A brief mindfulness-based program for parents of pre-school children with developmental disabilities

Abstract

There is strong evidence that parents of children with developmental disabilities are more likely to report parental stress and depression. This, in turn, leads to vicious cycles of negative outcomes for these children and the family's well-being. To use mindfulness training to address the difficulties of such parents, the authors developed a brief mindful parenting program (6 weekly sessions, 9 total contact hours, and 10 minutes of home practice per day). A randomized control trial was designed to examine the effectiveness of the program. The results showed that after completing the program, parents had significant improvements in parental stress (F[1, 176] = 4.76, p = .03), depression (F[1, 176] = 8.07, p = .01), and stress from parent–child dysfunctional interaction (F[1, 176] = 6.46, p = .01). Based on the pretest scores, parents with severe stress and depression reported more significant positive changes, and they reported moderate effect sizes of 0.62 for stress and 0.57 for depression respectively. Participant satisfaction scores revealed that the parents were satisfied with the content and overall program arrangement, and agreed that their ability to cope with emotions and stress was enhanced. The results gave support to the program's feasibility. Future studies could further compare its outcomes with a

mindfulness-based stress reduction program or a child behavior management program. Behavioral observations, biomarkers and other outcome measures could be considered in addition to self-reported measures, to investigate the outcomes and long-term benefits of this brief program.

Keywords: Mindful parenting, Developmental disabilities, Pre-school children

Familial stressors in families with children with developmental disabilities

The prevalence of developmental disabilities in children in the United States, including autism spectrum disorder (ASD), intellectual disability, any learning disability, and attention deficit hyperactivity disorder (ADHD) has been estimated at 13.87 % (Boyle et al. 2011). Consistent findings suggest that parents of children with any type of developmental disability are likely to experience higher levels of stress (Estes et al. 2013; Modesto-Lowe, Danforth, and Brooks 2008; Norlin and Broberg 2013) and their levels of stress are higher than those in families of children with HIV infection or asthma (Gupta 2007).

Hearing and responding to the news that a child has a disability is complicated for many families. The experience of much uncertainty, possible misdiagnoses, and acceptance of a formal diagnosis is often difficult and unpleasant (Carroll 2013;

Zajicek-Farber 2013). Pervasive and significant deficits in such children are typically associated with difficulties and challenges in caregiving that trigger additional parental pressure, and a higher risk that family members will suffer from mental health problems. Self-blame and rumination has been shown to be associated with parental depression (Carroll 2013; van der Veek, Karrij and Garnefski 2009). A meta-analysis of 18 studies found that 30–35 % of the mothers of children with developmental disabilities had elevated levels of depressive symptoms (Singer 2006).

Studies have shown that having children with developmental disabilities has a significant effect on marital quality. A meta-analysis found that compared with healthy controls, families of children with developmental disabilities had a 5.97 % higher rate of divorce (Risdal and Singer 2004). However, Hartley et al. (2010) examined the prevalence of divorce in parents of children with ASD and found that parents of such children had a 23.5 % divorce rate, which was almost double the rate of matched parents without ASD children.

Green (2007) remarked that parents of children with disabilities experience more than subjective emotional distress, and encounter struggles including negative attitudes toward disabilities and inadequate support for special needs in child care. Woodman, Mawdsley and Hauser-Cram (2015) found transactional effects between parenting stress and child behavior problems within families of children with

developmental disabilities across a 15-year period from early childhood to adolescence.

The consistent findings of higher stress levels among parents of children with developmental disabilities were corroborated by a 2012 study of parental stress in Hong Kong in which the authors of this manuscript surveyed parents with healthy children and those with children with developmental disabilities. We found that the latter had more defensive responses to their children's behavior (t = 2.09, df = 392, p = .04), more parent–-child dysfunctional interactions (t = 6.97, df = 392, p = .00), increased perceptions of their child being difficult (t = 3.84, df = 392, p = .00), and more overall parental stress (t = 4.54, df = 392, p = .00) than the former. This study suggested that parental stress contributes to an increased likelihood of family dysfunction, which, in turn, can have negative consequences for the health and mental health of family members.

It is indeed a challenge to policy-makers and service operators who attempt to support the families of children with developmental disabilities (Mazzucchelli and Sanders 2011). Earlier interventions for this target group were primarily based on psychoeducation and behavior management strategies that focused on modification of maladaptive cognitions and the skill deficits of the parents (Singer, Ethridge, and Aldana 2007). However, Whittingham (2013) contended that the complicated issues

of parents of children with developmental disabilities, including persistent parenting difficulties, the grief arising from having a child with a developmental disability, and marital disharmony, should be addressed, and mindfulness-based intervention could be an advanced approach to support the overall needs of such parents.

Bögels and Restifo (2014) suggested that mindfulness can help parents to become aware of the re-occurring patterns of interactions and attachment with their children. These enable parents to better accept and regulate their own emotions more effectively, as well as the emotions of their children. In the past decade, there has been growing evidence to suggest that mindfulness-based interventions for parents significantly reduce parental stress and promote child and family well-being (Bögels et al. 2014; Coatsworth et al. 2015; Duncan et al. 2009; Singh et al. 2007; Singh et al. 2010).

Studies have further demonstrated the potential benefits of mindfulness-based intervention for the parents of such children. Singh et al. (2007) conducted a study of four parents of children with developmental disabilities who undertook twelve hour individual mindfulness training sessions. The study reported positive changes, including a reduction in childhood aggressive behavior and increases in parental satisfaction. Benn et al. (2012) recruited 70 parents and educators of children with disabilities and randomly assigned them to intervention and waitlist control groups.

Their intervention included nine 2.5-hour sessions and two full days. In contrast to the controls, the participants reported a significant reduction in stress and anxiety, an increase in mindfulness, more self-compassion and perceived personal growth (Benn, Akiva, Arel, and Roeser 2012). Neece (2013) reported the results of a study in which 46 parents of children aged 5–23 with developmental disabilities were randomly assigned to treatment and waitlist control groups. An eight-week mindfulness-based stress reduction (MBSR) program was offered to the intervention group parents. These parents reported less stress and depression, greater life satisfaction, and fewer child behavior and attention problems. Bazzano et al. (2013) studied the benefits of MBSR in 76 parents and caregivers of individuals with developmental disabilities. Their study reported improvements in perceived stress, increased mindfulness, self-compassion, and psychological well-being, and these effects were sustained at the two-month follow up. Dykens et al. (2014) conducted a randomized control trial in which 243 mothers of children with developmental disabilities received either a brief six-week mindfulness-based intervention or a positive psychology program led by peer mentors. Mothers in the mindfulness-based intervention group had significant improvements in anxiety, depression, sleep, and psychological well-being, but not in parental stress. Impressive effect sizes on depression and anxiety, i.e. 0.81 and 0.98, respectively, were reported. Unfortunately,

detailed and critical information about the intervention was not provided. For example, the content of the intervention, time spent in mindfulness practice during class and at home, and the rationale for using qi going instead of yoga (as is usual in most mindfulness-based intervention programs) were not detailed, and there was a lack of data relating to treatment fidelity.

The abovementioned studies shed light on the application of mindfulness-based intervention for this particular target group. However, these investigations had several limitations in their research and practice assumptions. First, most of the studies had weaknesses in their research methods, including small sample sizes, mixed groups of participants (i.e., recruiting both parents and educators, or parents of children within a wide age range), limited information about program design, and no reporting of treatment fidelity. Second, some of these studies used standardized mindfulness-based interventions including an eight-week MBSR program, or more intensive one-to-one training (such as Singh et al. 2007). However, there is a concern about the limited accessibility and inequitable distribution of standardized mindfulness training programs (Rycroft-Malone et al. 2014).

In Hong Kong, MBSR/MBCT programs have been funded in a few public hospitals and NGOs for clinical populations, but many other needy individuals enroll in such programs in the private sector. Currently, many local mindfulness programs

are offered in the evenings and in urban areas to cater to working adults who can afford to join the programs. Parents of children with developmental disabilities are usually fully engaged in household chores, and it is very difficult for those who live in suburban areas to travel to city center weekly for intensive intervention sessions. Additionally, local stakeholders have difficulty in recruiting qualified MBSR/MBCT instructors.

A brief mindful parenting program could enhance the intervention choices for the target groups and stakeholders (Bennett-Levy, Richards, and Farrand 2010). Designing a different intervention or program for each kind of developmental disability may create recruitment challenges for funders, policy-makers and service providers. Moreover, the content, format and intensity of an intervention should be appealing for parents and relatively easy to implement so that the program can be more widely accessible (Sanders 2012). The benchmark MBSR program last for 20–27 hours (Kabat-Zinn 1990), and the effectiveness of these programs has been well documented (Cachia, Anderson, and Moore 2015; Hwang and Kearney 2013; Hofmann, Sawyer, Witt, and Oh 2010). However, the rigorous requirements of training, fidelity, and supervision challenge the wider generalizability, dissemination and implementation of such programs (Rycroft-Malone et al. 2014). Compared with most face-to-face parenting programs, which normally last for 6–15 hours, the

authors design and evaluate a low-intensity parenting program that not only effectively reduces parental stress, but also appeals to parents who are busy with their household chores and caregiving (Sanders 2012). Unexpectedly, two recent clinical trials of brief interventions suggested that such interventions had some strengths. Mohr et al. (2012) reported that a telephone-administered cognitive behavioral therapy (CBT) program had lower attrition than individual CBT, with comparable effect sizes for depression in both treatments. Further, Bower et al. (2013) conducted a meta-analysis of 2470 patients in primary care to examine the interaction between baseline severity and treatment effect. The results suggested that participants who were more severely depressed at baseline showed larger treatment effects than those who were less severely depressed. A brief program can improve treatment efficiency and higher intensity interventions should be offered to those with a history of treatment failure, or who do not improve after the initial treatment. Recently, some evidence-based low-intensity mindfulness intervention programs have been designed for specific populations, but their application to parents is rather limited (Davis and Zautra 2013; Klatt, Buckworth, and Malarkey 2008). The authors referred to two overseas mindful parenting programs—MY Mind, developed by Professor Bögels for children with ADHD or AS disorder and their parents, and the Mindfulness-Enhanced Strengthening Families Program (MSFP)

(Bögels 2014; Coatsworth et al. 2014)—and made necessary adaptations for the Chinese parents of children with developmental disabilities.

Procedure

The current study

We evaluated the perceived benefits of a new and low intensity mindfulness-based intervention approach for parents of children with developmental disabilities. Table 1 summarizes the themes, learning objectives and content of the six sessions of the program. A pilot study was arranged and the participants' subjective experiences and perceived benefits were collected afterwards. After the analyses of the qualitative data and the reflection of the instructors, the intervention protocol was finalized and a randomized control trial (RCT) was launched. We also examined the overall attrition rates, defined by completion of not less than half of the program, i.e., three sessions. Attendance rates and service user satisfaction data were included to investigate the overall feasibility of the program.

Method

An RCT was launched in April 2015 and completed in April 2016. Participants were recruited from six districts in Hong Kong. District-based parent seminars were

conducted to explain the mindfulness-based approach and the objectives and procedures of the project. As illustrated in Figure 1, all interested and eligible applicants were randomly assigned to an intervention group or control group. Parents or caregivers whose children did not have developmental disabilities, and individuals with severe mental disorders, who were engaging in substance abuse, or who had experienced individual or family crisis in the previous six months were excluded. For the intervention and control groups, outcome measures were collected before the program (T0), and after the program (T1). A one-day mindfulness workshop was arranged for control group parents who were interested in mindfulness after their participation in the study.

The study obtained the ethical approval of the Research and Contracts Office of the City University of Hong Kong (ref. 3-3-201412) and was registered under the Centre for Clinical Research and Biostatistics Clinical Trials Registry, Hong Kong (ref. CUHK_CCRB00482).

Measures

The Parenting Stress Index–Short Form (PSI–SF)

Parenting stress was measured with the Parenting Stress Index–Short Form (Abidin 1990). It includes four sub-scales: Defensive Responding, Parental Distress, Parent–

Child Dysfunctional Interaction and Difficult Child. Higher scores indicate higher parenting stress. The internal consistency of the 36 items in the current sample was very good (α = .91).

The Center for Epidemiologic Studies Depression Scale (CESD)

Depression was measured using the Center for Epidemiologic Studies Depression Scale (Radloff 1977). Higher scores indicate greater depression. The internal consistency of the 20 items in the current sample was very good (α = .91).

The Eyberg Child Behavior Inventory (ECBI)

Child behavior problems were measured by the Eyberg Child Behavior Inventory (Robinson, Eyberg, and Ross 1980). It has two sub-scales: the Intensity score (indicating the severity of behavioral problems) and the Problem score (indicating the variety of behavioral problems). Higher Intensity scores indicate a higher severity of behavioral problems, and higher Problem scores indicate a greater variety of behavioral problems. In the current sample, the internal consistency of the 36 Intensity items was excellent (α = .92), as was that of the Problem items (α = .92).

The Chinese Interpersonal Mindfulness in Parenting (CIM-P)

Parents' interpersonal mindfulness in parenting was measured by the Chinese version of the Interpersonal Mindfulness in Parenting Scale (Duncan et al. 2009). An expert team containing a psychiatrist, a clinical psychologist and an experienced practitioner in mindfulness was responsible for questionnaire back translation and a scale validation study was conducted by the first author (Lo et al., in review). Higher scores indicate more mindfulness in parenting. The internal consistency of the 31 items in the current sample was good (α = .75).

The Kansas Marital Satisfaction Scale (KMSS)

Marital satisfaction was measured by the Kansas Marital Satisfaction Scale (Schumm et al. 1986). Higher scores indicate greater marital satisfaction. The internal consistency of the three items in the current sample was excellent (α = .97).

Statistical analyses

The intervention effect was evaluated by comparing the intervention and control groups. Repeated measures ANOVA, with time (pre-test and post-test) as the within-subjects variable and group (treatment group and control group) as the between-subjects variable, was used to detect effects of time, group, and time × group interactions for each of the outcome measures. In the case of significant

results, effect sizes were calculated. All analyses were performed using SPSS version 22.0.

Results

The attrition rate was only 7.7 % (7/91). Among completers, the attendance rate was 83.3 %. On average, each participant attended 5.0 sessions.

Table 2 summarizes selected demographic data of the study participants. A Chi-square analysis was first conducted to compare the between-group differences, and found no significant difference in all areas. There was a significant difference in parental stress between the intervention group (pre-test: M = 118.99, SD = 19.10, range = 71–166; post-test: M = 112.44, SD = 19.46, range = 67–165), and control group (pre-test: M = 119.55, SD = 22.43, range = 67–218; post-test: M = 117.74, SD = 21.02, range = 70–178) (F[1, 176] = 4.76, p = .03). The differences in depression scores between the intervention group parents (pre-test: M = 23.48, SD = 9.47, range = 4–53; post-test: M = 19.85, SD = 8.94, range = 4–43) and control group parents (pre-test: M = 21.75, SD = 10.34, range = 1–53; post-test: M = 21.47, SD = 9.96, range = 3–48) was also significant (F[1, 176] = 8.07, p = .01). As a subordinate variable of parental stress, the stress from parent–child dysfunctional interactions was also significantly different between the intervention group (pre-test: M = 37.70, SD = 6.70,

range = 20–56; post-test: M = 35.73, SD = 6.26, range = 21–56) and control group (pre-test: M = 37.29, SD = 6.38, range = 22–54; post-test: M = 37.31, SD = 6.86, range = 25–60) (F[1, 176] = 6.46, p = .01).

As shown in Table 3, for parental stress, there was a time × group interaction (F (1, 176) = 4.76, p = 0.03), showing a larger reduction in PSI scores in the treatment group than in the control group. The result for depressive symptoms was similar. There was a significant time × group interaction (F (1,176) = 8.07, p = 01), showing a larger decrease in CESD scores in the treatment group than in the control group. The effect sizes were small, at 0.34 and 0.41, respectively (Cohen, 1988). Within the parental stress subscale, a reduction in parent–child dysfunctional interactions was found (F = 6.46, p = .01), with a mild effect size of .38.

Changes in mindful parenting and child behavioral problems were identified in both the treatment and control groups. However, group differences in these two measures were non-significant. Marital satisfaction did not show an obvious change in either group.Participants were classified as mild, moderate or severe, based on their pre-test stress ratings. Using one-way ANOVA, we found the severe group had the largest treatment changes after the program. For parental stress, the severe group showed a very significant drop from141.00 to 126.45 (F = 7.50, p = 0.001) with a moderate effect size of 0.62. For depression, the severe group showed a very

significant decrease from 33.53 to 24.88 (F = 12.91, p < 0.001) with a moderate effect size of 0.57. In addition to pretreatment symptom severity, we explored significant predictors of intervention effect. For parent-related variables, age, gender, marital status, previous meditation experience, work status, and attendance at the program sessions did not predict the outcomes for stress and depression. For child-related variables, age and gender did not predict the outcome of intervention effect. The ASD parent group (M = 8.33, SD = 12.87, N = 55) had marginally larger improvements in stress than did the ADHD parent group (M = 1.86, SD = 20.84, N = 7) (t = 1.16, p = .06). However, no differences between the two groups were found in depression improvement.

Participants' Satisfaction Feedback

A written evaluation feedback form was distributed to 91 participants who completed more than half of the program. The response rate was 73.6 %. Overall, the participants expressed a high level of satisfaction with the program: 97.0 % were satisfied or very satisfied with the timing arrangements of the program, which was weekday mornings, when MBSR or MBCT classes would not normally be offered in Hong Kong; 95.5 % indicated that they were satisfied or very satisfied with the group content, as well as the overall arrangement of the program; 74.6 % were satisfied or

very satisfied with the home practice arrangements; and 82.1 % agreed or strongly agreed that their capacity to cope with emotions and stress was enhanced after the program. Based on self-reports in the same questionnaire, the participants practiced mindfulness 3.19 times per week (SD = 2.09) for an average of 12.66 minutes (SD = 5.74).

Treatment fidelity

Two instructors were involved in teaching the program and both were included in the program design and the implementation of the pilot study. They have received extensive professional training in MBSR and MBCT, and have 3–10 years' experience teaching MBSR/MBCT. The mean treatment fidelity rating on the Mindfulness-Based Interventions–Teaching Assessment Criteria Scale (Crane, Eames and Kuyken et al. 2013), which assesses therapist adherence to the MBCT protocol and competence in its delivery, was 5.5 out of 6 (SD = 0.56) across the two instructors. One instructor achieved a mean score of 5.33 (SD = 0.65), and the other 5.58 (SD = 0.50). The independent rater was also a mindfulness instructor with over 10 years' experience and no background information about the instructor was offered during the fidelity test.

Discussion

The extremely low attrition rate of the study was comparable to a recent study of a six-session parenting training program in Hong Kong (Leung, Fan, and Sanders 2013). As this was the first large-scale mindful parenting project in Hong Kong, it is possible that earlier participants shared their experiences among their social circles and thus later applicants had more realistic expectations of the program when they enrolled. The excellent attendance rate showed that the participants enjoyed the program, and most of them tried their best to benefit as much as possible from it within their tight daily schedule.

We found significant between-group and within-group differences in the RCT, which suggests that the program may be effective in reducing stress and depressive symptoms in parents of children with developmental disabilities. It is encouraging that a brief intervention of 9 hours can produce significant effects. The benefit to individuals may be small but the sum effects in terms of mental health promotion should not be underestimated. Within the parental stress subscale, a reduction in parent–child dysfunctional interactions was found, which suggests that brief intervention can lead to a more harmonious parent–child relationship in the family. This finding may support Gehart's model of interpersonal mindfulness (2012), suggesting that mindfulness practice can help to develop a balance of both personal

processes and relational processes. Indeed, it has been shown that the mental health of individual family members is strongly associated with parenting styles that are emotionally present, compassionate, and accepting (Gehart 2012).

Another encouraging finding of this study was the stronger effect size in the severe symptom group. Parents with the highest levels of stress and depression benefited more from the program, which was consistent with the recent review of low-intensity intervention program (Bower et al. 2013). In view of the burden on public health and the high prevalence of developmental disabilities, it is recommended that brief interventions are delivered more regularly as a preventive measure for all suitable parents. For those families in need of more intensive intervention, brief intervention can still be provided during their waiting time for intensive treatment and instructors of the brief program may also identify concrete service needs and make necessary referrals, to improve the efficiency of the health care system.

The lack of significant changes in child behavioral problems and marital satisfaction may reflect the focus of the intervention on parental mental health, in which the aim is not to achieve changes in children's behavior, but to learn to accept the limitations of the children. In this brief program, none of the activities addressed the marital relationship directly.

It is interesting to note that parents reported changes in mindfulness not only in the treatment group but also in the control group. The possible mechanism of change in interpersonal mindfulness is uncertain but in a recent study, participants in an ordinary parenting program reported changes in different outcomes, when compared with a parenting program incorporating mindfulness (Coatsworth et al. 2015). One possible explanation is that mindfulness and mindful parenting are non-specific factors and effective interventions with a different orientation (e.g., a cognitive behavioral approach, mindfulness-based intervention, or other support service from a child care center) can promote mindfulness and interpersonal mindfulness. A possible explanation is that after a mindful parenting program, parents may become more aware of their own limitations and reactivity and be more ready to report their actual situations in parenting, instead of responding based on social desirability (Coatsworth et al. 2015).

Limitations and future research questions

First, this study gives initial support to the effectiveness of a brief mindfulness-based intervention for improving the mental health of parents. The research question should further be answered by comparing the outcomes of the brief mindful parenting program, a MBSR/MBCT program for parents, and other evidence-based

approaches, such as a child behavioral training program. Multiple child and parent outcomes should be assessed to examine the intervention-specific effects.

Second, the present study was conducted in an NGO that provides education to one third of the pre-school children with developmental disabilities in Hong Kong. The study should be replicated in other locations and formats, such as in hospitals and clinics, and via on-line delivery, to examine how different modes of delivery affect the outcome and participation satisfaction. There are special considerations about accessibility for parents of children with developmental disabilities, who are busy with child care and household chores, and restrictions for cross-district traveling to mindfulness-based intervention programs, due to the limited availability of instructors, their geographical locations, and the daily routines of such parents. More studies should be conducted to investigate how different modes and modalities can improve the well-being of children and families with other special needs.

Third, further studies should consider using more comprehensive assessments than self-reported measures in evaluating their program effectiveness. For instance, biomarkers such as salivary cortisol and heart rate variability are two common alternative outcome measures for mindfulness-based intervention (Nyklíček, Mommersteeg, Beugen, Ramakers, and Bioxtel 2013). Additional behavior observation and coding of parents may also be considered (Duncan, Coatsworth,

Gayles, Geier, and Greenberg 2015).

Acknowledgment

We would like to acknowledge the sponsorship of the Social Welfare Development Fund of the Social Welfare Department of Hong Kong SAR Government in this mindful parenting project.

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