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Cognitive-behavioral group program for Chinese heterosexual HIV-infected men in Hong Kong
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Abstract
This study explored the effects of cognitive-behavioral program (CBP) using a wait-list control group in 16 Chinese heterosexual HIV-infected men. Participants in the treatment condition underwent a 7-week group based CBP, which addressed various HIV-related issues. Relevant cognitive and behavioral strategies were taught as well. The aim of treatment was to improve the quality of life and to reduce psychological distress in a sample of heterosexual symptomatic HIV-infected men. Prior to intervention, baseline measures showed that our sample had a lower quality of life in comparison with the local general population. They also experienced a significant level of psychological distress. Following intervention, men in the CBP group demonstrated significant improvement in the mental health dimension of quality of life and a significant reduction in depressed mood. These preliminary findings suggested that short-term cognitive-behavioral therapy can be effective in improving the quality of life and mood of Chinese heterosexual HIV-infected men.

Keywords: HIV/AIDS; Men; Chinese; Cognitive-behavioral therapy

1. Introduction
Since the arrival of more effective antiretroviral medications for HIV infection, HIV-infected individuals have to cope not so much with death but with the complex psychosocial demands of a chronic life-threatening illness [1]. Subsequent to the first and the strongest impact of the initial news of seropositivity, infected persons have to experience lots of direct burdens and changes in lifestyle including overt signs of progressive physical deterioration [2], legal and societal stigmas [3,4], and possibly multiple bereavements [5]. Several studies found that adjustment disorder with depressed mood is very common among HIV-infected patients [6-9]. Although HIV-infected persons may not be afflicted with clinical affective disorder, many of them experience significant levels of distress. Therefore, emotional adjustment is a major dimension of quality of life that is relevant to them.

Previous research shows that apart from biological factors, various psychosocial variables contribute to individual differences in HIV disease progression [10,11]. The combination of unpredictable stressors and diminished social resources may lead to the use of maladaptive coping strategies, such as denial and avoidance [12]. The adoption of a fatalistic and pessimistic attitude was found to be associated with an accelerated disease course and a shortened survival period among men with AIDS [13-18].

Given the negative impact brought by HIV infection, psychological intervention may be beneficial to HIV-infected individuals [19]. Typically, these interventions involve groups of 6-8 participants which are led by two co-leaders. These groups usually meet weekly for 2–3 months. Studies that specifically recruited HIV-positive men who were experiencing ongoing mood problems found that group-based, stress-reduction interventions are successful in improving psychological functioning and reducing depressive symptoms [20-28].

Most of the past research has been focused on studying the efficacy of psychological intervention for the gay population [22-28]. Little is known about the generalizability of such intervention among heterosexual men. In Hong
Kong, heterosexual men made up a considerable proportion of HIV-infected patients. The purpose of the present study is to investigate whether group-based cognitive-behavioral intervention can help Chinese heterosexual HIV-infected men to relieve distress and to promote their quality of life.

2. Method

2.1. Participants

Participants were recruited from a pool of 62 HIV-seropositive heterosexual men, who attended the Clinical AIDS Service of Queen Elizabeth Hospital, a major general hospital in Hong Kong. Eligibility criteria included: (1) a diagnosis of HIV illness; (2) being in a symptomatic stage of infection (CDC stage B or C); (3) being heterosexual male and older than 18 years old; (4) able to comprehend and communicate in Chinese and (5) willing to participate in the study. Patients were excluded if they were hospitalized at the time of recruitment; having a highly infectious disease; have received psychotherapy before; or with cognitive deficits, mental retardation or psychotic symptoms at the time of the study.

Information was collected from nurse specialists and medical records to select patients who met the eligibility criteria. Eligible patients were contacted by phone to confirm their eligibility and interest in the study. Those consenting patients were asked to fill out a set of questionnaires for baseline assessment. Clinical interview was also conducted by a clinical psychologist in training.

Out of the 62 patients who met the inclusion criteria, 53 were successfully contacted. Twenty-four patients attended the screening interview. After the baseline assessment, 20 patients had signed consent to participate in the study. However, four patients were later found to be unsuitable candidates for the present study. Two of them were assessed to be unsuitable to place in a group environment, one indicated that he was bisexual at a later time, and one was found to be at the asymptomatic stage of HIV infection rather than symptomatic.

In total, 16 participants were recruited. Eight participants entered the CBP group and eight participants entered the waitlist control (WLC) group. However, two participants in the CBP group and one from the WLC group dropped out due to practical reasons. Data of these dropouts were excluded from the present analyses. Thus, the final sample that entered statistical analyses consisted of 13 participants. Six participants belonged to the CBP group and seven belonged to the WLC group.

2.2. Measures

2.2.1. Demographic characteristics

At the beginning of the study, we collected information on the participants’ age, sex, employment status, relationship status, and years of education. Other biomedical information, including the time since diagnosis of HIV infection, stage of illness, and the latest CD4 count, was obtained from the medical records of the participants.

2.2.2. Psychosocial assessment

2.2.2.1. Health-related quality of life (HRQOL). Medical outcomes study short-form 36 (SF-36) [29] was used to measure HRQOL. It yields a profile of eight domains, which include physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional and mental health. Higher scores always indicate better HRQOL when raw scores are linearly transformed to a 0–100 scale. The SF-36 has been translated into Chinese and was validated on the local population in Hong Kong [30].

2.2.2.2. Mood state. The Center for Epidemiologic Studies-Depression Scale (CES-D) [31] was used to measure depressive mood. The scale includes 20 items related to depressive mood, feelings of guilt and worthlessness, feelings of hopelessness and helplessness, psychomotor retardation, loss of appetite, and sleep disturbance. Participants reported the frequency of each of the symptoms during the past week on a four-point Likert scale ranging from 1 (rarely or none of the time) to 4 (most or all of the time). Higher scores indicate higher frequency of depressive symptoms.

2.3. Procedures

To ensure a satisfactory randomization, the 16 participants were grouped into eight matched pairs based on their demographic background including age, education level, employment status, marital status and the time since diagnosis. Participants within each matched pair were randomized to either the CBP group or the WLC group respectively. The CBP group consisted of seven weekly sessions, with each session lasting for 2 hours. Immediately after the cognitive-behavioral program was completed, post-treatment data were collected from the CBP group. Comparison data were obtained from the WLC group at the mean time.

2.4. Cognitive-behavioral group therapy

The protocol of the CBP intervention was derived based on Beck’s [32] theory of cognitive-behavioral therapy and the coping effectiveness training protocol developed by Chesney and her colleagues [33]. The aims of the program were to teach patients to identify and challenge their irrational beliefs related to various aspects of their illness, and to enhance their skills in coping with stressful situations.
arising from their illness. The program also aimed at improving social support and reducing distress of the participants. The CBP group was led by a clinical psychologist specializing in treating HIV-infected patients and a clinical psychologist in training. The group was comprised of seven sessions and each session lasted for 2 hours. Various topics were set up as the theme of discussion. These topics included health issues, self-view issues, social relationships and existential issues which were related to their illness. Participants received training in cognitive restructuring [32] and behavior change strategies. Information on the psychological and physiological responses to stress responses was provided and relaxation techniques were taught. In addition, the choice of stress management techniques in face of different types of stressors was also discussed. All sessions were structured in such a way that homework was first reviewed and then the topic of the week was introduced. Next, group discussions and therapeutic intervention were carried out. At the end of each session, relaxation exercises were included. Participants were encouraged to practice these exercises at home on a daily basis.

2.5. Statistical analyses

Before conducting hypothesis-testing analyses, chi-square tests and simple independent sample t-tests were used to test if differences existed between the CBP group and the WLC group on the demographic variables and the outcome measures at baseline. Paired-sample t-tests and Stuart–Maxwell test [34–36] were administered to examine any changes occurred in the demographic variables between pre-treatment and post-treatment. Pearson correlation coefficients were used to examine the relationships among the demographic variables and the changes between pre- and post-treatment assessment on various variables. The present study employed a more stringent significance level of 0.10 would be adopted in finding differences in demographic variables and outcome measures between the CBP group and the WLC group at baseline assessment. If any of these demographic variables differed significantly between the two groups at baseline or were related to changes in any of the outcome measures, they were statistically controlled for in subsequent analyses. In testing the treatment effects, analysis of covariance (ANCOVA) was conducted to analyze the post-treatment differences between the two conditions with baseline measures set as the covariates. If the assumptions of ANCOVA were not met, repeated measure analysis (RMA) was conducted instead.

3. Results

3.1. Sample characteristics

The 13 participants of this study were between the ages of 29 and 48, with a mean age of 38.15 (S.D. = 8.03) (Table 1). All of them were infected with HIV via heterosexual sexual contact. About half of the participants (54%) were married and almost all of them (92%) were living with family members. There were no significant differences between the two groups on any of the demographic variables at baseline assessment. This indicated that randomization with matched pairs to the experimental and the control condition was successful. None of these demographic variables changed significantly during the intervention period (all $P > 0.10$). However, age was significantly correlated with the change in depressed mood, $r = −0.66$, $P < 0.05$. Therefore, age was controlled for in the analysis of the treatment effects on depressed mood.

3.2. Effects of treatment on quality of life

Prior to treatment, the quality of life of our participants was generally lower than the local general population as measured by the SF-36. Table 2 shows that they scored lower on most subscales of SF-36 when compared with the local norm [30]. The means and standard deviations of the SF-36 scores at both pre-treatment and post-treatment by group assignment were presented in Table 3. There was no significant difference between the CBP group and the WLC group at baseline on all subscales, with $P > 0.10$.

We hypothesized that men in the CBP condition would show improvement in quality of life, whereas men in the control condition would show minimal change on these measures. The results show partial support for this hypothesis. Participants of the CBP group program showed improvement in their mental health. ANCOVA revealed a significant group effect for mental health (QoL-MH) at post-treatment, $F(1, 10) = 5.51$, $P < 0.05$, after controlling for initial differences. A closer look at the items of the QoL-MH subscale revealed two subtypes of items, which were the depression subtype (e.g., “felt down in the dumps”, “felt downhearted and blue”, and “been a happy person”) and the anxiety subtype (e.g., “been very nervous”, and “felt calm and peaceful”) respectively. ANCOVA were then repeated with score of the depression subtype (QoL-MHd) and that of the anxiety subtype (QoL-MHa). Significant group effect was found in the depression subtype at post-treatment, $F(1, 10) = 5.28$, $P < 0.05$. However, no group effect was found for the anxiety subtype. These results implied that the cognitive-behavioral group program specifically improved the depressed mood of the HIV-infected men in our study. For all other subscales of QoL, no significant group effects were obtained at post-treatment assessment, with $P > 0.10$.

3.3. Effects of treatment on psychological distress

The means and standard deviations of the CES-D scores at pre-treatment and post-treatment were presented in Table 3. There were no significant differences between groups on the CES-D scores at pre-treatment assessment. ANCOVA was performed with the pre-treatment depressed mood level and
Table 1
Demographic characteristics of the sample (N = 13)

| Demographic characteristics | CBP (N = 6) | WLC (N = 7) | Group |
|----------------------------|-------------|-------------|-------|
| Age (S.D.)                 | 38.17 (8.47) | 38.14 (8.32) | t = 0.005, P > 0.10 |
| Type of infection          |             |             |       |
| Heterosexual sexual contact| 6           | 7           |       |
| Education background       |             |             |       |
| Primary                    | 2           | 2           | χ²(2) = 0.929, P > 0.10 |
| Secondary                  | 4           | 4           |       |
| Tertiary                   | 0           | 1           |       |
| Current work status        |             |             |       |
| Full-time                  | 1           | 3           | χ²(3) = 2.438, P > 0.10 |
| Part-time                  | 0           | 1           |       |
| Unemployed                 | 5           | 3           |       |
| Current monthly income (HKD) |            |             |       |
| Below US$ 9999             | 5           | 2           | χ²(3) = 4.569, P > 0.10 |
| US$ 10,000-19,999          | 1           | 2           |       |
| US$ 20,000-29,999          | 0           | 1           |       |
| US$ 30,000-39,999          | 0           | 0           |       |
| US$ 40,000-49,999          | 0           | 2           |       |
| Current living arrangement |             |             |       |
| Living alone               | 1           | 0           | χ²(1) = 1.264, P > 0.10 |
| Living with other family members | 5 | 7 |       |
| Marital status             |             |             |       |
| Single                     | 2           | 1           | χ²(3) = 1.406, P > 0.10 |
| Married                    | 3           | 4           |       |
| Separated                  | 0           | 1           |       |
| Divorced                   | 1           | 1           |       |

Notes: *US$ 1 = 7.78 HKD.

Table 2
Pre-treatment comparison of means and standard deviations for MOS 36-item short form health survey (SF-36) with the local norm [30] (N = 13)

| Scales                     | CBP mean (S.D.) | WLC mean (S.D.) | HK norm mean (S.D.) |
|----------------------------|-----------------|-----------------|---------------------|
| Physical functioning       | 79.17 (22.66)   | 83.57 (18.64)   | 94.02 (10.88)       |
| Role physical              | 58.33 (19.10)   | 60.71 (37.86)   | 85.31 (28.36)       |
| Bodily pain                | 61.11 (28.76)   | 65.08 (21.69)   | 87.07 (18.96)       |
| General health             | 45.00 (22.14)   | 41.43 (6.27)    | 59.32 (19.43)       |
| Vitality                   | 62.50 (25.64)   | 58.57 (19.94)   | 61.67 (17.59)       |
| Social functioning         | 56.25 (27.10)   | 60.07 (21.50)   | 91.45 (18.66)       |
| Role emotional             | 66.67 (42.16)   | 71.43 (40.50)   | 72.34 (37.86)       |
| Mental health              | 72.00 (12.90)   | 70.29 (15.81)   | 73.07 (15.93)       |

age set as the covariates. There was a significant group effect (F(1, 9) = 12.18, P < 0.01) on depressed mood level at post-treatment. Men in the CBP group showed a significant reduction in distress in contrast to their peers in the control condition.

4. Discussion

The purpose of this pilot study was to test the effects of psychological intervention in a group of Chinese heterosexual symptomatic HIV-infected men. Results have provided initial evidence that men who participated in the CBP group demonstrated a significant reduction in psychological distress and improvement in quality of life. These findings are consistent with past research carried out in Western developed countries, that group based cognitive-behavioral intervention could improve distressed mood and quality of life [27,37]. Convergent evidence of the therapeutic effects of CBP was obtained from both measures of quality of life and depressed mood. Health-related quality of life is a concept that involves multi-dimensional aspects to reflect how much one perceives oneself as generally satisfied and competent to perform in life [38,39]. This definition implied that subjective perception is an important component of a person’s quality of life. Among various dimensions of quality of life, the mental health aspect was found to be significantly improved among participants in the CBP group. This suggested that the component of quality of life which involved subjective
interpretation, like mental health, instead of those aspects of more objective dimensions (e.g. physical functioning), was more amenable to improvement by CBP. The techniques taught in the treatment condition included situation analysis, cognitive restructuring, and positive reframing. All of them were tailored to enhance participants’ ability to produce cognitive changes. Therefore the present findings were consistent with the aims of the treatment package.

In the present sample, the baseline level of depressed mood of the CBP group as measured by CES-D was above the cutoff score of 16 suggested by Radloff [31]. It indicated that these participants were more distressed on average at the time they entered the study. After the 7-week CBP treatment, participants demonstrated a significant reduction in depressed mood. According to Radloff’s [31] cutoff score, this reduction may represent changes from a state of dysphoric mood to mood within normal limits. In contrast, no change in psychological distress was noted in patients in the control condition, who received routine care from the out-patient clinic during the period between the pre-treatment and post-treatment time points.

Cognitive-behavioral program (CBP) could effectively reduce distress of HIV-infected patients in our sample because it was designed to include topics which targeted issues that were specifically related to HIV infection. Participants were then taught to identify, and confront their automatic negative thoughts. They were also assisted to reframe the meaning of the illness in a more constructive way. In addition, participants reported quite a lot of dissatisfaction and frustrations in their daily life. They would usually respond in maladaptive ways, like temper outbursts. In the treatment sessions, they were taught to analyze various stressful situations and to respond more adaptively.

In view of the preliminary nature of the present study, the findings should be interpreted with caution before generalizing them to other populations. The sample size was relatively small given its nature as a pilot study. In fact, many of the nonsignificant findings may have been statistically significant if the sample size was larger. Hong Kong has been experiencing an economic downturn in recent years. Many of our patients have had to work long working hours and were unable to attend a 7-week treatment group punctually. This may have affected our sample size to some extent. In addition, this sample was a highly selective sample of generally literate men who voluntarily participate in a fairly demanding study of CBP and HIV. Self-selection factors may have biased the sample toward men who used more active coping. Thus, these findings may not generalize to those less motivated HIV-infected patients.

However, it is premature to conclude that group format of treatment is poorly accepted among men in Hong Kong before further studies are conducted on more cohorts of patients.

This study also focused on therapy outcomes but not processes. There are nonspecific processes involved in a group based intervention that may be responsible for the positive outcomes. For example, attention from group leaders, upward and downward comparisons and feeling of support from group members are all nonspecific elements in a treatment group. The contribution of these nonspecific factors should be further examined. Although the present results suggested that cognitive behavioral intervention was able to alleviate psychological distress in our sample, the potential for long-term gain is not known. Three-month follow-up data was planned to be obtained from our sample initially. Unfortunately, there was an outbreak of Severe Acute Respiratory Syndrome (SARS) in Hong Kong 3 months after the treatment. No follow-up data could be obtained to monitor the sustainability of treatment gain.

Findings of the present study suggest that time-limited group based interventions are feasible and effective among

### Table 3

| Scales                          | CBP Pre mean (S.D.) | CBP Post mean (S.D.) | WLC Pre mean (S.D.) | WLC Post mean (S.D.) | F P-value |
|--------------------------------|---------------------|----------------------|--------------------|----------------------|-----------|
| Physical functioning           | 79.17 (22.68)       | 86.87 (17.22)        | 83.57 (18.64)      | 86.83 (17.25)        | 0.30b 0.61 |
| Role physical                  | 58.53 (49.16)       | 70.83 (40.05)        | 60.71 (37.86)      | 60.71 (40.46)        | 0.42c 0.53 |
| Bodily pain                    | 61.11 (26.78)       | 85.19 (13.46)        | 65.08 (21.66)      | 69.64 (15.33)        | 4.41c 0.06 |
| General health                 | 45.00 (22.14)       | 50.83 (22.23)        | 41.43 (6.27)       | 42.14 (11.49)        | 0.32b 0.58 |
| Vitality                       | 62.50 (23.56)       | 66.67 (17.51)        | 58.57 (19.94)      | 62.66 (14.10)        | 0.08c 0.78 |
| Social functioning             | 56.25 (27.10)       | 83.33 (17.08)        | 66.07 (21.36)      | 78.57 (25.73)        | 1.10b 0.32 |
| Role emotional                 | 66.67 (42.16)       | 77.76 (27.22)        | 71.43 (40.50)      | 61.00 (40.50)        | 0.00c 0.37 |
| Mental health                  | 72.00 (12.90)       | 83.33 (11.14)        | 70.29 (15.81)      | 70.66 (10.51)        | 6.51b 0.03 |
| Mental health (depression sub-scale) | 13.83 (2.40)     | 15.83 (1.47)         | 13.57 (2.64)       | 13.43 (2.15)         | 8.28b 0.02 |
| Mental health (anxiety sub-scale) | 9.17 (1.72)        | 10.00 (1.79)         | 9.00 (1.63)        | 9.29 (1.11)          | 0.13d 0.69 |
| CES-D                          | 16.67 (6.59)        | 19.17 (5.33)         | 13.57 (9.50)       | 13.71 (9.88)         | 0.000c 0.00 |

The F-test denotes the group effect after controlling for the initial difference in analysis of covariance (ANCOVA).

The F-test denotes the Group x time interaction effect for the 2 x 2 repeated measures analysis of variance (RMA).

The F-test denotes the Group effect after controlling for the initial difference and age in analysis of covariance (ANCOVA).

* P < 0.05, two-tailed.

** P < 0.01, two-tailed.
Chinese heterosexual HIV-infected men in Hong Kong. Nevertheless, two aspects of these men were observed to be rather different from the Western world. First, Chinese men usually place great values on family relationships. The disclosure of being HIV positive and the physical illness itself made them worry that they could no longer perform the role of caregivers in their families. This brought great impact on the macho image they used to hold. Strategies that help to redefine their roles and to adjust their expectation on themselves in the family would be beneficial to them. Second, Chinese generally tend to communicate their negative affects in terms of physical symptoms, such as chest discomfort, headache and stomachache. Additional time was required to educate and encourage our participants to express their emotions and to attribute signs of emotional distress more correctly.

In fact, our Chinese heterosexual men showed more similarities than differences when compared with their peers in the West. They share many common psychological impacts and challenges related to HIV infection. In the era of managed care and with the pressure to provide more time-limited treatments, it is important to learn that such treatments are effective and feasible in Chinese heterosexual men despite the few differences observed. Meanwhile, social support emerged to be a critical element in alleviating the psychological distress of our patients. They are often frustrated and angry about the stigma relating to AIDS. It is rare to find an opportunity to ventilate their feelings and grief. A group based psychological treatment may specifically target such needs so that patients can openly discuss concerns and provide enhanced social support. It will be helpful for future research to employ process analyses to help us better understand the mechanism in the reduction of distress among HIV-infected men.

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