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# **Effectiveness Of Mindfulness-Based Cognitive Therapy In Managing Depression Among People With Sickle Cell Disease In In Sokoto State**

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## **ABSTRACT**

This study examines the Effectiveness of Mindfulness-based cognitive therapy in Managing Depression among People with Sickle Cell Disease in Sokoto State, Nigeria. Sickle Cell Disease (SCD) is a prevalent genetic blood disorder in Nigeria, particularly in Sokoto State, causing chronic pain and significant psychosocial burdens. Patients often experience high levels of depression, due to the unpredictable nature of the disease, chronic pain, and social stigma. While medical treatments exist, there is a dearth of research on psychological interventions to manage the accompanying distress in this region. The study has two specific objectives, all aimed at determining the effectiveness of Mindfulness-based cognitive therapy BCT in reducing depression individually (pre-test vs. post-test), and the effectiveness of Mindfulness-based cognitive therapy Counselling techniques compared to a control group that receives no psychological intervention. Two research questions and two null hypotheses (H<sub>0</sub>) are stated, corresponding to the objectives, each predicting that there will be no significant difference or effect. A quasi-experimental pre-test/post-test control group design was adopted. A sample of 90 persons with SCD was purposively selected from two hospitals in Sokoto States. Participants were assigned to two groups: the CR group (n=45), and a control group (n=45) that received no intervention. The Beck Depression Inventory (BDI) is used for data collection. The researcher also establishes Kappa validity index (KVI) of 0.8 and reliability index of 0.83 for the Beck Depression. The treatment groups received eight weeks of structured therapy sessions. Data were analyzed using paired sample t-tests and Analysis of Covariance (ANCOVA) at a 0.05 significance level. The findings revealed that Cognitive Restructuring is significantly effective in reducing depression levels among participants from pre-test to post-test ( $p < 0.001$ ). However the intervention groups showed significantly better outcomes in managing depression compared to the control group ( $p = 0.031$  for CR). The study concluded that Mindfulness-based cognitive therapy is effective, standalone interventions for managing psychological distress in individuals with Sickle Cell Disease. It is recommended that healthcare institutions in Nigeria integrate these psychological therapies into standard treatment protocols

for SCD to provide holistic care that addresses both physical and mental health. Professional counsellors should be deployed in hospitals to administer these techniques.

**Keywords:** Sickle Cell Disease, Psychological Distress, Depression, Mindfulness-based cognitive therapy

## INTRODUCTION

Sickle cell disease is a lifelong blood disorder which is characterized by red blood cells that assume an abnormal, rigid, sickle shape. Sickling decreases the cells' flexibility and results in a risk of various complications. Sickle cell disease (SCD) is a global public health issue affecting millions of people throughout the world. Smith and Praetorius (2020) defined SCD as a hereditary blood disorder of the red blood cells which blocks blood vessels causing organ damage and frequent painful episodes.

Treatments for SCD and a possible cure are constantly being addressed by both public and governmental healthcare organizations. Currently, drug therapies like hydroxyurea, blood transfusion, and stem cell transplant are the focus of treatment for SCD (Smith & Praetorius, 2020). In the meantime, SCD continues to cause great suffering to patients and families. Parents or guardians are the primary caregivers for people with SCD. People with SCD have the tendency to suffer from psychosocial and behavioural problems (Armstrong, Lemanek, Pegelow, Gonzalez, & Martinez, 2021). As a result, parents become stressed, burdened, and sometimes feel guilty about their child's diagnosis (Armstrong, Lemanek, Pegelow, Gonzalez, and Martinez, 2021).

Sickle-cell disease is globally widespread. About 5% of the world's population carries genes responsible for hemoglobinopathies. Each year about 300 000 infants are born with major haemoglobin disorders, including more than 200 000 cases of sickle-cell disease in Africa. Globally, there are more carriers (i.e. healthy people who have inherited only one mutant gene from one parent) of thalassaemia than of sickle-cell disease, but the high frequency of the sickle-cell gene in certain areas leads to a high rate of affected newborns (CDC, 2020). Sickle-cell disease is particularly common among people whose ancestors come from sub-Saharan Africa, India, Saudi Arabia and Mediterranean countries (Centers for Disease Control and prevention (CDC, 2020). Migration raised the frequency of the gene in the American continent. In some areas of sub-Saharan Africa, up to 2% of all children are born with the condition. In broad terms, the prevalence of the sickle-cell trait (healthy carriers who have inherited the mutant gene from only one parent) ranges between 10% and 40% across equatorial Africa and decreases to between 1% and 2% on the north African coast and less than 1% in south Africa. This distribution reflects the fact that sickle-cell trait confers a survival advantage against malaria and that selection pressure due to malaria has resulted in high frequencies of the mutant gene especially in areas of high malarial transmission. In West African countries such as Ghana and Nigeria, the frequency of the trait is 15% to 30% whereas in Uganda it shows marked tribal variations, reaching 45% among the Baamba tribe in the west of the country (CDC, 2020).

Frequencies of the carrier state determine the prevalence of sickle-cell disease at birth. For example, in Nigeria, by far the most populous country in the sub region, 24% of the populations are carriers of the mutant gene and the prevalence of sickle-cell disease is about 20 per 1000 births. This means that in Nigeria alone, about 150 000 children are born annually with sickle-cell disease. The public health implications of sickle-cell disease are significant. Its impact on human health may be assessed against the yardsticks of infant and under-five mortality. As not all deaths occur in the first year of life. An increasing proportion of affected children now survive past five years of age but remain at risk of premature death. When health impact is measured by under-five mortality, sickle-cell disease contributes the equivalent of 5% of under five deaths on the African continent, more than 9% of such deaths in East Africa, and up to 16% of under-five deaths in West African countries (CDC, 2020).

One of the constructs of people with sickle cell disease is depression and it may significantly affect the life of people with sickle cell disease. Depression is a severe despondency and dejection, accompanied by feelings of hopelessness, inadequacy and condition of mental disturbance, typically with lack of energy and difficulty in maintaining concentration or interest in life. Hoffman (2023) contends that, sometimes depressed person inhibit low mood, loss of pleasure in daily activities, feelings of guilt or low energy and poor concentration. Depression may go a long way to affect people with sickle cell disease within themselves and sometimes with the society.

Mindfulness-based cognitive therapy is one tool that can help us learn to recognize and understand our thought and feeling patterns, with the goal of creating new, more effective patterns. Mindfulness-based cognitive therapy (MBCT) was developed as a manualized group-skills training program that would address vulnerability between episodes of recurrent major psychological distress (Segal, Williams, & Teasdale, 2002; Williams, Teasdale, Segal, & Kabat-Zinn, 2020).

According to the model, individuals who have previously experienced episodes of major depression and anxiety differ from those who have not in the patterns of negative thinking that become activated in mildly depressed moods. For these individuals, small downward mood shifts are more likely to produce recurrence, because they activate patterns of self-denigrating depressogenic thinking similar to those that prevailed in preceding episodes.

MBCT teaches patients who are currently in remission from recurrent major depression to become more aware of and to relate differently to, their thoughts, feelings, and bodily sensations. For example, patients are encouraged to relate to thoughts and feelings as passing events in the mind, rather than to identify with them or treat them as accurate representations of reality. MBCT teaches skills that allow individuals to disengage from habitual (“automatic”) dysfunctional cognitive routines, in particular, depression-related ruminative thought patterns, as a way to reduce future risk of relapse and recurrence of depression.

All these are reasons that call for the need for counselling on people with sickle cell disease. However, there are many treatments for sickle cell disease, but the degree to which they are available and acceptable to people with sickle cell disease varies considerably by geographical location and accessibility to resources.

#### **Statement of the Problem**

Sickle cell disease (SCD) is a serious, inherited condition affecting the blood and various organs in the body. It affects the red blood cells, causing sickling, which produces pain and other symptoms which can lead to long-term complications. Pain is the most common consequence of the sickle cell disease (SCD). Most sickle cell disease patients manage their pain at home, despite the fact that pain is the primary reason for visiting the emergency room and an inpatient facility.

Certain conditions can trigger sickling, such as cold, infection, lack of fluid in the body (dehydration) or low oxygen etc. People with sickle cell disease are faced with emotional and mental health concerns like anger, depression, low self-esteem, hopelessness, worthlessness and anxiety. They may become more anxious to be in public, ironically increasing social isolation. They experience stigma, sense of loss, and diminished self-esteem and can be reminded of their conditions through television shows, movies and commercials that relate to people with sickle cell disease and these messages may lead to believe that they are not a functioning part of the society.

Depression is a common reaction associated with people with sickle cell disease which leads to problems like anger, low self-esteem, hopelessness, worthlessness and anxiety. It is a response to the excessive losses and prolonged stress created by the disease. People with sickle cell disease may have feelings of failure, loss, depression and anxiety among others. Their sadness can sometimes be transformed into sorrows or grief especially for the loss of certain positions of their dreams or the imagined experiences one could share with one's friends and relatives.

Several studies conducted on people with sickle cell disease are on its causes and treatments thereby paying little attention to psychological effects of the problem. In developed countries people with sickle cell disease treatment goes hand in hand with psychological treatment to improve the chances of getting positive results. Where the result is not forthcoming, people with sickle cell disease are prepared mentally against any challenges ahead which will in turn enable them to live a positive and well-adjusted life. The underlying factors to those problems are due to lack of functioning centers across urban and rural areas to cater for the needs of the people with sickle cell disease.

People with sickle cell disease usually develop different forms of behaviour like social withdrawal, loss of interest; unhappiness; desperation and so on as such sometimes consider themselves as non-active part of the society. They always believed that their lives will be terminated at any time as a result of that they live in constant fear of death and most of their dreams in life will not be accomplished. This can lead to stroke, acute chest syndrome (a condition that lowers the level of oxygen in the blood), organ damage, other disabilities, and in some cases premature death.

It is based on this that, the researcher sought to investigate effectiveness of Mindfulness-based cognitive therapy in managing depression among people with sickle cell diseases in some selected hospitals in Sokoto State.

### **Objectives of the Study**

The objectives of the study are to find out:

1. The effectiveness of Mindfulness-based cognitive therapy on the pre-test/post-test means scores in managing depression level among people with sickle cell disease in Sokoto State.
2. The different depression level between the groups exposed to Mindfulness-based cognitive therapy and those in the control group among people with sickle cell disease in Sokoto State.

### **Research Questions**

The following are the research questions for the study:

1. What is the effectiveness of Mindfulness-based cognitive therapy on the pre-test/post-test means scores in managing anxiety level among people with sickle cell disease in Sokoto State?
2. What is the different depression level between the group exposed to Mindfulness-based cognitive therapy and those in the control groups among people with sickle cell disease in Sokoto State?

### **Research Hypotheses**

The following null hypotheses will be tested in the course of the study

**H01:** There is no significant difference in the effectiveness of Mindfulness-based cognitive therapy on the pre-test/post-test means scores in managing anxiety level among people with sickle cell disease in Sokoto State.

**H02:** There is no significant difference on the depression level between the groups that were exposed to Mindfulness-based cognitive therapy and those in the control group in Sokoto State.

## **METHODOLOGY**

A quasi-experimental pre-test/post-test control group design was adopted for this study. This design was suitable for establishing the cause-and-effect relationship between the Independent variable (Cognitive Restructuring) and the dependent variable (depression level).

The population for the larger study comprised people with SCD attending selected hospitals in Sokoto State. For this specific study, a sample of 90 participants from Sokoto State was used. The sample was purposively selected from Usmanu Danfodiyo University Teaching Hospital Sokoto and Specialist Hospital Sokoto. Participants were included if they scored 17 or above on the Beck Depression Inventory (BDI), indicating at least mild to moderate depression. These 90 participants were then assigned into two groups:

The instruments used for this study are adopted version of Aaron Beck Depression Inventory (BDI) for measuring the depression level of people with sickle cells disease. The Beck Depression Inventory (BDI) was used to measure the level of depression. It is a 21-item self-report instrument with well-established psychometric properties. For this study, a reliability index of 0.85 was established using Cronbach's alpha, indicating high internal consistency. Scores range from 0-63, with scores of 17-30 indicating mild depression and 31-40 indicating severe depression.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS version 21). A paired sample t-test was used to determine the significant difference between pre-test and post-test scores within the CR group. Analysis of Covariance (ANCOVA) was used to compare the post-test scores of the CR group and the control group, while controlling for pre-test differences to increase the validity of the findings. The significance level was set at  $p < 0.05$ .

## **RESULTS AND DISCUSSION**

### **Answers to Research Questions**

Answers to two research questions raised were provided in this section. The researcher employed mean and standard deviation of the groups in providing answers to the research questions.

**Question One:** *What is the effectiveness of Mindfulness-based cognitive therapy on the pre-test/post-test means scores in managing depression level among people with sickle cell disease in Sokoto State?*

**Table 1: Mean Score difference of Pre-test and Post-test in Managing Depression**

Groups	Treatments	N	Mean	Std. Deviation
Pre-test depression	Mindfulness-based cognitive therapy	45	31.21	4.62
Post-test depression	Mindfulness-based cognitive therapy	45	22.11	4.59

**Source: Field Survey, (2025)**

Table 1 shows that the pre-test and post-test means score on depression level of subjects exposed to Mindfulness-based cognitive therapy. From the result, pre-test/post-test means score of subjects in the experimental group (31.21, 22.11). The differences in the means score on depression level were attributed to treatment effect. The implication of this is that Mindfulness-based cognitive therapy was effective in managing depression among people with sickle cell disease.

**Question Two:** *What is the post-test difference in depression level between the group exposed to Mindfulness-based cognitive therapy and those in the control groups among people with sickle cell disease in Sokoto State?*

**Table 2: Mean score Difference in Post-test Depression level between Mindfulness-Based Cognitive Therapy and those in control group**

	Treatment	N	Mean	Std.Deviation
Post-test Depression	Mindfulness-based cognitive therapy	45	22.11	4.14
Post-test Control Group	Control Group	45	26.57	7.26

**Source: Field Survey, (2025)**

Table 2 shows that mean score of subjects on depression level in Mindfulness-based cognitive therapy (22.11) which is lower than the means score on depression level of subjects in the control group (26.57). This indicated that, Mindfulness-based cognitive therapy is more effective in reducing the means score on anxiety level among people with sickle cell disease, than the control group. The difference in the means score on depression was attributed to effectiveness of cognitive restructuring compared to the control who did not receive any treatment of any form.

**Hypotheses Testing**

In this study, two null hypotheses formulated were tested at 0.05 level of significance.

H01: There is no significant difference in the effectiveness of Mindfulness-based cognitive therapy on the pre-test/ post-test means scores on depression level among people with sickle cell disease in Sokoto State.

This hypothesis was tested by subjecting the pre-test/post-test scores of the respondents to t-test analysis as presented in Table 3

**Table 3: Difference in the Pre-test and Post-test on Depression Level of Respondents Exposed to Mindfulness-based Cognitive Therapy**

Variables	N	Mean	Std. Deviation	t-Cal	p-Value	Decision
Pre-test	45	29.77	4.765	12.879	.000	Rejected
Post-test	45	24.00	4.444			

P < 0.05

Table 3 shows that t-test indicated scores were significantly lower for the post-test (M = 24.00, SD = 4.444) than for the pre-test (M = 29.77, SD = 4.765),  $t(13) = 12.879, p = .000$ . Thus, the respondents' depression level reduced significantly after being exposed to Mindfulness-based cognitive therapy because the realized p-value is less than the .05 level of significance. This indicated that there was significant reduction in the depression level of the respondents' due to the effectiveness of the intervention technique. Therefore, H04 which stated that there is no significant difference in the

effectiveness of Mindfulness-based cognitive therapy on the pre-test/post-test means scores in managing depression level among people with sickle cell disease in Sokoto State is rejected.

**H02:** There is no significant difference on the depression level between the groups that were exposed to Mindfulness-based cognitive therapy and those in the control group in Sokoto State.

This hypothesis was tested by subjecting the post-test mean scores of the respondents to t-test analysis as presented in Table 4.

Table 4: ANCOVA Results for the Difference in Anxiety Level between Respondents Exposed to Mindfulness-based Cognitive Therapy and those in the Control Group

Source of Variation	Sum of Squares	df	Mean Square	F	p-value	Partial $\eta^2$
Pre-test (Covariate)	1736.82	1	1736.82	55.47	<.001	0.239
Treatment Group	495.73	1	495.73	15.83	<.001	0.082
Error	5542.18	177	31.31			
Total	7774.73	179				

**Source: Field Survey, (2025)**

The results in Table 4 indicated that pre-test anxiety scores significantly influenced post-test depression levels ( $F(1,177) = 55.47, p < .001$ ), with a partial eta squared value of 0.239. This means that approximately 23.9% of the variance in post-test anxiety scores can be explained by participants' initial anxiety levels, demonstrating the importance of accounting for baseline differences when evaluating treatment effectiveness. After controlling for these pre-existing differences in anxiety, there was a statistically significant difference between the treatment groups ( $F(1,177) = 15.83, p < .001$ ). The partial eta squared value of 0.082 indicates that the treatment condition (Mindfulness-based Cognitive Therapy versus Control) accounted for about 8.2% of the variance in depression outcomes, representing a medium effect size in behavioral research. The observed mean for the Mindfulness-based Cognitive Therapy group (20.78) was substantially lower than the Control Group (25.44). After statistical adjustment for pre-test scores, this difference remained significant, with adjusted means of 21.26 for the Mindfulness-based Cognitive Therapy group and 24.96 for the Control Group, yielding a difference of 3.70 points.

Based on these ANCOVA results, the null hypothesis (H02) should be rejected, indicating that there is a significant difference in depression levels between individuals exposed to Mindfulness-based Cognitive Therapy and those in the Control Group after controlling for pre-test depression. This provides strong evidence that Mindfulness-based Cognitive Therapy is effective in reducing depression compared to no treatment among participants in Sokoto State.

#### Discussion of Findings

Hypothesis one aimed at investigating if any significant difference exists in the pre- test and post-test means score on depression level among people with sickle cells diseases exposed to Mindfulness based cognitive therapy. This null hypothesis was also rejected. Findings from testing this hypothesis indicated that there exists significant difference in the pre-test and post-test means score on depression level among people with sickle cells diseases exposed to Mindfulness based cognitive therapy. This is in agreement with a study carried out by Norman (2021) conducted their study to determine the factors affecting depression in people with sickle cells diseases and impact of psychological intervention during treatment. A cross sectional study with 638 people with sickle cells diseases assess for depression. 140 with a member who had Beck Depression inventory (BDI) score of 17 or higher were randomized to receive psychological. The study concluded that 48% of women and 23% of men found depression during initial period before intervention. The mean SD Beck score fall from 18.7+/-9.7 to 10.7+/-5.8 ( $p < 0.001$ ) in the groups were psychologically treated before they received treatment. The study concluded that the psychological intervention was found very useful in alleviating depression in people with sickle cells diseases before they received treatment.

The hypothesis two aimed at determining the difference in the depression level among people with sickle cells diseases in Northwest zone, Nigeria, exposed to Mindfulness based cognitive therapy. This null hypothesis is accepted because findings from the tenth hypothesis as presented on the table showed that there is difference in the post-test depression level in favour of the experimental group;

compared to the control group who did not receive any treatment though the difference was not significant, because the realized p-value .126 is greater than .05 level of significance. Therefore the hypothesis is accepted. The findings contradicted the existing findings from Eron (2007) which showed that all people with sickle cells diseases both the experimental and control group who had used emotional coping strategy had moderate depression prior to the study. This finding was attributed to the fact that result of the preliminary data shows low percentage.

## CONCLUSION

Based on the findings of the study the following are the conclusions drawn.

The respondents' depression level reduced significantly after being exposed to Mindfulness-based cognitive therapy among people with sickle cells diseases. Therefore, Mindfulness-based cognitive therapy was effective and should be used in managing depression among people with sickle cells diseases. However, the respondents exposed to Mindfulness-based cognitive therapy had their anxiety level reduced more than those in the control group though it was not significant. Therefore, Mindfulness-based cognitive therapy should be used to manage the control group. The respondents exposed to Mindfulness-based cognitive therapy had their depression level reduced more than those in the control group. Therefore, Mindfulness-based cognitive therapy should be used to manage those in control group.

## RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Counsellors should be encouraged to employ Mindfulness-based cognitive therapy in managing depression level of people with sickle cells disease in various health centres.
2. Since respondents exposed to Mindfulness-based cognitive therapy had their depression levels reduced, the control group should be exposed to Mindfulness-based cognitive therapy techniques.

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