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EFFECTIVENESS OF MINDFULNESS TRAINING IN FOSTERING TOBACCO CESSATION AMONG UNDERGRADUATES IN A NIGERIAN UNIVERSITY

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ABSTRACT

The study investigated the impact of mindfulness training in fostering tobacco cessation among undergraduates in a Nigerian university. It also observed the moderating effect of self-efficacy on the causal link between mindfulness training and tobacco cessation. Participants were 57 students randomly assigned to experimental and control groups. A pre-test, post-test, design was utilized. The experimental group was exposed to a 12 week mindfulness training programme. Participants in both experimental and control groups were tested before and after training programme on tobacco cessation. Data collected were analysed using analysis of covariance (ANCOVA). Results showed that the experimental group improved significantly in tobacco cessation than the control group. Further, self-efficacy mediated effectively the causal link between mindfulness training and tobacco cessation among the participants. It was recommended that Mindfulness training should be introduced in smoking cessation programmes and advancing studies in smoking cessation.

Key words: Mindfulness training, Self-efficacy, Tobacco cessation, Undergraduates

INTRODUCTION

Despite continuous efforts to build a civilized and unique utopia for prosperity, tobacco use, though widely recognized, is a nefariously growing health barrier and often generate deadly assault on mankind survival. For instance, the World Health Organization (WHO) estimates that if current trend of tobacco use continues, as many as one billion people could die in the 21st century (WHO, 2008). This is because earlier surveys indicated that approximately 1.25 billion people continue to smoke tobacco and nearly 5.4 million people die each year from tobacco-related illnesses (Mackay, Eriksen, & Shafey, 2006; World Health Organization [WHO], 2008). Of primary concern is that, prevalence of tobacco use varies widely

among developing nations and even more so among men and women, albeit the increase of this phenomenon among young people, between ages, 10 and 29 (CDC, 2009; Suleiman, 2003) is regrettably serious and frightening. Hence, the call for continuous research and comprehensive actions on tobacco use is inevitably of dire necessity.

Tobacco is used in various ways. It could be dried and rolled into cigarettes and cigars for smoking, shredded and inserted into pipes (also for smoking), and finely pulverized for inhalation as snuff. Cigarette smoking is one type of insidious tobacco use that is commonly practiced. Specifically, Mackay, Eriksen, & Shafey, (2006) reports that about 50% of men and fewer than 10% of women smoke in developing countries. Thus, the tobacco industry has already identified these countries as new markets, targeting women and young people with aggressive marketing strategies and a variety of tactics to repeal advertising restrictions and suppress tax increases (WHO, 2008; Sebrie & Glantz, 2006; Samet, Wipfli, Perez-Padilla, & Yach, 2006). In Nigeria, there are varieties of tobacco smoking brands over the media with Federal Government inscriptions such as "Smokers are liable to die young", or "Tobacco smoking is dangerous to health." However, this has often been dismissed as hypocritical and has raised more questions than answers. One may want to ask, if cigarettes are that dangerous as facilitating dying young, why not place a ban on it. Hence, it comes as no surprise that among men age 15-49, when assessed by the number of cigarettes smoked in the past 24 hours, according to background characteristics, 14 percent reported use of tobacco products, with those smoking cigarettes constituting 9 percent (NDHS, 2008).

Prevalence of smoking among youths also varies across regions of the world, ranging from 4.3% in Southeast Asia to almost 18% in the European region (Warren, Jones, Eriksen, & Asma, 2006). For example, a 2000 study reported that roughly one-third of high school students have smoked in the past 30 days, and over three-quarters of smokers start before they turn 19 years old (Gruber & Zinman, 2000). Furthermore, several studies provide a rising percentage of increase in smoking among youths and or young adults in Nigerian tertiary institutions (Makanjuola, Daramola and Obembe, 2007; Okojie, Isah & Okoro, 2000; Adelekan 2000; Obot 2001; Fatoye & Morankinyo, 2002; NDHS, 2008) scientific investigations have indicated that Cigarette smoke metabolites have

been shown to cause specific DNA mutations (Harris, 1991; Shiao, Rice, Anderson, Diwan & Hard, 1998; Phillips, 2002), and are excreted in the urine (Hecht, 2002). While measures for preventing smoking behaviour are yet to evolve, engaging in smoking cessation seems to be the only reprieve for a slowly dying world of smokers.

The evidence concerning smoking cessation has grown in strength for close to a decade with over 100 forms of therapy described in the literature. The functions of these therapies are to: analyze motives for group members' behaviour; provide an opportunity for social learning; generate emotional experiences; and impart information and teach new skills (Stead & Lancaster, 2005). Some of these interventions used include coping and social skills training, aversion therapy, contingency management, self control, and cognitive-behavioural interventions (Lancaster & Stead, 2005; Stead & Lancaster, 2005). For instance, available research on aversion therapy suggests it increases the odds of quitting smoking. However, the level of benefit is small and possibly related to publication bias rather than a true effect, hence, Hajek and Stead (2001) this form of therapy should not be considered for most patients.

In another study Knight (2004) tested a church-based group intervention (plus nicotine replacement therapy) compared to minimal self-help and found 1-year quit rates of 65% and 17%, respectively. Nevertheless, based on methodological limitations it is unclear whether participants were responding to the intervention content or the supportive contact. Contingency management techniques have also been used to successfully reduce tobacco use (Corby, Roll, Ledgerwood, & Schuster, 2000; Krishnan-Sarin, Duhig, McKee, McMahon, Liss, McFetridge, & Cavallo, 2006). It was suggested from these studies that contingency management techniques in combination with CBT may significantly enhance smoking quit rates in a high-risk adolescent population. Furthermore, although the few valid research studies suggested some potential for cognitive behavioral therapy, much more quality research is needed to develop interventions for tobacco cessation in youth (Backinger et al., 2003; McDonald, Colwell, Backinger, Husten, & Maule, 2003).

Mindfulness connotes an ancient practice of peaceful and non-judgemental acceptance that has since been psychologized and adopted as a modern psychotherapy (Kabat-Zinn 1990; Hayes & Shenk 2004; Dimidjian & Linehan 2003; Dryden & Still, 2006). The phenomena has been defined as bringing one's complete attention

to the present experience on a moment-to-moment basis (Marlatt & Kristeller, 1999), and as paying attention in a particular way: on purpose, in the present moment, and non-judgmentally (Kabat-Zinn, 1994). Considered as a capacity available to everyone, mindfulness has been described as involving self-regulation of attention and a quality of relating to experience with curiosity, openness, and acceptance (Bishop, Lau, Shapiro, Carlson, Anderson & Carmody, 2004). Notably, the ability to direct one's attention in this way can be developed through the practice of meditation, which is defined as the intentional self-regulation of attention from moment to moment.

Over the years; there had been reports on both the clinical utility of mindfulness and the latest research findings demonstrating beneficial effects (Park, 2003). Earlier, Bear (2003) had reported several successful research findings with stress reduction when mindfulness was synergized with other psychotherapies (such as CBT, DBT, ACT, AT). It should be noted that tobacco use such as smoking could be triggered by stress. However, sparse studies have investigated the likely effect of direct mindfulness training on smoking cessation. Camody, Vieten and Astin, (2007) reported that mindfulness application in smoking cessation remains to be determined in controlled clinical trials. Though, several studies are ongoing with their findings yet unavailable some related studies are available.

For instance, Bowen (2009) and Witkiewitz and Bowen (2010) reported relative success of the efficacy of mindfulness meditation for smoking relapse prevention. Davis and colleagues (2007) investigated the efficacy of mindfulness-based stress reduction conducted in eight group sessions for smoking cessation in a single-group pilot study. They found that adherence to the meditation practice was associated with cessation of smoking and reductions in emotional distress. In another study Rosenqvist and Sand, (2006) found that increase of the acceptance aspect of mindfulness was correlated with non-smoking or quit smoking. They also added that mindfulness seemed to be correlated with a decrease in experienced discomfort of withdrawal symptoms.

According to Camody, Vieten and Astin, (2007) evidence suggests that one of the characteristics that differentiates those who succeed at quitting smoking from those who do not succeed is that relapsers rely more on environmental change processes and social management of contingencies. Whereas maintainers rely more on inner-directed, experiential processes focused on self-liberation. It is

argued that the mechanism of action of mindfulness could be by adding clarity and vividness to current experience and encouraging closer, moment-to-moment sensory contact with life. That is, without a dense filtering of experience through discriminatory thought (Brown, Ryan & Creswell, 2008). This is supported based on the fact that mindfulness practices provide opportunities to gain insight into the nature of thoughts and feelings as passing events in the mind rather than inherent aspects of the self or valid reflections on reality (Segal, Williams & Teasdale, 2002). That this skill might persist through time exerting a long-term effect on response to smoking cues provides a strong obligation for this study.

The moderating variable being examined in this study is self-efficacy. Self-efficacy is defined as the belief in one's ability to execute successfully a certain course of behaviour (Bandura, 1986). Bandura (1997) asserted that self-efficacy is significantly and positively related to future performance and extensive research strongly supports this claim. Research has demonstrated a clear connection between self-efficacy and behaviour. Self-efficacy influences choice of actions and the amount of energy invested in a task and the length of time during which one persevere without achieving the desired results (Busch, Fallan & Pettersen, 1996). In other words, self-efficacy beliefs influence task choice, effort, persistence, resilience and achievement (Bandura, 1997; Aspinwall & Richter, 1999).

Self-efficacy's broad application across various domains of behavior has accounted for its popularity in contemporary motivation research (Graham & Weiner, 1996). It has shown relatedness for behaviours such as tobacco smoking and cessation. For instance, Sterling, Diamond, Mullen, Pallonen, Ford, and McAlister, (2007) finding suggests that youth smokers who do not possess the self-efficacy to avoid smoking believe smoking offers emotional or social benefits; in turn these smokers intend to continue smoking. Lack of a direct effect of smoking-related self-efficacy on intention is supported in the literature. O'Callaghan et al. (1999) found that self-efficacy (labeled perceived behavioral control) did not significantly predict intention to smoke. Fagan et al. (2003) found that self efficacy to avoid smoking was also associated with intention to quit smoking in a bivariate analysis, but the association did not hold in multivariate models.

In addition, Baldwin, Rothman, Hertel, Linde, Jeffery, and Finch (2006), found that both participant self efficacy and perceived

satisfaction with quitting immediately prior to quitting was positively correlated with attempt to quit. With regard to quit history, Carey and Carey (1993) found that smokers who successfully quit for 1 year had higher SE scores before they quit than did their relapsing counterparts. The purpose of this study is to investigate the effectiveness of Mindfulness technique in the tobacco cessation behaviour of some selected undergraduates. The moderating role of self efficacy in the relationship between mindfulness and tobacco cessation would also be investigated.

Research question

The following research question were raised for the study

1. Is there any significant main effect of treatment on participants' tobacco cessation behaviour?

It was hypothesized that the experimental group would not be significantly different from the control group on tobacco cessation behaviour.

METHODS

The study adopted the pretest-posttest, control group quasi-experimental design with a 2 by 2-factorial matrix. The row consists of mindfulness technique group and the control group. The row was crossed with smoking cessation self-efficacy varied at two levels (high and low).

Sample

After an initial call for cooperative participation 57 students indicated interest to participate in the study. The participants were students of University of Ibadan distance learning programme. They cut across 100-500 levels from the Faculties of Education and Social Science. Among them 50 were males and 7 females. The age of the participants ranged between 19 and 37years with a mean age of 26.9years. The students from Faculty of Social Sciences (27 students; 23 males and 4 females) and were assigned to the experimental and those from Education (30, all males) the control groups.

Instrument

Tobacco Cessation Scale

The scale used as a measure of success in tobacco cessation is the Kim's smoking cessation motivation scale (KSCMS) by Park, Chai,

Lee, Joe, Jung and Kim (2009). The total scale consists of four subscales logically (pre-contemplation, contemplation and preparation I and II) and higher score of each subscale indicate greater level of motivation. However, the questions of pre-contemplation were scored inversely, and the total score means high motivation in smoking cessation. The total scale is designed in a five point likert format with response ranging from 1 Agree to 5 Disagree. To avoid the effects of random responses some questions were scored inversely. Inversely scored items were 7, 8, 10. Cronbach's alpha for total scale and each of the four subscales was 0.679, 0.537, 0.480, 0.666, and 0.481, respectively (Park, Chai, Lee, Joe, Jung and Kim, 2009). It has also reported a two week test-retest reliability coefficient of 0.76.

Smoking Cessation Self-Efficacy

Level of SE was determined using the 12-item Smoking Self-Efficacy Questionnaire (SEQ-12), which assesses confidence in ability to refrain from smoking in a variety of different situations involving both internal and external stimuli (Etter, Bergman, Humair, & Perneger, 2000). The SEQ-12 has demonstrated test-retest reliability as well as content, construct, and predictive validity; it does not correlate significantly with social desirability scales (Etter, Bergman, Humair, & Perneger, 2000). To ascertain the psychometric adequacy of the instrument for Nigerian audience it was subjected to test-retest reliability analysis using a population outside the present study. The scale produced a reliability co-efficient of 0.81 respectively.

Procedure

The study was carried out in four phases: pre-session activities, pretest, treatment and posttest. The pre-session activities include the voluntary recruitment and purposive assignment of participants to experimental and control group. At the pretest stage the smoking self-efficacy scale and Kim's smoking cessation motivation scale (KSCMS) were administered to the participants. Participants in the experimental group were only exposed to twelve weeks of mindfulness training programme. The programme involved 12 sessions covering eight training goals. Each session lasted for forty minutes. Participants attended a session per week for a period of twelve weeks. Though the control group was not treated, they were given talks on effective communication skills. The posttest was administered following the conclusion of the programme.

Mindfulness technique

The therapeutic package for mindfulness techniques facilitates the understanding of mindfulness practice theoretically and experientially. Through lectures, demonstrations, participatory exercises, and small group discussion of skills and objectives: being emotionally calmer, experience inner happiness; have clear and creative thoughts; take responsibility for your well-being; and developing inner stress management and stronger self-confidence. There will be 12-sessions comprising 90 minutes per session. Homework was assigned to reinforce knowledge and skills taught during the lessons.

Data Analysis

Analysis of covariance is the major statistical tools employed in this study. ANCOVA was used to remove initial differences between the students in the experimental and control groups.

RESULTS

The findings of the study are presented in the following tables.

Research question1

Is there any significant main effect of treatment on participants' tobacco cessation behaviour?

Table 1. Analysis of covariance (ANCOVA) on Adjustment between Treated Participants and Control Group with pretest as Covariate.

Source of variation	S S	Df	M S	F	P
Covariate	167.345	1	167.345	5.787	.020
Pre-test	167.345	1	167.345	5.787	.020
Main effects	1383.348	2	691.674	22.070	.000
Treatment	704.993	1	704.993	21.044	.000
Tobacco cessation self efficacy	773.742	1	773.742	23.097	.000
2- way interaction Treatment X Tobacco cessation self efficacy	267.886	1	267.886	7.996	.007
Explained	1940.463	4	485.116	14.481	.000
Residual	1842.521	52	33.433		
Total	3782.984	56	67.553		

Table 2. Multiple Classification Analysis on performance
Grand Mean = 61.48.

Variable + category TRTGRP	N	Unadjusted -	Eta	Adjustment Devs	
Experimental control	30 27	3.75 -3.75	.47	3.62 -3.62	.46
Tobacco cessation self efficacy					
High	26	4.81		4.79	
Low	29	-3.21	.49	-3.19	.49
Multiple R squared					.442
Multiple R					.665

From the analysis of covariance in Table 1, the participants posttest scores on tobacco cessation using their pretest as covariates indicates that there was a significant main effect of treatment on the participants ($F(1,52) = 21.070, P < 0.05$). The null hypothesis, which states that there would be no significant main effect of treatment on the tobacco cessation behaviour was therefore rejected. The alternative hypothesis is thus accepted. In addition the result from the table indicated that there was also a two-way interaction of treatment with the smoking cessation self efficacy of the participants ($F(1,52) = 7.99, P < 0.05$). The interpretation is that the mindfulness training programme was favourable in fostering tobacco cessation among students and that the causal linkage between both variables was mediated by smoking cessation self-efficacy.

From table 2, the participants in the experimental group reported better improvement than the control group. The experimental group had the highest adjusted post mean score ($61.48 + (3.75) = 65.23$) as compared to that of the control group ($61.48 + (-3.75) = 57.73$). The result reveals that students with high smoking cessation self-efficacy were better ($61.48 + 4.81 = 66.29$) as compared to students with low smoking cessation self-efficacy ($61.48 + (-3.21) = 58.27$). The MCA as shown in Table 2 further indicates that the multiple R^2 is .442, while the multiple R is .665. This implies that the combination of the treatment programme and smoking cessation self-efficacy accounted for 44.2% of the variance of the

criterion measure (academic performance), while the remaining 55.8% could be attributed to other unexpected sampling error.

Discussion

The finding that Mindfulness training was significant in fostering tobacco cessation among participants in this study does not come with much surprise. Prior studies of researchers (Adeyemo & Agokei, 2010; Witkiewitz & Bowen, 2010; Rosenqvist & Sand, 2006; Camody, Vieten and Astin, 2007; Brown, Ryan & Creswell, 2008; Segal, Williams & Teasdale, 2002) provide support for the current finding. Understandably, the phenomena has been defined as bringing one's complete attention to the present experience on a moment-to-moment basis (Marlatt & Kristeller, 1999), and as paying attention in a particular way: on purpose, in the present moment, and non-judgmentally (Kabat-Zinn, 1994). These varied definitions argue for the significant roles of intentions, being purposeful and attitude could play in ability to regulate, manage and execute actions that are positively inclined and acceptable.

Nevertheless, a plausible reason for the current finding could be attributed to skills acquired from the mindfulness training given to the participants. That is, being mindful is having pure awareness, fully present, non-reactive, objective, and non-judgmental as the mindfulness training emphasizes. Mindful persons pay attention with mindful contemplation to each experience and situation without resistance, without judgement, without analyzing and without reacting. By this, a natural balance between thinking and doing is attained such that the individual is neither completely lost in an activity such as smoking cessation nor completely lost in thought. Further, a potentially infinite gainfulness of increased level of self-regulation and self-management, values clarification, relaxation, and acceptance is attained (Baer, 2003; Shapiro et al., 2006). In this manner, resilience and persistence towards tobacco smoking is strengthened and accomplishing tobacco smoking cessation is improved.

The findings in Table 2 indicates that participants exposed to mindfulness training with high smoking cessation self efficacy were better than those exposed to the same training but with low smoking cessation self efficacy. The indication is that self-efficacy is shown here as a facilitator of tobacco cessation smoking behaviour. The studies of particularly O'Callaghan et al., (1999) and Fagan et al.

(2003) lends support to the current finding. Further, the submission that self efficacy has been shown to be a valid predictor of human actions (Adeyemo & Agokei, 2009; Aremu & Akpochafo, 2007; Pallonen, Ford, and McAlister, 2007) corroborates with this finding. Again, Bandura (1997) asserted that self-efficacy is significantly and positively related to future performance and extensive research strongly supports this claim. The fact that participants with high self efficacy scores significantly reported success in tobacco cessation than those with low self efficacy scores shows that self efficacy is a good indicator of future tobacco smoking cessation success, and also that higher self efficacy may mean greater likelihood to successfully quit tobacco smoking.

Conclusion

This study has demonstrated the importance of the application of mindfulness training to smoking cessation. The highlighted deadly predicament that awaits smokers are not only insidious to smokers but to those around them. This is because every individual is somehow connected to a smoker or is a "secondary smoker." Applying suitable and favourably disposed approaches to assist individuals quit or cease tobacco smoking is perhaps *sine qua non* for a better world. Mindfulness training shown to be successful in this study, provide a basis for advancing studies in smoking cessation. Being mindful provides the basis for clarity to see every situation for what they are, thus, becoming more manageable to see the reality of the situation, to make considered decisions and to take appropriate action if needed. The moderating role of self-efficacy in this study emphasizes the significance of self efficacy in change of behaviours. It might be that smoking cessation self-efficacy may be a factor that needs to be supported so that the intended cessation outcomes can be achieved. Hence, any intervention targeted at this direction would likely be germane to enhancing tobacco smoking cessation behaviour.

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