Abstract

Purpose; The purpose of this study was to set up the acceptance-commitment therapy (ACT)-based anger crisis management program for patients with schizophrenia and then examine and determine the effects of that program on the psychological flexibility and anger expression style (i.e., anger control, anger in, and anger out) of those patients. Methods: A non-equivalent control group pretest-posttest design was employed. Participants of the study were 45 inpatients who were diagnosed with schizophrenia. For this study, the ACT-based anger crisis management program was applied to the experimental group (n=23) over 4 weeks with 2 sessions per week based. Meanwhile, the control group (n=22) received usual care services from their primary health care providers without any experiment with the ACT-based program. The study was carried out from May to July, 2019. Data were statistically processed and analyzed using the Chi-square test, Fisher’s exact test, and the independent t-test in accordance with the IBM SPSS/WIN 22.0. Findings: The experimental group showed a significant improvement in psychological flexibility (t=5.09, p<.001) and anger control (t=5.09, p<.001) and a significant reduction in anger-in (t=2.44, p=.019) and anger-out (t=2.44, p=.019). Conclusion: The findings of this study suggest that the ACT-based anger crisis management program could be useful as a mental health nursing intervention that realizes the improved psychological flexibility and more effective anger expression style of patients with schizophrenia.

Keywords: Crisis, Schizophrenia, Acceptance and Commitment Therapy, Anger Management Therapy, Psychological Flexibility

1. Introduction

1.1. Necessity of the research

According to a local epidemiologic survey of mental illness status, 1 in four Korean adults has ever experienced at least one among 17 types of mental illnesses that include anxiety disorder, depression disorder and substance use disorder. Of the survey participants, more notably, about 710,000 people have reportedly experienced any of the primary symptoms of schizophrenia such as hallucination, delusion and lowered reality-testing ability[1].

Schizophrenia is one of major mental illnesses. It is estimated that approximately 2 million cases of schizophrenia newly take place each year. Characteristically, the illness aggravates over time and often becomes a chronic mental problem[2]. For instance, schizophrenia is in most cases developed in the early period of adulthood, when it brings disorders in many different areas including recognition, cognition, emotion, behavior and social activity. At some point, then, such disorders lead to thoughts or behaviors that are so bizarre and destructive. Resultantly, thus, patients with schizophrenia may likely express anger towards themselves or others and
even attempt to commit suicide[2][3]. If it becomes chronic, schizophrenia is often involved with negative symptoms such as evasion, that is, schizophrenic patients’ failure of emotional recognition or expression in a proper way[3]. Among impairments of emotional control, as far as patients with schizophrenia, anger is a predictor of behavioral aggressiveness or suicide. This clearly suggests why it is inevitable management in the field of mental nursing practice to perform anger crisis[4].

As one of the most basic human emotions, anger is an emotional state that range from annoying to fury and to rage. Also, anger varies in duration and strength depending on situation. By the way, anger expression has two different conceptual styles. One that is positive is anger control and the negative other is anger-in and anger-out[5][6]. Prior research[7] found that patients with schizophrenia is lower in anger control and higher in anger-in and anger-out than normal people without the same illness. Another prior study[8] that compared how to cope with anger between patients with bipolar disorder and with schizophrenia discovered that in anger-provoking situations, the former patients take more problem-solving actions than the latter ones. These prior findings, anyway, suggest that it is urgently needed for patients with schizophrenia to get the skills or capability of coping well with stressful or anger-provoking situations that they may face.

Treatment of patients with schizophrenia is largely made in two ways. One way is treatment with medication and the other is psycho-social rehabilitation. It is generally known that a combined practice of medication and psycho-social rehabilitation is effective in alleviating the symptoms of schizophrenia and reducing the reocurrence of the mental illness[3]. As a part of the combination, especially, Cognitive Behavior Therapy(CBT) has been actively used to treat people with mental health problems. But, a recent well-organized review of literature that concerns CBT for patients with schizophrenia reached a conclusion that CBT has little effect on those patients in the long-term[9]. In other words, CBT may be temporally effective in treating schizophrenic patients who receive the therapy without understanding or accepting their illness, but eventually, CBT has just limited long-term effects[10].

In contrast, the Acceptance and Commitment Therapy(ACT) is a new intervention that is based on the concepts of acceptance and awareness, instead of approaches taken by CBT. The new conceptional intervention leads patients with schizophrenia to accept their own thought or emotion as it is[11]. How many ACT has positive effects have already been supported by literature review[12] and meta-analysis research[13]. ACT has the ultimate goal of improving the psychological flexibility of patients with schizophrenia under its assumption that evasive reaction brought by limited attributes of language and negative recognition leads to those patients’ psychological inflexibility that in turn causes their mental illness[14]. From the perspective of ACT, patients with improved psychological flexibility are likely to experience in person a negative thought or emotion of their own as it is rather than to evade or suppress it. This means that they accept realities given to them, which contributes to their behavioral changes with the pursuit of valuable objectives[14]. Thus, it is hoped that an anger crisis management program based on ACT would lead its participants or patients with schizophrenia to be more psychologically flexible and that the improved flexibility would allow them to experience without self-defense and cope better with situations given to them, consequently changing their behaviors, especially anger expression, in a positive way.

Hence, this study was designed in order to set up the ACT-based anger crisis management program for patients with schizophrenia and then determine the effects of that program on those patients’ psychological flexibility, anger control, anger-in and anger-out, ultimately clarifying the possibility of applying the same program as a new mental-nursing intervention.

1.2. The purpose and hypotheses

Hypothesis 1. The experimental group that participate in the ACT-based anger crisis management program would show a significant dif-
ference in psychological flexibility, in comparison to the control group that don’t participate in that program.

Hypothesis 2. The experimental group that participates in the ACT-based anger crisis management program would show a significant difference in anger control, in comparison to the control group that don’t participate in that program.

Hypothesis 3. The experimental group that participates in the ACT-based anger crisis management program would show a significant difference in anger-in, in comparison to the control group that don’t participate in that program.

Hypothesis 4. The experimental group that participates in the ACT-based anger crisis management program would show a significant difference in anger-out, in comparison to the control group that don’t participate in that program.

2. Experimental Methods

2.1. Research design

This study is a quasi-experimental research of nonequivalent control group pretest and posttest design. Specifically, the research is an attempt to set up a cognitive behavior program based on ACT for the anger crisis management of patients with schizophrenia and then determine the effects of that program on the psychological flexibility, anger control, anger-in and anger-out of those patients.

2.2. Subjects

Participants of this study were inpatients of a mental hospital located in K Province, Korea who were diagnosed with schizophrenia by a specialist of mental health medicine at that hospital in accordance with the Diagnostic and Statistical Manual of Mental Disorders, DSM-5. Another qualifications for the subjects were 1) being aged 19 or over, 2) having no history of drug addiction, alcohol addiction or organic mental disorder other than schizophrenia, 3) being able to communicate with the authors of this study during participation in the ACT-based anger crisis management program and understand the contents of the questionnaire given to them and 4) having no experience of participation in any other cognitive behavior program within 3 months before the beginning of this study. Regarding the number of the subjects, the study initially allocated 21 for each group by using the G*Power 3.1.9 Program in which literature[12] and meta-analysis research[13] on the effects of ACT were reviewed in an organized way or referred and by designating effect size=.80, significance level=.05 and the power of test=.80 through the two-sample independent t-test. However, later, this study modified the number of the participants by taking into consideration the rate of dropout, that is, about 20% due to the possibilities of discharge from hospital, sleep-over, aggravation of symptoms or abandonment for a personal reason during the application of the ACT-based anger crisis management program. Accordingly, by convenience sampling, the study finally selected 26 patients for the experimental group from a ward of the above mentioned mental hospital and 26 for the control group from another ward whose environment for treatment was similar to the former ward. And then, the experimental group was divided into two subgroups (13 for sub-group A, 13 for sub-group B). Meanwhile, a preliminary survey was made prior to the first session of the ACT-based anger crisis management program. This study applied total 8 sessions of that program to the experimental group over 4 weeks on the basis of 2 sessions per week. After that, the post-test was conducted. While, the control group were just asked to receive the pre- and post-tests in a same way as the experimental group, without being experimented with the ACT-based program. Data collection was made from May to July, 2019. Data that were finally analyzed here were responses from 23 of the experimental group, except 1 who gave up participation in the program halfway and 2 who were discharged and responses from 22 of the control group, except 1 who was discharged and 3 whose answers to items of the questionnaire were deemed insincere.

2.3. ACT-based anger crisis management program

ACT originally seeks to make patients experience realities given to them and accept them as
they are rather than alleviating or eliminating problems that the patients have. Similarly, the ACT-based anger crisis management program set up in this study has the ultimate purpose of leading patients with schizophrenia to raise their own adaptive way of anger expression by helping them become more psychologically flexible. Theoretical frameworks of that program are shown below <Figure 1>.

**Figure 1.** Conceptual framework of this study.

The ACT-based anger crisis management program used in this study is a restructured version of the guidelines for acceptance and commitment therapy in order to be more applicable to patients with schizophrenia. Before finally completed, that program was examined and verified to have content validity by 1 specialist of mental health medicine and 2 nurses of mental care. That program is structured to provide 8 sessions in total. Each session consists of 3 stages whose total spent time is 50 minutes or, more specifically, 10 minutes for introduction, 30 for development and 10 for breathing meditation. In this study, the introductive part of the program had the goal of inducing so-called the creative despair of participants, leading them to accept the thought or emotion of their own. In more detail, the introductive part sought inducing participants not to avoid their own negative thought or emotion, especially anger, but to accept them as it helped the respondents appreciate that suppressing or restricting such negative thought or emotion would be ineffective and even cause more problems. The main part of the program aimed to lead participants to accept realities given to them by means of group experience activities, many different metaphors or breathing mediation and then objectively observe and flexibly respond to things around them going beyond stereotypes related to language or objects. Finally, the last part of the program aimed to make participants effectively practice substantial actions in order to achieve meaningful goals or values that they set up in the realities that they face. The composition of the program is shown as below <Table 1>.
Table 1. The anger crisis management program based on ACT.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Purpose</th>
<th>Contents of program</th>
</tr>
</thead>
</table>
| Orientation of the anger crisis management program (session 1) | Understand the purpose and necessity of the program | • ACT program introduction  
• Do not think about chicken  
• Conducting a pre-test  
• Breathing meditation |
| Acceptance (session 2) | Accept thoughts, feelings, and experiences in and of itself | • Activities using metaphor  
• Remembering the moment I'm angry and not reminding me  
• Breathing meditation |
| Defusion of thought and language (session 3) | Separate thoughts from the actual and understand Hidden language properties know | • Button activity of thought and mind  
• Watermelon words follow game  
• Brain bingo game  
• Breathing meditation |
| Stay in the present (session 4) | Focus on the thoughts and emotions of this moment | • Experience card matching activity  
• Emotion is a moment and it passes.  
• Eating meditation |
| Self as context (session 5) | Be able to understand oneself as an observer’s point of view | • Activities using metaphor  
• I am peaceful/angry  
• Breathing meditation |
| Finding and clarifying values (session 6) | Identify the importance of meaningful value in life | • Activities using metaphor  
• Finding my life value  
• Breathing meditation |
| Commitment to value (session 7) | For the chosen value committed to devotion | • Activities using metaphor  
• Watch videos about life’s worth  
• Breathing meditation |
| Finish the program (session 8) | Adapted to real life and dedicated to selected values | • Participation in the program  
• Program evaluation  
• Conducting a post-test |

2.4. Instrumentation

1. Psychological flexibility

The scale used here to measure the psychological flexibility of participants is the 2nd edition of the Questionnaire for Acceptance and Behavior of Korean version. That edition is Heo et al.’s[17] adapted version of the Acceptance and Action Questionnaire-II (AAQ-II) which was developed by Bond et al.[16]. This scale is a 7-point Likert scale that uses total 10 items to measure the psychological flexibility of respondents in a self-reported way. Among those items, those in form of negative sentence are supposed to be reversely interpreted in terms of scores for them. In other words, higher scores mean higher psychological flexibility. According to research by Heo et al.[17], the inter-item consistency of this scale is Cronbach’s α=.85. The reliability in this study is Cronbach’s α =.73.

2. Anger expression style

Having the goal of measuring the anger expression style of participants, the scale used here is the inventory for anger expression that belongs to Chon, Hahn, Lee and Spielberger’s[6] STAXI-K, State-Trait Anger Expression Inventory-Korean version that is the outcome of the modification and supplementation of STAXI, State-Trait Anger Expression Inventory that was developed Spielberger, Krasner and Solomon[18]. The inventory contains of total 24 items or, more specifically, 8 items for anger control, 8 for an-
ger-in and 8 for anger-out. The higher respondents are score for each item, the higher they are in the level of anger control, anger-in or anger-out. According to research by Chon et al.[6], anger control, anger-in or anger-out are respectively Cronbach’s α=.73, .74 and .81 in terms of reliability. For this study, however, the reliabilities of anger control, anger-in and anger-out are respectively Cronbach’s α=.80, .76 and .78.

2.5. Data analysis

The collected data were processed using the SPSS/WIN 25.0 Program.

1. The general characteristics of participants were identified and determined in terms of frequency, percentage point, mean value and standard deviation value. Homogeneity between the experimental and the control groups in relation to those dependent variables was examined and analyzed using the Chi-square test and the Fisher’s exact test.

2. As part of the preliminary survey, the Shapiro-Wilk test was made to verify the normality of dependent variables. This move found that those variables are all normal in distribution (W=.917~.985, p=.067~.971), which in turn were analyzed using the independent t-test. Homogeneity between the experimental and the control groups in relation to those dependent variables was analyzed using the independent t-test. And then, homogeneity between the experimental and the control groups in relation to those dependent variables was examined and analyzed using the independent t-test.

3. The effects of experimental treatment with the ACT-based anger crisis management program were determined and analyzed using the independent t-test.

3. Results

3.1. General characteristics and homogeneity test

As far as the general characteristics of participants are concerned, 56.5% of the experimental group and 50.0% of the control group were all male. And 73.9% of the experimental group and 81.8% of the control group were all aged 40 or over. In terms of marital status, 91.3% of the experimental group and 81.8% of the control group were all unmarried. Of the experimental group, additionally, 78.3% were high school graduates or lower and 21.7%, junior college graduates or higher. While, 81.8% of the control group were high school graduates or lower and 18.2% of the same group were junior college graduates or higher. 60.9% of the experimental group and 72.7% of the control group were all religious believers. Furthermore, 73.9% of the experimental group and 68.2% of the control group were all at least 5 times in the frequency of hospitalization. Based on all of these characteristics, this study made the homogeneity test to find that the experimental and the control groups were homogeneous with no significant difference <Table 2>.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Categories</th>
<th>Exp. n(%)</th>
<th>Cont. n(%)</th>
<th>χ²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Men</td>
<td>13(56.5)</td>
<td>11(50.0)</td>
<td>.192</td>
<td>.768</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>10(43.5)</td>
<td>11(50.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age(year)</td>
<td>&lt;40</td>
<td>6(26.1)</td>
<td>4(18.2)</td>
<td>.407</td>
<td>.722*</td>
</tr>
<tr>
<td></td>
<td>≥40</td>
<td>17(73.9)</td>
<td>18(81.8)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2. Homogeneity test on psychological flexibility, anger control, anger-in and anger-out

As part of the pre-test, this study tested homogeneity between the experimental and the control groups. As a result, it was found that the two groups were similar to each other with no significant difference between them in psychological flexibility (t=.695, p=.491), anger control (t=.417, p=.679), anger-in (t=.916, p=.365) or anger-out (t=.467, p=.643) <Table 3>.

Table 3. Homogeneity of dependent variables in pretest.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Exp.(N=23) M±SD</th>
<th>Cont.(N=22) M±SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological flexibility</td>
<td>47.13±9.73</td>
<td>45.14±9.51</td>
<td>.695</td>
<td>.491</td>
</tr>
<tr>
<td>Anger control</td>
<td>21.35±5.30</td>
<td>20.73±4.64</td>
<td>.417</td>
<td>.679</td>
</tr>
<tr>
<td>Anger in</td>
<td>18.65±5.06</td>
<td>17.32±4.69</td>
<td>.916</td>
<td>.365</td>
</tr>
<tr>
<td>Anger out</td>
<td>16.13±5.53</td>
<td>15.45±4.02</td>
<td>.467</td>
<td>.643</td>
</tr>
</tbody>
</table>

Note: Exp.=Experimental group; Cont.=Control group.

3.3. The effects of the anger crisis management program based on ACT

This study applied the ACT-based anger crisis management program to its participants. As a result, the research found that the same program brought significant differences between the experimental and the control groups in terms of psychological flexibility (t=7.29, p<.001), anger control (t=4.67, p<.001), anger-in (t=-2.51, p=.016) and anger-out (t=-2.34, p=.024) <Table 4>. 

<table>
<thead>
<tr>
<th>Variables</th>
<th>Exp.(N=23) M±SD</th>
<th>Cont.(N=22) M±SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological flexibility</td>
<td>47.13±9.73</td>
<td>45.14±9.51</td>
<td>.695</td>
<td>.491</td>
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<tr>
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<tr>
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<td>16.13±5.53</td>
<td>15.45±4.02</td>
<td>.467</td>
<td>.643</td>
</tr>
</tbody>
</table>

Note: Exp.=Experimental group; Cont.=Control group.
### Table 4. The comparison of psychological flexibility, anger control, anger in and anger out between the pretest and posttest.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group</th>
<th>N</th>
<th>Pre test</th>
<th>Post test</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>M±SD</td>
<td>M±SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological</td>
<td>Exp.</td>
<td>23</td>
<td>47.13±9.73</td>
<td>54.22±6.10</td>
<td>7.29</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>flexibility</td>
<td>Cont.</td>
<td>22</td>
<td>45.14±9.51</td>
<td>40.36±6.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger control</td>
<td>Exp.</td>
<td>23</td>
<td>21.35±5.30</td>
<td>24.65±3.31</td>
<td>4.67</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>22</td>
<td>20.73±4.64</td>
<td>20.14±3.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger in</td>
<td>Exp.</td>
<td>23</td>
<td>18.65±5.06</td>
<td>15.70±3.14</td>
<td>-2.51</td>
<td>.016</td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>22</td>
<td>17.32±4.69</td>
<td>18.36±3.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger out</td>
<td>Exp.</td>
<td>23</td>
<td>16.13±5.53</td>
<td>13.52±2.37</td>
<td>-2.34</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>22</td>
<td>15.45±4.02</td>
<td>15.05±1.96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Exp.=Experimental group; Cont.=Control group.

### 4. Discussion

It was turned out in this study that the ACT-based anger crisis management program is effective in improving the psychological flexibility of mentally problematic people. This fact supportively complies with not only an integrated review and research of literature[10] concerning ACT’s influence on persons with mental health problems, but also an organized review of literature[12] that suggest that ACT helps improve the psychological flexibility of persons with mental illness. Thus, theoretically, ACT brings behavioral changes as well as improved psychological flexibility that allows its patients to accept their own thought or emotion as it is and get an objective insight to the reality given to them, in comparison to CBT as a conventional intervention that intends to strengthen its patients’ coping skills by means of cognitive restructuring[14]. Keeping in mind this theory, the authors of this study set up a particular ACT-based program that includes the utilization of many different metaphors, provision of opportunities, which allow experiencing activities whose goal is to escape from language-related stereotypes, and the process of breathing meditation, all of which the study considered are more appropriate for participants of that program who are under specially situational contexts, especially in relation to schizophrenia, resultantly finding that the program contributed to making those participants become more psychologically flexible. Indeed, afterwards, the participants recognized that the ACT-based anger crisis management program helped a lot them live a daily life in a socially acceptable way as that program led them to view and accept their own thought or emotion as it is in non-violent way, while acknowledging that until participation in that program, they were likely to be verbally abusive, behaviorally aggressive or just evasive when they faced anger-provoking situations.

This research discovered that the ACT-based anger crisis management program has a positive effect on how patients with schizophrenia express anger. In other words, the study showed that the program significantly enhanced anger control as a positive style of anger expression and, in contrast, significantly reduced anger-in or anger-out as a negative style of anger expression. By the way, prior research suggest that patients with schizophrenia are lower in the level of anger control and higher in the level of anger-in or anger-out than people who are mentally normal[7] and that those patients are less likely to cope with an anger-provoking situation in a problem-solving way that patients with bipolar disorder[8]. By the way, anger expression in such inappropriate way might lead to behavioral ag-
gressiveness towards the self or others and, further, even suicide or violence. In this sense, it may be regarded that the biggest outcome of this study was verifying the fact that the ACT-based anger crisis management program effectively help patients with schizophrenia respond to anger in a more adaptive way. When sharing their experience of that program, participant of this study said that after the program participation, they came to understand the fact that any thought or emotion of their own does not always stay in their mind, but changes over time. Also, they added that as a part of the program, meditation while eating nut products or breathing mediation was much helpful to making themselves keep or restore presence in situations that were anger-provoking in daily life.

In fact, it has been already determined that ACT intervention has positive effects on people who suffer physical diseases such as chronic pain, diabetes and tinnitus as well as mental health problems such as eating disorder, anxiety, depression and psychosis[10][11][12][14]. But in Korea, research on ACT intervention is still in its early stage and, if any, their main focus is in most cases put on some adolescents or college students who have been officially confirmed as those who are highly risky with mental health problems[10]. This suggests that in the near future, this country should develop its own effective methods of ACT intervention provided taking into full consideration characteristics or situational contexts of people who have many different types of mental illness including schizophrenia and then that those intervensional methods should be researched in a continuous, empirical way in the field of clinical practice.

5. Summary and Conclusion

This study was attempted to set up the ACT-based anger crisis management program for patients with schizophrenia and then clarify the effects of that program on the psychological flexibility, anger control, anger-in and anger-out of those patients. The study found that the ACT-based anger crisis management program is positively effective in improving the psychological flexibility or anger control of patients with schizophrenia and reducing those patients’ anger-in or anger-out. This apparently suggests that the above mentioned program could be a useful intervention that helps patients with schizophrenia become more psychologically flexible and, further, find a more effective anger expression style of their own. Thus, this study is so meaningful in that it set fundamentals for the creation of effective intervensional methods that are effectively applicable to help patients with the same mental illness in the field of clinical practice.

6. References

6.1. Journal articles


[10] Choi DJ & Kim SJ. An Integrative Review of Acceptance and Commitment Therapy


### 6.3. Additional references


### 6.2. Books


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