Relato de Pesquisa

Outcomes of a pilot-group using mindfulness-based stress reduction (MBSR) for people living with HIV with mild-moderate depression

A prática de mindfulness (MBSR) como dispositivo terapêutico no tratamento da depressão em pacientes HIV-positivo: resultados de um estudo-piloto

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Abstract

This pilot-study investigated the usefulness of a mindfulness-based stress reduction (MBSR) 8-week programme for HIV-positive individuals experiencing mild-moderate symptoms of depression. A total of 17 participants, aged 18-65 were recruited. This study used a mixed research design (One-way repeated measures; thematic analysis). Outcome measures included the Hospital Anxiety Depression Scale (depression subscale) assessing severity of depressive symptoms and the Acceptance and Action Questionnaire (AAQ-II) assessing levels of psychological flexibility. In addition participants were asked to share experiences of how treatment had affected their ability to manage symptoms of depression and HIV-diagnosis (acceptance, control, coping and relationships were amongst the themes extracted). Results suggested that there was significant reduction in depressive symptoms between post-treatment and all other three conditions (beginning of treatment, baseline one and baseline two). Similarly a significant increase in psychological flexibility was reported at post-treatment phase. The theoretical, clinical and research implications are discussed.

Keywords: HIV; Depression; Mindfulness; Psychological Flexibility

Resumo

Este estudo-piloto investigou a utilidade do Programa Mindfulness de Redução de Estresse *(MBSR)* de 8 semanas em 17 participantes HIV-positivos apresentando sintomas de depressão leve à moderada. Foram utilizados questionários para avaliar os sintomas de depressão (escala HADS) e flexibilidade psicológica (AAQ-II), bem como uma análise qualitativa de como o tratamento afetou a capacidade dessas pessoas em lidar com sintomas de depressão e o diagnóstico de HIV. Os resultados sugerem que houve uma redução significativa dos sintomas de depressão entre pós-tratamento, início de tratamento e fase de espera. Do mesmo modo houve um aumento significativo na flexibilidade psicológica após tratamento. Os resultados desse estudo indicam que o Programa Mindfulness de Redução de Estresse é altamente eficaz no âmbito clínico, oferecendo novas perspectivas terapêuticas no tratamento da depressão para portadores de HIV. Discutem-se os processos cognitivos envolvidos na prática de mindfulness que mediam essas mudan-

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-ças nos pacientes, e são oferecidas recomendações de como integrar práticas de mindfulness dentro do contexto terapêutico da clínica para atendimento a pessoas que vivem com HIV/AIDS.

Palavras-chave: HIV; mindfulness; depressão; flexibilidade psicológica.

Introduction

The prevalence of depression in HIV-positive individuals vary widely from 5 to 20%, depending on the population studied, the stage of HIV infection that they are in, in addition to other complicating conditions such as substance abuse (Cruess *et al*., 2003). Factors that often have a negative impact on the HIV population and their quality of life are HIV-related stigma, loneliness/decreased social support, neurological changes, declining health, fatigue, changes in appearance – especially in the cases of long-term survivors of HIV, and financial distress (Moneyham *et al*, 2008). HIV-positive individuals may be twice as likely to develop major depressive disorders compared with uninfected samples (Ciesla and Roberts, 2001).

The diagnosis and treatment of depression is important because of its association with poor self-care and worse health outcomes in HIV populations. Additionally, studies relate depressive symptoms with symptoms of HIV infection and disease progression (Zorrilla *et al*., 1993; Burack *et al*., 1993). Feelings of hopelessness, lack of control, and loss of future self are common in the HIV population, and are often manifested as a cluster of symptoms typical of a depression diagnosis (Ciesla and Roberts, 2001). The prevalence of depression among HIV individuals may also be attributable to ongoing stressors (i.e., constant reminder of illness, daily stress, side effects, regular visits to HIV clinics) that accompany maintaining a strict HIV treatment regimen (Olatunji *et al*., 2006).

Symptoms of depression in the HIV population are often common after the initial HIV-diagnosis and when individuals experience health problems and become symptomatic (Carrico *et al*., 2007). For example, Cooperman and Simoni (2005) reported that in a sample of 207 American females living with HIV, 26% attempted suicide after their diagnosis. Of those who attempted suicide, 27% tried within the first week after diagnosis and 42% tried within the first month. Evidence suggests that although most individuals learn to cope with their diagnosis over time, when they experience symptoms of HIV-related illnesses, depression returns (Carrico *et al*., 2007). Approximately 19% of a 2,909 adult sample living with HIV reported having thoughts of suicide within the previous week (Carrico *et al*., 2007). Another study by Robertson, Parsons, van der Horst, and Hall (2006), composed of 246 non-psychiatric adults living with HIV reported that nearly two thirds had suicidal ideation at some point in their lives. The prevalence of such high rates of suicidal ideation and attempts indicates that stressors associated with HIV are severe enough to have an impact on the quality of life in this population.

Consequentially, untreated symptoms of depression within HIV populations may cause significant morbidity and shorten longevity (Mayne *et al*., 1996; O'Neil *et al*., 2003). Factors such as increased social withdrawal, loss of interest or pleasure in daily activities and feelings of hopelessness, which are included in a common presentation of depression (DSM-IV, 1994) may further impact the quality of life of

HIV-positive individuals (Leserman *et al*., 2002, Ironson *et al*., 2005). Thus, the diagnosis and treatment of depression is important because of its association with poor self-care and worse health outcomes in HIV populations. Additionally, studies relate depressive symptoms with symptoms of HIV infection and disease progression (Zorrilla *et al*., 1993; Burack *et al*., 1993).

Since advances in antiretroviral and other therapies now allow longer life for individuals living with HIV, identifying risk of depressive episodes has become a vital step in HIV clinical practice, thus the development and implementation of treatments for depressive symptoms have the potential to improve quality of life, health outcomes and adherence to HIV treatment (Starace *et al*., 2002).

In the context of depression in HIV populations, mindfulness-based interventions are important because research suggests that mindfulness practice significantly reduces avoidance (i.e. an unwillingness to experience both negative affect and cognition through daydreaming, distraction, thought suppression, substance abuse; Zettle, 2007) and rumination (i.e. thinking repetitively about the causes, meanings, and consequences of depressive mood), both of which are key factors that help develop, maintain and that facilitate relapse of depressive disorder (Williams, 2008; Beck, Rush, Shaw, & Emery, 1979; Ingram, Miranda, & Segal, 1998; Nolen-Hoeksema, 1991). Mindfulness is defined as the capacity of intentionally bringing one's attention to the internal and external experiences occurring in the present moment. It can be defined as the ability to observe things as they are (i.e. with acceptance), without choosing, without comparing and judging (i.e. with compassion), and without evaluating (Kabat-Zinn, 1992). The method is comprised of a series of meditation and attentional training techniques and exercises specific to help individuals change their relationship with their thoughts, feelings and emotions, as well the felt sense of the body.

Avoidance and rumination have been suggested to shift together as the result of mindfulness practice (Williams, 2008). The greater the change in mindfulness, the greater the reduction in depressed mood (Kumar *et al*., 2008). Mindfulness teaches participants how to develop skills to nurture the present moment experience '*as it is'* (with acceptance of, and contact with the *present moment*), and thus it could be argued that it encourages growth in *psychological flexibility* and/or a reduction in avoidance (Hayes, Strosahl, Luoma, *et al*., 2004; Batten *et al*. 2009). *Psychological flexibility (*Hayes *et al*., 1999*)* refers to the individual's ability of focusing on the present moment and reducing the tendency to control internal private experiences. These attempts to control private events, through 'daydreaming', 'thought suppression' and other forms of cognitive distractions have been correlated with depression, especially when the engagement with such strategies to reduce experiential suffering may prevent individuals from pursuing life values-based personal goals (e.g., looking after one's health, developing healthy and long-term interpersonal relationships, and being engaged in some form work-related activity). *Psychological flexibility* is a term derived from *Acceptance and Commitment Therapy* theory and as been observed to be one of the key processes through which Mindfulness practice works. Further it has been observed as the ability that helps individuals detach from provocative and evocative private experiences (such as pain, negative thoughts, low mood, and other symptoms), accept private experiences *for what they are*, stay in touch with the present moment, and make contact with values such as kindness and compassionate living, whilst promoting the development of helpful patterns of behaviour (e.g., daily mindfulness practices that may mediate improvement in self-care, self-efficacy, and decreased reactivity to internal/external stressors) in pursuit of a more helpful and vital way of dealing with symptoms of depression (Zettle, 2007).

The practices employed in Mindfulness practice, address those mental and behavioural habits (i.e. avoidance and rumination) that undermine wellbeing and maintain chronic feelings of dissatisfaction, thus facilitating *early detection* of negative thinking patterns, feelings, and body sensations that accompany depressive mood (Williams, 2008). This in turn reduces individuals' vulnerabilities to the development and recurrence of depressive mood (Segal *et al*., 2002).

Previous research also suggests that mindfulness practice may improve quality of life and outcomes in psychological wellbeing in HIV-positive patients, although the published results are still limited (Logsdon-Conradsen, 2002). A study by Robinson *et al*. (2002) suggest that mindfulness-based stress reduction (MBSR) may assist in slowing HIV disease progression and may be considered an effective adjunctive therapy in the comprehensive management of HIV disease. This has been supported by a later study by Creswell, Myers, Cole and Irwin (2008) that showed that mindfulness practice slows the progression of HIV. Furthermore, Mindfulness practice has shown significant acceptability and reasonable feasibility when used as an intervention for HIV-infected patients (aged 13-21 years) for improving psychological wellbeing and self-efficacy, both of which have significant implication for improved quality of life. Outcomes of a mindfulness-based cognitive therapy (MBCT) 8-week programme (sample size=7) for people living with HIV with recurrent depression by Leaity and Hennessey (2006), suggests that MBCT training has a positive impact on participants' depression levels. Available research has documented a significant and expected relationship between *psychological flexibility* as assessed by the Acceptance and Action Questionnaire (AAQ; Hayes, Strosahl, Wilson *et al*., 2004) and levels of self-reported depression (Garst & Zettle, 2006). A study by Gird and Zettle (2007) suggests that participants exhibiting low levels of *psychological flexibility*, as assessed by the AAQ, respond to depressive mood in ways that exacerbate their overall level of emotional distress.

In the context of HIV, an increase in *psychological flexibility* and indeed mindfulness skills, may serve a powerful function in improving mental health in HIV-positive individuals experiencing depressive mood. *Psychological flexibility* seems to free individuals to pursue ways of leading a vital, engaged life (free from avoidance and rumination which are the direct opposites of being in contact with the present moment, i.e. mindfulness), whereas psychological rigidity may keep individuals *"bogged down"* (Zettle, 2007). Consequentially, given that depression appear to be frequent in HIV-patients, leading to negative health outcomes (Hartzell, Janke and Weintrob, 2008), it appears extremely valuable research that examines the usefulness of the Mindfulness training as an intervention for treating depressive mood in HIV-infected patients. Based on the literature reviewed, it could be argued that increased psychological flexibility produces psychological changes through acceptance and increased awareness of psychological distress and tension, that promotes a reduction in depressive mood (Hayes, 2004; Linehan, 1993; Teasdale, 1999).

The Present Study

The current investigation differs from earlier Mindfulness and HIV/depression research in a number of ways. Firstly, it pays specific attention to changes in depressive mood states in HIV adult patients experiencing current and on-going mild-moderate symptoms of depression. Secondly, it investigates how a mindfulness-based stress reduction 8-week programme is able to reduce depressive symptomatology in these patients. Subsequently, it examines the degree to which increased psychological flexibility, and

indeed a reduction in avoidant coping mediates these improvements. Finally, it provides an opportunity for participants to reflect on how these improvements affect their quality of life and their attitudes towards their HIV-diagnosis and symptoms of depression.

Hypotheses

Hypothesis 1: Participants who undergo the 8-week programme in mindfulness-based stress reduction (MBSR) will experience an improvement in psychological wellbeing as evidenced by a significant reduction in their depression scores (HADS-depression).

Hypothesis 2: An increase in psychological flexibility levels (i.e. a reduction in avoidance, as measured by the AAQ-II) will serve as one of the mechanisms, or mediators, by which MBSR produces these improvements.

Method

Design

As indicated earlier, three main research questions were addressed in this current study. First, did participants' depressive symptoms decrease over time? Second, did participants' levels of *psychological flexibility* increase at the end of the 8-week mindfulness programme? Third, how did participants describe and evaluate their experience of mindfulness practice in the context of their depressive mood and HIV-diagnosis.

Given that participants' subjective experiences of mindfulness as a treatment of depressive symptoms in the context of HIV remains largely unstudied, this study mixed quantitative and qualitative data analyses in the attempt to widen current understanding of how Mindfulness-based interventions may be a useful treatment for depression in the context of HIV. Consequentially, a mixed research methods design combined allows the results obtained from one method to elaborate on results from the other method (Hanson *et al*., 2005) and use results from on method to help develop or inform the other method (Goodyear *et al*., 2005).

Participants

Seventeen participants (N=17) were recruited from an HIV/AIDS support service in South East London. All participants had a diagnosis of HIV and were in various anti-retrovirals treatment regimens for a period ranging between 5 to 20 years. Three participants (n=3) opted not to initiate the MBSR programme after assessment phases I and II were conducted. One participant (n=1) did not present with current significant depression. Another participant (n=1) dropped out in the second week of the treatment phase. To qualify for the study, participants had to be diagnosed HIV-positive for >6 months, between 18-65 years of age, and had to report mild-moderate symptoms of depression (scores between 7-16 on the *HADS-D depression subscale)*. Participants were excluded for any substance abuse or if they had initiated

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psychiatric treatment in the past six months, were currently severely depressed and suicidal, with a diagnosis of psychosis, or indicated prior experience of mindfulness or a regular mind-body practice in the past six months (e.g. tai chi; meditation). A total of twelve participants (n=12) with *mean age* 45.7 years concluded the 8-week mindfulness programme. Ethics committee approval was obtained both from the HIV service and from London Metropolitan University.

Measures

Measurement of Depression

The 14-item HADS - *Hospital and Anxiety Depression Scale* (Zigmond and Snaith, 1983) was used in order to measure the severity of depressive symptoms. It consists of two 7-item scales for depression ad anxiety (Zigmond and Snaith, 1983). The HADS-D can indicate probable cases of depression with an average sensitivity and specificity of approximately .80 using the optimal cut-off score of 7 (Bjelland *et al.*, 2002). This threshold (7) was used in this study.

Measurement of Psychological Flexibility

The Acceptance and Action Questionnaire version II *(*ten-item version; Bond *et al.*, submitted) is comprised of ten statements that represent various aspects of avoidant coping targeted at reducing and/or controlling negative affect, behaviour and cognition, that have a subsequent impact on quality of life (Batten *et al.*, 2009). For example, this particular type of avoidance has been found to be associated with higher levels of depression in both psychiatric and community populations, thus contributing to low levels of *psychological flexibility* and a subsequent narrowing of behavioural repertoires and willingness to experience (with acceptance) thoughts, feelings, memories and bodily sensations that the individual evaluates as negative (Hayes *et al.*, 2004; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). In the AAQ-II, respondents are asked to rate each of these statements on a scale of 1 (*never true)* to 7 (*always true)*, giving a possible range of 10-70. Higher scores mean higher flexibility. The AAQ-II was designed to assess the same construct as the AAQ (Hayes *et al.*, 2004) and both have adequate internal consistency (Cronbach's alpha _ .70) and an expected pattern of convergent and divergent validity (Hayes *et al.*, 2004).

Procedure

Recruitment

The MBSR programme was advertised through posters within the HIV service, presentations, and via the Internet. They were given an '*assessment form*' requesting personal information (including name, GP address, information about their HIV diagnosis, and other medical problems). They also received a standardised letter explaining the rationale of the programme, start date, selection procedure and additional information about MBSR. They also got a copy of the *'Hospital Anxiety and Depression Scale'* (HADS) and a consent form explaining the rationale of the study and explaining that all data collected would be held in strictest confidence according to current laws of the Data Protection Act (1998) of the

UK. In addition, the consent form stated that participants would be responsible for notifying the instructor of the MBSR programme of any changes in their physical or psychological wellbeing, and the permission to contact their GP in case they presented with any risk. All participants were contacted via telephone after they were assessed for eligibility. Participants who fell under the exclusion criteria were given information as to where they would be able to find the support they required at that stage. For counselling and emotional support, they were told of the services already in place in their HIV centre, and other public and voluntary organizations connected to this centre (e.g., SLAM, THT).

Outline of the MBSR programme

Week 1 – Participants were welcomed to the group. They were once again informed of the aims of the study and had the opportunity to ask questions about the course. In addition they were asked to fill the HADS (depression) and AAQ-II, both were coded as 'baseline T2' scores.

Week 5 – Participants were given the 'beginning of treatment (T2)' HADS (depression) and AAQ-II questionnaires. They received a welcoming pack containing four cd's for home practice (Kabat-Zinn, 1992). The 8-week MBSR programme started. This in turn, has differed from the traditional MBSR programme (Kabat-Zinn, 1992) in the following ways. Although it was composed of various mindfulness skills practices, including mindfulness of body, breath, thoughts and feelings, gentle mindful hatha yoga stretching, group dialogue where participants were able to share their experiences of both the group class practice and the home individual practice, just as in the traditional Kabat-Zinn (1992) programme, in addition it included talks on stress, acceptance, compassion, strong emotions and discussions often brought by participants (such as 'physical changes', i.e. lipodystrophies - excess, or lack of fat in various regions of the body as the result of anti-retroviral treatment (Daar, 2007), 'HIV treatment side-effects' and 'HIV-diagnosis disclosure'. These discussions were facilitated in the context of mindfulness practice through the use of mindful communication that is a similar component of Kabat-Zinn's (1992) traditional programme (i.e. deepened empathic listening and mutual respect; ability to understand feelings and needs that are not often clearly expressed in communications; translate criticism, judgment, blame into feelings and need; and the invitation to softening the resistance to experience strong feelings and needs, whilst addressing avoidance and reactivity to what is expressed (Kabat-Zinn, 1992). Further, this MBSR programme did not include the full-day retreat that is often provided in the traditional Kabat-Zinn's (1992) programme.

Week 13 – This was the final session of the 8-week MBSR programme. There was a group Mindfulness practice followed by final questions, recommendations, and an open mindful dialogue. Participants were given the 'post-treatment (T3)' HADS (depression) and AAQ-II questionnaires. In addition, they were asked to answer the semi-structured feedback form. At the end of the course a follow-up meeting was arranged but no data was collected at this stage. In addition, they were told they were able to address any difficulties or share any positive outcomes as a direct consequence of their attendance in the course both via e-mail and via phone. This ensured participants' continuing support, taken into account the nature of this study and its target population.

Quantitative statistical analyses

Participants' 'depression' and 'psychological flexibility' scores were measured using one-way repeated measures analysis of variance (ANOVA). The *'depression'* scores were assessed through the *HADS--D* at four different times: at assessment phases I and 2 ('baseline T0' and 'baseline T1'); and 'beginning of treatment' (T2); and later at the end of the MBSR 8-week programme ('post-treatment T3'). *'Psychological flexibility'* was assessed three times using the *AAQ-II*: at assessment phase 2 ('baseline T1'); and beginning of treatment (T2); and later at the end of the MBSR 8-week programme (post-treatment T3). Assessment phases 1 and 2 had a four-week interval between them. Assessment phase 2 and 'beginning of treatment' scores had a subsequent four weeks interval between them. Finally 'beginning of treatment' and 'post-treatment' scores had an eight-week interval between them. Prior to running post-hoc tests, the data set was analysed to detect possible violations of assumptions (i.e. normal distribution or homogeneity of variance). In analyses where the sphericity assumption was violated, degrees of freedom were adjusted using the Greenhouser-Geisser correction (Field, 2009). Statistical analyses were performed using SPSS for Windows (SPSS version15.0).

Qualitative data analysis

To learn about acceptability and usefulness of the mindfulness programme in the target population, a semi-structured feedback form was administered at the end of treatment. This included a question about (a) the experience of attending the mindfulness programme; (b) which component of the programme participants found most helpful; (c) the perception of how attending the course supported them in the management of depressive symptoms; and another question (d) asking participants how the course has influenced their perception over their HIV diagnosis. The form consisted of a combination of open-ended and closed questions about participants' perceptions of the mindfulness programme and its effect on their lives. Based on a thematic analysis approach (Braun and Clarke, 2006) participants' responses to questions (*a)*, (*c)* and (*d*) were coded and themes were identified. All themes were reported by at least a majority of participants. Responses to question (b) which merely assessed participants' preference of individual components found most helpful (i.e. body scan, yoga, meditation, home practice materials, group dialogue) were analysed using SPSS descriptive statistics (SPSS version 15.0; Field, 2009).

Results

Initially the total number of participants recruited was N=17, but then there was reduction of five participants (n=5). These reductions occurred for a variety of reasons including the time between assessment phases I (T0) and II (T1), which was four weeks respectively, as well as no significant depression (>7 HADS-D score), and premature discharge from the study. Results were reported in two different sub-sections: quantitative statistical analysis – was interested in the changes in self-reported symptoms of depression (HADS depression sub-scale) and levels of psychological flexibility (AAQ-II); and qualitative data analysis – which analysed data collected from the semi-structured feedback form at the end of the treatment phase. Data for the latter comprised of responses from 9 participants (n=9).

Quantitative Statistical Analysis

Table 1 summarises the means and standard deviations for both the AAQ-II (T1, T2 and T3) and the HADS-D depression (T0, T1, T2 and T3).

Table 1
Means and standard deviation of the three conditions of psychological flexibility and four conditions of depression.

Depression scores (HADS-D)	Means	Std Deviation	N (number of participants)
Baseline T0	10.3333	3.36650	12
Baseline T1	10.5833	3.47611	12
Beginning of Treatment T2	10.2500	3.69582	12
Post-treatment T3	5.2500	3.10791	12
Psychological Flexibility (AAQ-II)			
Baseline T1	28.3333	8.13894	12
Beginning of Treatment T2	31.2500	9.30420	12
Post-treatment T3	44.9167	6.28792	12

Tests for normality were conducted for data in *table 1* that showed a normal distribution overall: both for 'psychological flexibility' (AAQ-II) and 'depression' scores (HADS-D).

With regards to the depression variables, the *mauchley's sphericity test* was significant, and in turn the *greenhouse-houser* statistical notations were reported.

Inferentials

Hypothesis 1: To test hypothesis 1, a one-way repeated-measures ANOVA was conducted on the data collected via the 'HADS-D depression scores', that showed that significant differences were found among the four conditions: 'baseline T0', 'baseline T1', 'beginning of treatment T2', and 'post-treatment T3' $F_{(3, 33)}=18.357$, $P< .05$)

Following, a *post-hoc* test was conducted for the 'HADS-D depression scores' with *bonferroni adjustment* (p-value = .01) to clarify where the significant differences were located among the four conditions: no significant differences were found between 'baseline T0' and 'baseline T1', and 'baseline T0' and 'beginning of treatment T2', and 'baseline T1' and 'beginning of treatment T2'; however, a significant difference was shown between 'post-treatment T3' and all other conditions (see Figure 1.0 for illustration between the variables). These results confirmed the first hypothesis, indicating that, as expected, at the end of the MBSR programme participants' scores of depression would significantly decrease. Additionally, participants at post-treatment presented with no significant symptoms of depression.

Hypothesis 2: To test hypothesis 2, a further one-way repeated-measures ANOVA was conducted on data collected via the AAQ-II, that showed that significant differences were found between 'baseline T1', 'beginning of treatment T2' and 'post-treatment T3' $F_{(2,22)}=24.038$, $P< .05$).

Consequentially, a *post-hoc* test was conducted with *bonferroni adjustment* (p-value = .01) to locate

where the significant differences lied amongst the three conditions. The results revealed that no significant differences were found between 'baseline T1' and 'beginning of treatment T2'; and a significant difference was found between 'baseline T1' and 'post-treatment T3', and 'baseline T1' and 'pre-treatment T2' (see Figure 2.0 for illustration between the variables). These results confirmed the second hypothesis, demonstrating that, an increase of *psychological flexibility* (i.e. a significant reduction in avoidant coping) would serve as one of the mechanisms through which mindfulness practice would help participants' depression levels significantly reduce. Additionally, participants reported significantly higher levels of *psychological flexibility* at post-treatment than at the beginning of treatment and assessment phase.

FIGURE 1.0
Plot for differences between the four conditions of the HADS-D
(depression)
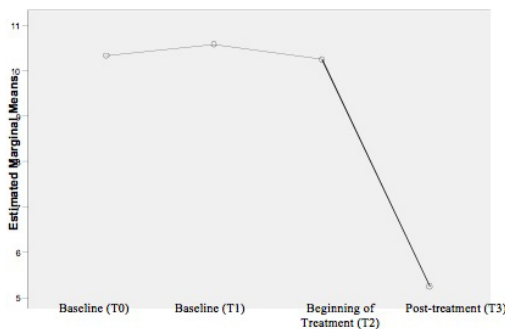
FIGURE 2.0
Plot for differences between the three conditions of the AAQ-II
(psychological flexibility)
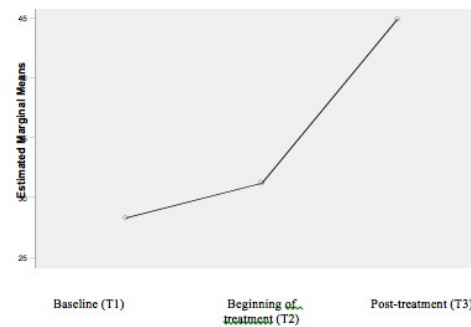
Qualitative Data Analysis

A total of nine participants (n=9) have provided feedback at the end of the Mindfulness training through the 'semi-structured feedback form'. Table 2 describes the components of the Mindfulness programme participants found to be most helpful.

Four over-arching themes were identified, namely, "Acceptance", "Control", "Coping" and "Relationships". Each of these themes is described in turn, beginning with a definition of the themes, followed by a narrative account of the theme including its respective sub-themes (see Table 3).

Table 2
Components of MSBR programme participants found most helpful

	Body Scan	Mindful Gentle Yoga	Home Practice Materials (handouts – literature on mindfulness, coping, HIV; Kabat-Zinn, 1992)	Silent Meditation
N (number of participants)	7	5	2	3

Table 3
Qualitative Data Regarding MBSR Programme Effects (summary of over-arching themes and themes)

Over-arching theme	Themes/Participants Quotations
Acceptance	*Depression and HIV-diagnosis objectified.* Capacity to accommodate depressive symptoms and HIV-diagnosis with less distress and perceive them as transient normal experiences: "Being in the course has helped me realise I can cope with HIV, day-to-day, mindfully". "Move from negative to positive thoughts", "I am not the only person that experiences stress in life".
Control	*Decreased reactivity and avoidance:* "Deal with every day stressful situations in a more objective way", "and maintain a connection with lived life'. Knowing how to react to maladaptive thinking.
Coping	*Taking action:* "It has helped to direct attention. Moving from negative to positive thoughts". Improving attitude and directing attention whilst acting on values such as compassion. *Sense of control.* Increased sense of agency over depression: "I have learned to stop and control my thinking and come back to the present moment" *Improved self-care:* "It has helped me to calm myself when necessary, to be more aware of the fact that I can help myself, by being more aware of my thinking and that I can do something about it".
Relationships	*Improved relationships.* Better communication and increased empathy with others: "to deal with a person in a good way", "I really enjoyed being here and it has been a very nice group of people", "I have more compassion towards others", "Able to say no without feeling guilty".

MBSR, mindfulness-based stress reduction

Acceptance

Many participants who articulated a sense of increased control still continued to experience negative thoughts and low mood. The over-arching theme of Acceptance incorporates a number of processes that appear to have increased their *willingness* to experience these ongoing depression-related phenomena and stressors related to HIV living with less distress.

Depression and HIV-diagnosis objectified. This theme incorporates ways in which negative thinking and low mood became more acceptable in the context of HIV. First, most the participants described a new perspective on their depression-related thoughts, feelings and HIV-diagnosis that can be summarised as "Being in the course has helped me realise I can cope with HIV, day-to-day, mindfully", "Move from negative to positive thoughts" and "I am not the only person that experiences stress in life". Second, a minority indicated that they it was easier to "accept situations beyond (their) control". Finally, many participants spoke of increased tolerance to depressed mood, and additional increase of hope and that moods are transient: "Even though I still suffer from depression, I have a bit improvement since the start of the course".

Control

This over-arching theme describes participants' perceptions and evaluations of personal agency in relation to depression-related thoughts and feelings and to the capacity to respond to stressful events in life more promptly and guided by increased awareness. Control comprised of three themes.

Decreased reactivity and avoidance. Many participants said they were able to respond to stressful situations in more objective ways, whilst maintaining a connection to life-values. That can be summarised as: "Deal with every day stressful situations in a more objective way", "and maintain a connection with lived life'.

Taking action. A number of participants have reported being more able to direct attention and act with compassion. This can be summarised as "It has helped me to direct attention. Moving from negative to positive thoughts".

Sense of control. Many participants said that having the tools to cope enhanced their confidence to handle depression-related thoughts and feelings, supporting the belief in the possibility of prevention and a sense of control over depressive mood, thus improving their capacity to return to the present moment. This in turn, reduced rumination and increased their awareness of early signs of depression. For example, "I have learned to stop and control my thinking and come back to the present moment" and "the fact that the breath can be used to control almost every aspect of our daily lives, and moments, bad and good".

Coping

The sub-themes comprising the over-arching coping theme relate to participants' ability to care about their health and their depression-related symptoms.

Improved self-care.   A number of participants stated that their quality of life had improved in different aspects as the result of attending the MBSR programme. For example, a participant said, "quality of life has improved. Eating regularly, sensible meals." In addition, another participant has reported being "more aware of the fact that I can help myself, by being more aware of my thinking and that I can do something about it".

Relationships

The over-arching theme "Relationships" incorporated a number of changes that participants noticed in their interpersonal relationships, that they attributed to MBSR. First participants said that they often put others' needs above their own, as a way to avoid 'feeling guilty", and that as result of attending the programme they were better able to bring a sense of legitimacy in their relations and with reduced guilt. For example, a participant said now it was possible "to say no without feeling guilty".

Improved relationships.   In addition, participants felt that attending the programme had provided with the capacity to communicate with others with increased empathy. One of the participant's responses was that it was possible "to deal with a person in a good way". In addition, another participant noticed that compassion has increased towards others ("I have more compassion towards others").

In sum, these self-reported themes represent important aspects of enhanced self-efficacy and improved psychological wellbeing, both of which appear to have significant implications for improved quality of life. In addition, they appear to inform the significant improvement observed in the reduction of depression-related symptoms (as measured via the HADS-depression subscale) and the significant increase in the levels of *psychological flexibility* (as measured via the AAQ-II), as reported earlier through the statistical analyses. Furthermore, participants reported that they would use what they learned in the future and would recommend the MBSR programme to friends and other service users (e.g. "(…)to continue with the tools that I got from the course"). All participants reported that they had gotten something of lasting value from the meetings, including learning to "deal with HIV and the pain of every day life", improved attitude, increased calm (e.g. "calm down when someone upsets me") and "have more compassion towards others."

Discussion

In this pilot-study, a mindfulness-based programme for HIV-positive individuals experiencing symptoms of mild-moderate depression showed significant acceptability and reasonable feasibility. Given that this study mixed both quantitative and qualitative approaches in research methods, it widened the possibility for enriching the results in ways that one form of data alone does not allow (Brewer & Hunter, 1989; Tashakkori & Teddlie, 1998). For example, it allows us to simultaneously generalize results from this somewhat small sample to a larger target population and to gain a deeper understanding, based on participants' feedback (Hanson *et al*., 2005), of the ways in which mindfulness training may be used as form of intervention to reduce symptoms of depression and improve the quality of life of individuals living with HIV.

The first eight weeks period comprising of both assessment phases I and II served as a control waiting period to detect naturally occurring changes in depressive symptoms. in the target population. Results indicated that there were no significant changes in the waiting period, which was consistent with the initial hypotheses of this study. As predicted, participants' depressive symptoms have significantly reduced at the end of the 8-week mindfulness programme confirming earlier research that this type of intervention yields good to excellent reliability and applicability in the context of HIV (Robinson *et al*., 2002; Sibinga *et al*., 2008). Further, it was hypothesised that *psychological flexibility*, i.e. the *willingness* to contact the present moment *as it is* without judgment in the service of valued-ends, would increase significantly at the end of treatment, and would serve as one of the mechanisms through which mindfulness practice produced these improvements. In turn, it could be argued that the improvements achieved were at least in one level, mediated by a significant increase on the capacity to experience depression-related thoughts and feelings, through *psychological flexibility (*as measured by the Acceptance and Action Questionnaire; AAQ-II, Bond *et al*., submitted). Given that the AAQ is assumed to measure one underlying construct—the willingness to experience private thoughts and feelings versus avoidance of those thoughts and feelings (Hayes *et al*,2004), it appears that one of the underlying processes of mindfulness training is to target the avoidance, often found in individuals with depression (Zettle, 2007) that helps develop and maintain depressive symptoms (Williams, 2008). In addition, previous research indicates that the key factors in *psychological flexibility* are the awareness, openness, and focus, which are likewise nurtured through mindfulness practice (Hayes *et al*., 2004; Kabat-Zinn, 1992). Furthermore, results from the feedback data analysis of participants' experiences of Mindfulness practice did provide some evidence of improved acceptance, decreased reactivity and avoidance to experience depression-related thoughts and feelings, which may provide additional support to the second hypothesis of this current investigation. Further, participants reported being better able to cope with their depression-related thoughts and feelings and their HIV diagnosis. Moreover, participants reported that this mindfulness training improved their capacity for self-care (i.e. eating more regular meals, at more regular intervals), in addition to keeping track of daily mindfulness practices (45 minutes, every day, for six weeks), even in the presence of the lack of motivation, energy and hope, which are central features of depression (Beck *et al*., 1979). In the context of HIV this is particularly important and a *value-end* in itself, given that self-care is one of the challenges that individuals with HIV face in the long-term symptom management of the disease and it is an extremely useful factor and predictor for better health outcomes in this population (Chou *et al*., 2004). Many authors agree on the position that improved self-observation through mindfulness training may promote use of a wider range of coping skills that enhances the capacity of *self-care* (Baer, 2003).

However, it is also probable that a few other factors may have served as the mechanisms through which mindfulness induced psychological wellbeing in these participants. For example, Kabat-Zinn (1992) argues that mindfulness as a skill may be useful because mindfulness skills may use prolonged *exposure* to avoided bodily sensations, thoughts and feelings that might lead to *desensitization*, with a reduction over time in the emotional responses elicited by the stressors. Similarly, it has been suggested that prolonged observation of current thoughts and emotions, through the practice of mindfulness skills, encourage the *extinction* of fear responses and avoidance previously elicited by these stimuli, improving patients ability to tolerate negative feelings and an increased ability to cope with them in a more effective manner (Linehan, 1993).

Further it has been argued that mindfulness training promotes awareness of all emotional and cog-

nitive events as they occur, including those that may be *early signs of potential depressive relapse* (Teasdale *et al*., 1995). Thus equipping individuals with skills that permit *recognition of maladaptive cognitive processes* that maintain vulnerability for the development and maintenance of depressive symptoms. In fact, most participants in this study reported being better able to direct their attention into a broader aspect of their living that was not 'just' depression or HIV, in addition to being better able to recognize negative thinking patterns associated with depressive mood states.

Cognitive change has also been suggested as one of the potential mechanisms through which mindfulness training produces improvement in psychological wellbeing and quality of life. For example, Kabat-Zinn (1982, 1990) argues that the observation of internal private experiences such as negative thoughts, in a non-judging manner, may lead to the understanding that they are "just thoughts", rather than actual defining truths, thus not necessitating that one either escapes them or engage in avoidant behaviours. In Mindfulness-based cognitive therapy authors frequently agree that the non-judgmental decentered view of private cognitions encouraged by mindfulness training may interfere with ruminative patterns believed to be characteristic of depressive episodes (Nolen-Hoeksema, 1991). Furthermore, mindfulness training encourages individuals to experience negative cognitions and to notice the depressogenic nature of their thinking and to redirect attention to other aspects of the present moment, such as breathing, walking, or environmental sounds. This in turn helps depressed individuals to let go of ruminative thinking cycles, which have been strongly linked with the maintenance of depression (Papageorgious and Wells, 2001).

Although *relaxation* in the context of mindfulness-based training has been argued to be a more ambivalent factor capable of producing changes in individuals, especially because relaxation may not be a primary reason for engaging in mindfulness skills (Baer, 2003), it is still worthwhile making reference to it in this discussion. The defended position of many authors (Baer, 2003; Williams, 2008; Goldenberg *et al*., 1994; Kabat-Zinn *et al*., 1998; Kaplan, Goldenberg, & Galvin-Nadeau, 1993) is that the purpose of mindfulness training is not to induce relaxation, but instead to teach non-judgmental observation of current conditions, which often includes autonomic arousal, racing thoughts, muscle tension, aversion to pain itself, and other phenomena incompatible with relaxation, and that relaxation ought to be seen perhaps more like a process than an outcome per se.

Finally, underlying factors such as *increased acceptance* may have also played an important role in mediating the improvements in psychological wellbeing (i.e. reduction in depressive symptoms) indicated by the results of this current investigation, a position often shared by many other authors (Hayes, Jacobsen, Follette, & Doughter, 1994). For example in analysing the feedback provided at the end of the MBSR intervention, participants reported that they were better able to accommodate depressive symptoms, perceiving them as transient normal human experiences, in addition to being more accepting of their HIV-diagnosis. This was in turn evidenced by a significant increase in the levels of *psychological flexibility* as measured by the AAQ-II, and a significant reduction in depressive mood as measured the HADS-depression subscale.

Study Limitations

This study has several limitations, some of which can be attributed to the nature of treatment out-

comes studies in general. For instance, a repeated-measures design, like the one employed in this study is less rigorous than a randomised control trial. Secondly, the treatment was delivered and data was gathered and subsequently analysed exclusively by one researcher, and a third-person treatment delivery, data collection, and subsequent coding of the qualitative data analysis would have been useful. Clinical and research supervision was provided throughout the pilot-study, to ensure issues pertaining Mindfulness treatment delivery, HIV and depression, as well as research methodology were addressed, but results must be approached carefully. Further, a mixed design combining quantitative and qualitative analyses may have addressed some of the difficulties in a pilot-study such as this one. However, replicating the study with a larger number of participants would seem important, as would be longitudinal follow-up, which was not provided in this current investigation.

As predicted at the beginning of the study, individuals experiencing symptoms of depression often have maladaptive beliefs over the nature and definition of recovery (Beck, Rush, Shaw, & Emery, 1979). Therefore, the participants that opted not to initiate the mindfulness treatment phase (n=3), and the participant that dropped out after the second week of treatment (n=1) may have decided to drop-out because of this, especially if they experienced that the programme was not helping them *'feel better'* at the rhythm they expected prior to the treatment phase. Nevertheless, the drop-out rate was not significantly high on this occasion. Furthermore, because of the general paucity of mindfulness studies focused on treatment of current and ongoing mild-moderate symptoms of depression in the context of HIV, these results are valuable.

Clinical implications and future research

The results of this study are promising. In general, only a few studies investigated how mindfulness-based interventions may be useful in improving quality of life and psychological wellbeing in HIV-positive individuals (e.g. Robinson *et al*., 2002; Sibinga *et al*., 2008; Longsdon-Conradsen, 2002), and even fewer studies report results that directly target depressive symptoms. Furthermore, this is the first study of its sort to combine both quantitative and qualitative data analyses, and to provide a basis for which other studies may continue to develop the understanding of how best to treat depressive symptoms in the context of HIV health care. In addition, future research should assess how MBSR is able to treat ruminative thinking processes in this target population because of its relationship to worse health outcomes and psychological wellbeing in this population (Eich-Höchli ., 1996; Eich-Höchli *et al*., 2001). Further as mindfulness training has been suggested to reduce avoidance and rumination in participants (Williams, 2008), it would appear valid that future research address this possible relationship in the context of HIV. As rumination (i.e. preoccupational thinking) is difficult to recognise, appropriate standardised measures should be used specifically targeting changes in this cognitive process.

Finally, this current study suggests many advantages to utilising mindfulness-based interventions in the treatment of HIV-positive patients experiencing mild-moderate symptoms of depression, however it is still uncertain as to which aspect of mindfulness training is mediating these improvements, and a long-term study examining these underlying processes at work in mindfulness practice are of great importance. This will support the claims being made in this pilot-study and help to validate it further.

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