management
 - Stress management (progressive muscle relaxation and guided imagery)
 - Overcoming negative affect
 - Increasing hope and fighting spirit
 - Achieving a functional wellness
 - Strengthening social relationships
- Health education using a booklet
 - Hopeful goal setting
 - Making a therapeutic personal relationship with significant others
 - Enhancement of spiritual self-perception
 - Problem-solving technique

Second Session

- Telephone counseling
 - Symptom check
 - Feedback on self-care behaviors
 - Raising self-efficacy on self-care behaviors

Figure 1. Psychosocial Intervention Contents

The actor demonstrated progressive muscle relaxation and guided imagery for stress management. The training was aimed to apply the strategy of emotional arousal from self-efficacy theory (Bandura, 1986). The 15-minute CD-ROM contained 66 scenes and was validated by three oncologists and three oncology nurse specialists prior to being used. In addition, the composition of the contents and degree of difficulty of the video were approved by five patients with cancer. Participants watched the CD-ROM once in a clinical setting with the researcher, then they could review the CD-ROM again.

Booklet: The booklet was provided to reinforce the CD-ROM. The contents were based on a literature review and needs assessment of patients with cancer by the principal investigator. Enhancing fighting spirit and hope were highlighted, and three themes were presented: hopeful goal setting, forming therapeutic personal relationships with significant others, and enhancing spiritual self-perception. In addition, a problem-solving technique was included.

Telephone counseling: A 15-minute telephone counseling session was performed individually with each participant one week after the first session using the strategy of verbal persuasion from self-efficacy theory (Bandura, 1986). A researcher checked symptom issues and self-care behaviors according to the telephone counseling protocol, gave feedback on the patients' self-care behaviors, and encouraged them to raise their self-efficacy. Therefore, the researcher encouraged participants to experience the enactive mastery described in self-efficacy theory (Bandura, 1986).

Control Group

Participants in the control group received their usual care. For ethical reasons, no attempt was made to limit naturally occurring exposure to learning texts. All control group participants were offered the CD-ROM and booklet after completing final data collection.

Study Procedures

The study was approved by the institutional review board and ethics committee of the Korea Institute of Radiological and Medical Sciences and was conducted in accordance with the Declaration of Helsinki. Eligible participants were approached by researchers or nurses, who informed them of the study and invited them to participate. Written consent for participation was obtained from the participants, and face-to-face baseline interviews were scheduled. At baseline, sociodemographic and clinical characteristics were obtained with a self-reported questionnaire. At first data collection, each participant received a gift card worth \$5. The post-test data collection was performed by mailed survey. To prevent diffusion of experimental data, data were collected from the control group first.

Outcome Measures

Fighting spirit and helplessness or hopelessness: Fighting spirit and helplessness or hopelessness were measured with subscales from the Mental Adjustment to Cancer (MAC) scale, which is used to assess the coping style of patients with cancer (Watson et al., 1988). The MAC consists of five subscales: fighting spirit, anxious preoccupation, fatalism, helplessness, and hopelessness. The scale has 40 items, each rated from 1 (definitely does not apply to me) to 4 (definitely applies to me), with higher scores indicating a greater tendency to adopt that coping style. Previous studies have confirmed the validity and reliability of the MAC (Fukui et al., 2000; Kissane et al., 2003). In the current study, the Cronbach alpha was 0.86 for fighting spirit and 0.85 for helplessness or hopelessness.

Anxiety and depression: Anxiety and depression were measured with the Hospital Anxiety and Depression Scale (HADS), a self-report measurement tool designed for use in medical settings to assess depression and anxiety (Zigmond & Snaith, 1983). HADS consists of 14 items: seven for anxiety (HADS-A) and seven for depression (HADS-D). Each subscale is scored from 0–21, with higher scores indicating greater distress. High reliability has been demonstrated in previous studies (Cronbach alpha varied from 0.68–0.93 for anxiety and from 0.67–0.9 for depression) (Bjelland, Dahl, Haug, & Neckelmann, 2002). The Korean version of HADS has been validated in Korea (Oh, Min, & Park, 1999). However, the reliability of HADS-A was confirmed only with a Cronbach alpha of 0.83, whereas reliability of the HADS-D was very low (Cronbach alpha = 0.5) in the current study.

Self-care behaviors: Self-care behavior was measured with a Korean scale developed by Oh et al. (1997). The scale consists of 20 items each rated from 1–7, with higher scores indicating better self-care behavior. The scale includes self-care behaviors for treatment and health promotion in patients with cancer. The reliability and validity were confirmed in a previous study (Oh et al., 1997), whereas Cronbach alpha was 0.79 in the current study.

Statistical Analysis

Descriptive analyses were conducted for all sociodemographic and clinical characteristics and outcome variables. Chi-square test, Fisher's exact test, and independent t tests were used to determine the homogeneity of general characteristics between the experimental and control groups. Effects of the intervention on each measure were assessed with analyses of covariance to test for a difference between the two groups after adjusting for baseline scores and variables that showed a difference in sociodemographic and clinical characteristics. A two-sided p less than 0.05 indicated statistical significance. Data were analyzed with SPSS® version 12.

Table 1. Baseline Sample Characteristics

Characteristic	Experimental (N = 37)		Control (N = 34)		p
	n	%	n	%	
Age (years)					0.197
Younger than 50	15	41	6	18	
50–59	12	32	12	35	
60 or older	10	27	16	47	
Gender					0.649
Male	15	41	12	35	
Female	22	60	22	65	
Marital status					0.658
Married	33	89	31	91	
Single	2	5	1	3	
Divorced or bereaved	2	5	2	6	
Education					0.491
Less than high school	14	38	16	47	
High school graduate or higher	23	62	18	53	
Monthly income (\$)					0.23
Less than 2,000	22	60	27	79	
2,000 or more	15	41	7	21	
Employed					0.762
Yes	8	22	6	18	
No	29	78	28	82	
Practicing religion					0.705
Yes	28	76	26	77	
No	9	24	8	23	
Cancer diagnosis					0.223
Breast	15	41	19	56	
Lung	3	8	4	12	
Colon	5	14	1	3	
Stomach	–	–	2	6	
Cervical	1	3	1	3	
Other	13	35	7	21	
Time since diagnosis (months)					0.185
6 or fewer	26	70	24	71	
7–12	3	8	1	3	
13–24	3	8	3	9	
25 or longer	5	14	6	18	
Stage					0.002
I	6	16	15	44	
II	13	35	9	27	
III	13	35	1	3	
IV	5	14	9	27	
Treatment					0.533
Chemotherapy only	24	65	18	53	
Radiotherapy only	1	3	2	6	
Chemotherapy plus radiotherapy	12	32	14	41	

Note. Because of rounding, not all percentages total 100.

Results

Participants

Participant recruitment was conducted in the control group first. The 34 patients in the control group were recruited from August–November 2006, and the 37 patients in the experimental group were recruited from

November 2006–March 2007. Adherence to the intervention was very high (94.5%); however, the nonresponse rate of the postintervention survey also was high at 29% for the control group and 51% for the experimental group. Most common reasons were that the survey was inconvenient, it took too long to complete, and the patient felt too ill. In addition, only 42 patients remained to complete the follow-up data collection. Patients who dropped out (n = 29) were similar to those who participated (n = 42) in terms of sociodemographic and clinical characteristics; however, patients who dropped out had more advanced-stage cancer than patients who participated (p < 0.001).

Baseline Characteristics

Table 1 presents the baseline characteristics of the participants. Sociodemographic and clinical characteristics did not differ significantly between the two groups, with the exception of more advanced-stage cancer in the experimental group. Therefore, advanced-stage cancer was controlled for in the analysis of each outcome.

Effect of the Intervention on Study Outcomes

Baseline values for all study outcomes were not significantly different between the two groups (see Table 2). A significant between-group difference was observed for change in fighting spirit (p = 0.005) and self-care behaviors (p < 0.001). Mean scores for fighting spirit and self-care behaviors increased in the experimental group but decreased in the control group. In particular, mean self-care behaviors increased by 28% from 83.9 at baseline to 107.5 at post-treatment assessment. However, no significant between-group differences were observed for helplessness or hopelessness (p = 0.42), anxiety (p = 0.279), and depression (p = 0.068). Although no statistical significance was found between the two groups, mean scores for helplessness or hopelessness and depression decreased slightly in the experimental group but increased in the control group. In addition, level of anxiety increased in both groups but to a greater extent in the control group.

Discussion

The current study aimed to evaluate the effectiveness of a brief psychosocial intervention using multimedia (i.e., CD-ROM) on psychological and behavioral out-

comes in patients with cancer receiving adjuvant therapy. The results support the effectiveness of BPIC in increasing fighting spirit and improving self-care behaviors over the study period. However, BPIC had no significant effect on reducing helplessness or hopelessness, anxiety, and depression.

As BPIC was developed based on self-efficacy theory (Bandura, 1986), the intervention offered peer modeling of active coping approaches for adverse effects of adjuvant therapy or psychological issues. The study effectively used the strategy of vicarious experience by providing comprehensive knowledge and skills needed during the adjuvant phase. The strategy may have caused the increase in fighting spirit and self-care behaviors in the experimental group relative to the control group. Strengthening the patient’s self-efficacy might accelerate the adaptation process, thereby improving fighting spirit and self-care behaviors. However, fighting spirit and self-care behaviors of the control group deteriorated because of the patients’ inability to cope properly with physical or psychological distress during treatment. The findings were consistent with those of previous studies (Fukui et al., 2000; Greer et al., 1992; Kam et al., 2003; Kissane et al., 2003; Lev et al., 2001; Oh et al., 1997). However, the current study is noteworthy for its brief intervention in comparison to the 6- to 20-week interventions used in the previous studies (Fukui et al., 2000; Greer et al., 1992; Kam et al., 2003; Kissane et al., 2003; Lev et al., 2001; Oh et al., 1997). The finding implies that BPIC can be cost effective; therefore, an analysis of cost effectiveness should be included in future research.

Unexpectedly, BPIC did not show significant improvements in helplessness or hopelessness, anxiety,

Table 2. Changes in Study Outcomes Between Experimental (N = 18) and Control (N = 24) Groups

Variable	Pretest			Post-Test		Change		p ^b
	\bar{X}	SD	p ^a	\bar{X}	SD	\bar{X}	SD	
Fighting spirit			0.601					0.005
Experimental	52.3	6.7		53.8	6.9	1.5	5.9	
Control	53.5	7		50.1	6	−3.4	4.5	
Helplessness			0.465					0.42
Experimental	12.6	4.1		12.4	3.7	−0.2	3.5	
Control	13.5	4.4		14.5	4.6	1	3.2	
Anxiety			0.521					0.27
Experimental	4	2.9		4.4	2.9	0.4	2.1	
Control	3.3	3.9		4.9	3.5	1.6	2.7	
Depression			0.133					0.068
Experimental	7.1	4.2		6.2	3.6	−0.8	4	
Control	5.2	3.7		7.1	3.6	1.9	2	
Self-care behaviors			0.987					< 0.001
Experimental	83.9	21.3		107.5	20.9	23.6	16.7	
Control	83.8	16.2		78.4	20.1	−5.4	18.6	

^a Independent t test

^b Analysis of covariance

and depression, which was not in agreement with other studies (Edmonds et al., 1999; Fukui et al., 2000; Greer et al., 1992). The first explanation for this disagreement may be related to the methodology of the intervention, such as dose or delivery method. The brief intervention evaluated in the current study may not have had sufficient strength to improve psychological issues. Greer et al. (1992) evaluated the effect of an eight-week adjuvant psychological therapy course for patients with cancer. Patients receiving therapy had significantly higher scores than control patients on fighting spirit and significantly lower scores on helplessness, anxiety, and fatalism. Similar findings were found by Fukui et al. (2000).

Researchers in previous studies provided a 60- to 90-minute psychosocial intervention for six weeks or more with a face-to-face method. The current findings indicated that a brief, two-week intervention may have been too short to achieve the full intervention effect. The pattern also was consistent with meta-analytic findings showing that the duration of the psychosocial intervention correlated positively with improvements in patients' psychosocial outcomes (Rehse & Pukrop, 2003). BPIC use requires some consideration with regard to the delivery method. Badger et al. (2005) also failed to prove the efficacy of six-week telephone-delivered interpersonal counseling on negative affect. Badger et al. (2005) indicated dosage effect as a reason for their failure: six weeks may not have been sufficient time to decrease the negative affect. However, one should be aware of the suitability of the delivery method for enhancing psychological well-being because previous researchers have demonstrated the positive effects of psychosocial intervention provided with the face-to-face method (Fukui et al., 2000; Greer et al., 1992; Kissane et al., 2003). Therefore, dose and delivery method issues of interventions targeting psychological improvement require additional examination.

The second potentially plausible explanation for the disagreement relates to a theory-related issue. Although the strategy of vicarious experience by peer modeling might be successful, other strategies (e.g., emotional arousal, verbal persuasion, enactive mastery) might not be applied sufficiently if participants watch a CD-ROM or read a booklet only once. Healthcare providers should increase telephone contacts or encourage relaxation training to strengthen theory-based strategies.

Another reason may have resulted from the floor effect. Mean score at baseline was very good; surprisingly, mean levels of anxiety and depression (3.7 and 6.2, respectively) in this study were lower than those of the Korean general population (5.3 and 6.6, respectively) (Yun, Kim, Lee, Park, & Kim, 2007), suggesting that the level could be lowered no further. Miyashita (2005) also reported that a four-week emotional and

educational intervention affected life satisfaction but did not affect anxiety. Miyashita (2005) also indicated a low level of anxiety at baseline and commented that the theme of group therapy (i.e., the expression of some negative feelings about cancer recurrence) might have temporarily increased the level of anxiety. The same notion could be applied to the current study as the researchers also covered adverse effects of adjuvant therapy and cancer recurrence. In addition, participants' characteristics may have played a role in overall findings not supported by the intervention. All study participants were hospitalized for adjuvant cancer therapy, but their progress stage in their regimen or cycle of adjuvant therapy likely differed, which could have influenced the outcomes.

Limitations

The current study had several limitations. The researchers did not conduct a randomized, controlled trial; therefore, the actual effectiveness of the intervention could not be determined precisely. The small sample size limited the power to detect differences between groups, so the results provided merely a preliminary indication that BPIC may be efficacious. In addition, the response rate of the post-intervention survey was low. Caution should be taken when interpreting the effects of BPIC on depression because the reliability of HADS-D was not confirmed in the current study (Cronbach alpha = 0.5). Lastly, the researchers did not observe the results of long-term follow-up and, therefore, could not examine whether the effects of BPIC were sustained.

Conclusions and Implications for Nursing

Oncology nurses are optimally positioned to deliver support and guidance for promoting adaptation in patients with cancer. The current study's results show that a brief psychosocial intervention using multimedia can be used effectively in clinical oncology settings to accelerate adaptation. BPIC was an easily transportable multimedia intervention suitable for use in clinical practice to enhance coping and self-care behaviors in patients with cancer receiving adjuvant therapy. The approach could further reduce the cost of the intervention and facilitate its dissemination in the oncology setting.

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Digital Object Identifier: 10.1188/10.ONFE98-E104

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