Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 7, 2391-2397
2025
Publisher: Learning Gate
DOI: 10.55214/2576-8484.v9i7.9188

Effect of cognitive behaviour therapy programme in enhancing health seeking and health information utilization of undergraduates living with sickle cell trait in Ogun state, Nigeria

Kolawole Olanrewaju Ayodele[1]*, Emmanuel Onyesi Morka[2], Chinedu Sandra Ossai-Opute[3], Motunrayo A. Ademuyiwa[4], Eunice Funmilayo Olurinola[5]
[1]Babcock University, Ilishan-Remo, Ogun State, Nigeria; ayodelek@babcock.edu.ng (K.O.A.).
[2]University of Delta, Agbor, Delta State, Nigeria; nenait3@gmail.com (E.O.M.).
[3]Babcock University, Ilishan-Remo, Ogun State, Nigeria; oputesandra@gmail.com (C.S.O.O.).
[4]Health point clinic, Abeokuta, Ogun State, Nigeria; shafarmotunrayo2345@gmail.com (M.A.A.).
[5]University of Medical Sciences Teaching Hospital, Nigeria; akinteweeunice@gmail.com (E.F.O.).

Abstract: This study assessed the impact of cognitive-behavioral therapy (CBT) on health information seeking and utilization among undergraduates living with sickle cell traits in Ogun State, Nigeria. The research adopted a quasi-experimental design. The population consisted of 23 undergraduate students living with sickle cell disease. Participants were exposed to CBT. The reliability of the questionnaire was confirmed using Cronbach's alpha coefficient, which ranged from 0.78 to 0.81. Data collected before and after the intervention were analyzed using descriptive and inferential statistics at a 0.05 significance level. Results showed significant differences in participants' knowledge of sickle cell disease ($t(21) = 10.587$, $p = .011 < .05$), health-seeking behavior ($t(21) = 8.881$, $p = .000 < .05$), and health information utilization ($t(21) = 15.321$, $p = .000 < .05$) after exposure to CBT. Additionally, a significant difference was observed between the mean scores of participants on health information utilization at P1 and P2 ($t(21) = 3.654$, $p = .000 < .05$). It was concluded that integrating CBT components into healthcare can promote positive thoughts and improve healthy lifestyles.

Keywords: *CBT, Health information seeking, Sickle cell traits, Undergraduates, Utilization.*

1. Introduction

Sickle cell disease causes a wide range of life threatening and severe consequences. It has a globally occurrence of approximately 300,000 births annually. Sickle cell trait is predominant in malaria endemic regions of the world, especially Africa, South Asia and Middle East. This is because the trait protects children from malaria in their early years [1, 2]. About ten to forty percent of the Africans have the sickle cell trait contributing to a two percent estimated sickle cell disease prevalence [3, 4]. The public health implications of this disease are significant as the sickle cell disease causes to about 5% of deaths in the under-five population in Africa of which 9% of these mortalities occur in West Africa [5].

According to a study conducted in Ghana, 96.75% of undergraduate students had heard of or read about SCD, but only 2.3% could claim to be knowledgeable about the condition [6]. These knowledge gaps suggest that when students with SCD seek out information or support from their social circles, they might be the ones who suffer the consequences. Additionally, the lack of access to quality healthcare and the information that goes along with it turns out to be a global problem. A Grenadan study on SCD students also revealed significant access issues in SCD care, highlighting the obstacles to basic information and care for students in these environments [7].

There are extra risks associated with the internet and social media, which students use to obtain any health-related information. On Facebook groups, 55.1% of posts and comments that contained

History: Received: 8 May 2025; Revised: 14 July 2025; Accepted: 17 July 2025; Published: 31 July 2025
* Correspondence: ayodelek@babcock.edu.ng

information about SCD were incorrect, even though 72% of adolescents and young adults with SCD looked for health information online [8]. This kind of misunderstanding may lead to poor health choices and support the necessity of technology in the life of a student with sickle cell disease. As a result, mobile health (mHealth) applications are being used more frequently to help people who need health information manage chronic illnesses like sickle cell disease. There is potential for developed digital interventions to close knowledge gaps, as one study found that patients with sickle cell disease (SCD) were willing to use mHealth applications for their care [9].

There are practical repercussions when health information is misguided or inadequate. Students with SCD may experience worsening mental and social difficulties as a result of making poorly informed health decisions. According to a study, 38% of health-related tweets in Arabic were erroneous, a trend that probably occurs across various languages and geographical areas. Health-related misinformation is widespread on social media [10]. Students' health may suffer as a result of these errors, which may raise their risk of complications and have an adverse effect on their social and academic lives. Research on the information-seeking and sharing behaviors among undergraduates with SCT is conspicuously lacking. Few studies concentrate on SCD students in Nigeria, despite the fact that many have examined general attitudes and knowledge regarding SCT in academic settings.

For health management, a range of interventions have been employed, including behavioral modification techniques and patient education. Reinforcing self-management skills is largely accomplished through training. As a result, innovative and efficient methods are needed to assist these individuals in becoming better at managing themselves. Since sickle cell disease necessitates more lifestyle modifications than other chronic illnesses, psychological therapies can enhance acceptance and treatment compliance as well as other elements of the illness. The psychological method known as cognitive behavioral therapy is predicated on the idea that ideas are what lead to emotions and, eventually, behavior. While its behavioral component concentrates on the connection between issues, behavior, and thought, its cognitive component emphasizes the significance of the meaning that an individual assigns to things, circumstances, or occurrences.

The goal of cognitive behavioral therapy, sometimes referred to as cognitive restructuring, is to recognize and confront inaccurate or negative thoughts and swap them out with more realistic and adaptive ones. In other words, cognitive behavioral therapy is an evidence-based treatment that is used to address negative thoughts that are contributing to negative outcomes, such as a lack of commitment to life skills, a carefree attitude toward seeking health care [11] and the prevention and management of illness [12]. It functions through the identification of negative or unhelpful beliefs, their dismantling, and their reconstruction in a more accurate and balanced manner. Cognitive behavioral therapy focuses on changing the ideas and mental patterns that cause unhealthy behaviors.

Cognitive behavioral therapy (CBT) can help patients manage their health problems by changing their thought and behavior patterns, improving treatment or drug compliance, and improving patient well-being. Cognitive behavioral therapy (CBT) has been successfully used to enhance the mental health and general well-being of individuals over the age of 18 who are suffering from terminal illnesses [13]. This evidence supports the role of psychosocial support interventions in promoting healthcare among adults with HIV [14]. The form and function of psychosocial support for sickle cell disease in Nigeria, and among undergraduate students specifically, are, however, poorly understood. Thus, this study will make use of CBT intervention strategies in fostering health information seeking, and utilization of health information among undergraduates living with sickle cell traits.

CBT therapies in this context seek to dispel harmful or erroneous beliefs about health self-management and replace them with more responsible and knowledgeable viewpoints. As a therapeutic method, cognitive behavioral therapy (CBT) aims to change unfavorable thought patterns and beliefs by encouraging more adaptive and healthy thought processes [15]. In psychology, cognitive behavioral therapy (CBT) has been used extensively and has been effective in treating a range of emotional and behavioral problems. Olatunji, et al. [15] for instance, used cognitive behavioral therapy (CBT) to lower drug use among teenagers in Nigeria and found that the participants' behavior significantly improved. Despite focusing on a different behavioral issue, this study highlights the promise of cognitive behavioral therapy (CBT) as an intervention technique for medication adherence among Nigerian individuals living with HIV/AIDS. The application of CBT to promote health information seeking, and utilization of health information among undergraduates living with sickle cell traits is grounded in the belief that altering cognitive distortions and negative thought patterns. Therefore, this study assessed the impact of CBT on the health information seeking, and utilization of health information among undergraduates living with sickle cell traits.

1.1. Hypotheses

H_{01} There is no significant difference in the mean scores of participants on knowledge of SCD, health seeking behaviour and health information utilization at PO (at 0 week) and P1 (at 4 weeks exposure to CBT)

H_{02} There is no significant difference in the mean scores of participants on knowledge of SCD, health seeking behaviour and health information utilization at P1 (at 4 weeks exposure to CBT) and P2 (at 8 weeks follow-up)

2. Material and Methods

Research Design: The research design employed for this study is one group quasi-experimental research design.

Population: The population of this study consisted of all the undergraduates living with sickle cell traits a private University in Ogun State, Nigeria. These are the undergraduates living with sickle cell traits that fully registered with the University Student Support Center, and the University teaching hospital.

Sample Size: The total enumeration approach was adopted for the selection of the participants through a snow-ball method. In total, 23 undergraduates living with sickle cell traits participated in the study.

Sampling Technique: Purposive sampling technique was used for this study. Undergraduates living with SCD were identified through the help of Students Support Center, and those who willingly volunteered to participate were recruited into the study.

Instrumentation: The instrument used for this study was a self-structured survey questionnaire that: 1) elicited information on SCD knowledge among people living with SCD. The items will be measured on a variety of scale with only one correct answer. The correct answer is 1 and wrong answer is 0. Knowledge as a variable will be measured as either high (mean score between 7.0 & 10.0), moderate (mean score between 4.0 & 6.0) or low (mean score between 1.0 & 3.0); 2) elicited information on the extent of utilization of SCD health information by the respondents. The items were measured on 4 continuum scale ranging from 0 to 3 (Never to All the time). The higher the score, the higher the utilization level. Higher mean score (13-25) signifies good utilization while lower score (1-12) signifies poor utilization of SCD health information by the respondents, and 3) elicited information about information seeking behaviour among people living with SCD. The items were measured on 4 point likert- scale ranging from 1 (strongly disagree) to 4 (strongly agree). It is a 10 item questionnaire. The higher the score the better the information seeking and sharing behaviour of the participants.

The instrument was subjected to a pilot testing among 5 Sickle Cell Disease young patients between the age of 18 and 30 who were not part of the respondents for this study. They were patients from another Teaching Hospital in Ogun State. This was done to test and improve on the proposed questionnaire used for the study. All the recovered copies were subjected to a reliability test results, which yielded a coefficient value ranging from 0.79 to 0.87.

3. Method of Data Collection

Pre and Post intervention: The researchers made an arrangement with the University Student Support Center about the period for data collection, which were every Monday and Wednesday. The training as well as the collection of the data were done on these days for 8 weeks. The consent of the participants was obtained and the structured test paper was used to collect data in person from the participants at week 1(pre-test), week 4 (post-test) and week 8 (follow up). The intervention lasted for 50 minutes each day. The data was collected in three phases namely:

Phase One (Pre intervention): The researchers requested the consent of the participants, explained the purpose and benefits of the study and also solicited for the cooperation of the participants throughout the study. The researchers got themselves familiarized and acquainted with the participants and a cordial relationship were established. The objectives of the training were explained to them. The researchers explained the topic to be discussed during the training within four weeks and agreed with the participant that each session will last for fifty minutes. The pretest took place using structured test paper after the orientation. This was done to assess the general knowledge level of the participants on the knowledge SCD, health seeking behavior and utilization of SCD health information.

Phase Two (Intervention sessions): The objective of this session was to expose the participants to a cognitive behaviour therapy programme in order to foster their knowledge of SCD, health seeking behaviour and health information utilization. This section was divided into four sessions along with activities to be done in each section, which lasted for fifty minutes. The intervention took four weeks, divided into four sections as listed below:

Week One: General orientation on the importance of health education to human life, the purpose of the present programme to individuals' wellness. Followed by seeking of the participants' consent of participation, and the administration of pre-test for collection of the baseline data against which the post-test data was compared. Followed by the presentation of basic rules and regulation of the programme such as punctuality, regularity and full participation.

Week Two: Introduction of the CBT concepts, presentation of CBT basic assumptions and the identification of human challenges (by participants) especially SCD-based ones that could demand intentional and personal approach.

Week Three: Discussion on the cognitive strategy which connotes self-mental training that embraces the use of rational analysis, disputing, change of language and reframing.

Week Four: CBT discussion which encompasses self-feeling, with its components as rational emotive imagery, role playing, shame attacking exercise, and the enablement of this strategy in human health life. Review of the programme, post-test administration, presentation of gift items to participants, and closing remarks. They were told to come back after two weeks for posttest which was the same as pretest.

Week Five -Seven: A break.

Week Eight: A follow-up on the training programme in order to see the continuity in the knowledge gained and positive change in behaviour. Here, a second post-test administration with be given.

Phase Three (Evaluation of intervention session): this session was done after four weeks of intervention session, as a follow-up on the training programme in order to see the continuity in the knowledge gained and positive change in behaviour. Here, a second post-test administration with be given. The researchers appreciated and wish the participants well in their life endeavour.

Method of Data Analysis: The completed questionnaire was collected, coded and analysed. The statistical Package for Social Science (SPSS) version 27 was used for the analysis. Descriptive and inferential statistics of t-test were used to analyze the hypotheses at 0.05 significant level.

Ethical Consideration: Ethical approval for this study was obtained from Babcock University Health Research Ethics Committee (BUHREC) with a reference number
NHREC/24/01/2020/BUHREC/474/25.

4. Results

Table 1.
Respondents' Socio-demographic profile.

SN	Variable		Female (N = 14)		Male (N = 9)	
			Freq.	%	Freq.	%
1	Age	16-18 years	7	50.0	5	55.6
		19-21 years	6	42.9	2	22.2
		22-24 years	-	-	2	22.2
		25 years above	1	7.1	-	-
2	Level	100	3	21.4	-	-
		200	2	14.3	3	33.3
		300	5	35.7	3	33.3
		400	3	21.4	2	22.2
		500	1	7.1	1	11.1

Table 2.
Independent t-test to show the difference in the mean scores of participants on knowledge of SCD, health seeking behaviour and health information utilization at PO and P1.

Variable of Interest	Group	N	X	Std. Dev	Mean Diff	Df	t-cal	P
Knowledge	Pre-test (Po)	23	15.93	5.64	16.91	21	10.587	0.011**
	Post-test (P1)	23	32.84	3.89				
Health Seeking	Pre-test (Po)	23	23.66	8.31	15.25	21	8.881	0.000**
	Post-test (P1)	23	38.91	5.09				
Utilization of Health Information	Pre-test (Po)	23	9.81	3.23	11.97	21	15.321	0.000**
	Post-test (P1)	23	21.78	5.57				

Table 2 presents the result of the first hypothesis on whether there is significant difference or not in the mean scores of participants on knowledge of SCD, health seeking behaviour and health information utilization at P1 (at 4 weeks exposure to CBT) and P2 (at 8 weeks follow-up). Results of the difference in the mean scores of participants on knowledge of SCD at P0 and P1 (Mean difference = 16.91, $t_{(21)}$ = 10.587, $p = .011 < .05$),revealed a significant differences in the participant mean scores of knowledge of SCD at P0 and P1. However, it should be noted that there is a great improvement in the mean scores of the participants knowledge of SCD at P0 and P1, which was as a results of the CBT intervention they were exposed to.

It was equally found out that there is a significant difference in the mean scores of participants' health seeking behaviour at PO and P1 (Mean difference = 15.255, $t_{(21)}$ = 8.881, $p = .000 < .05$). The difference observed between participants' health seeking behaviour at PO and P1 was not accidental but due to the CBT intervention. Additionally, comparing the mean scores of participants on health information utilization at PO (0 week) and P1 (4 weeks exposure to CBT) indicate a statistically significant difference between the health information utilization at PO and P1. The mean score at PO was 9.81 (SD = 3.23) and 21.78 (SD = 5.57) at P1. The mean difference between PO and P1 was 11.97, with a t-value of 15.321, indicating a statistical difference. The reason for this can only be attributed to the additional knowledge gained through CBT on health information utilization.

Table 3.
Independent t-test to show the difference in the mean scores of participants on knowledge of SCD, health seeking behaviour and health information utilization at P1 and P2.

Variable of Interest	Group	N	X	Std. Dev	Mean Diff	Df	t-cal	P
Knowledge	Pre-test (P1)	23	32.84	3.89	0.19	21	0.416	0.159
	Post-test (P2)	23	33.03	3.80				
Health Seeking	Pre-test (P1)	23	38.91	5.09	0.37	21	0.922	0.088
	Post-test (P2)	23	39.28	5.20				
Utilization of Health Information	Pre-test (P1)	23	21.78	5.57	2.05	21	3.654	0.000**
	Post-test (P2)	23	23.83	4.85				

Table 3 compares the post-intervention at P1 (4 weeks) and P2 (8 weeks follow-up) difference in the mean scores of participants on knowledge of SCD, health seeking behaviour and health information utilization. The results indicated no statistical significant difference between knowledge of SCD at P1 and P2 (Mean difference = 0.19, $t_{(21)} = 0.416$, $p = .159 > .05$), and health seeking behaviour at P1 and P2 (Mean difference = 0.37, $t_{(21)} = 0.922$, $p = .088 > .05$). However, a significant difference was found between the mean scores of participants on the health information utilization at P1 and P2 (Mean difference = 2.05, $t_{(21)} = 3.654$, $p = .000 < .05$).

This suggests that participants demonstrated a higher level of health information utilization compared to knowledge of SCD and health seeking behaviour after 8 weeks. The reason for this can only be attributed to the adequate knowledge earlier gained that fosters their health seeking behaviour.

5. Discussion of Findings

The outcome of the first research hypothesis revealed significant differences in the mean scores of participants on knowledge of SCD, health seeking behaviour and health information utilization at PO (at 0 week) and P1 (at 4 weeks exposure to CBT). This study revealed that the use of CBT enhanced the undergraduates' knowledge of SCD, their health seeking behaviour and health information utilization. This study is in tandem with the findings of Ayodele [11] and Richford, et al. [12] that cognitive behavioral therapy is an evidence-based treatment that is used to address negative thoughts that are contributing to negative outcomes, prevention and management of illness [12]. Additionally, CBT was found to successfully used to enhance the mental health and general well-being of individuals over the age of 18 who are suffering from terminal illnesses [13]. This evidence supports the role of psychosocial support interventions in promoting healthcare among adults with HIV [14].

The results also revealed that there is an increase in the health information utilization at after 8 weeks of intervention compared to knowledge of SCD and health seeking behaviour. The only reason adduced for this difference is that utilization of health information could be panacea to knowledge of SCD and health seeking behaviour among people living with sickle cell diseases. h agreement with needs bordering on health management and medication adherence measures. The findings of the study aligns with the ideas of AlMuammar, et al. [16] and Di Novi, et al. [17] which indicated that the knowledge of health information empowers individuals to better understand health concerns, facilitating improved management. It simply implies that health and wellness are areas of the interests to the students.

6. Conclusion

The present study showed that cognitive behavioral therapy was effective in improving the knowledge of SCD, health seeking behaviour and health information utilization among undergraduate students living sickle cell disease. Therefore, this approach can further improve self management and medication adherence among people living with SCD. Moreover, integrating psychological components into healthcare, can be used to promote positive thoughts and improved healthy lifestyle. CBT

DOI: 10.55214/2576-8484.v9i7.9188

approaches include encouraging problem solving, participation in decisions about the treatment and care, and emphasizing self-worth and the potential for personal control over manageable issues of life.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Copyright:

References

[1] B. V. Babu *et al.*, "Inadequate community knowledge about sickle cell disease among the Indian tribal population: A formative assessment in a multicentric intervention study," *Transactions of The Royal Society of Tropical Medicine and Hygiene*, vol. 115, no. 12, pp. 1434-1444, 2021.

[2] M. R. Abboud, "Standard management of sickle cell disease complications," *Hematology/Oncology and Stem Cell Therapy*, vol. 13, no. 2, pp. 85-90, 2020.

[3] E. Morka, K. O. Ayodele, O. Ojomo, and O. Jegede, "Effect of health communication intervention on knowledge of sickle cell disease among Christian youths in selected towns of Delta State, Nigeria," *The Seybold Report*, vol. 17, no. 6, pp. 155–163, 2022. https://doi.org/10.5281/zenodo.6637179

[4] K. Ajilore, E. O. Morka, and K. Onyenankeyab, "Rethinking the sickle cell awareness campaign in west Africa : Evidence from Nigeria," *African Renaissance*, vol. 16, no. 1, pp. 167-185, 2019. https://doi.org/10.31920/2516-5305/2019/v16n1a9

[5] World Health Organization, "Children: Improving survival and well-being," 2021. https://www.who.int/

[6] L. A. Brown, "COVID-19: Examining adherence through the health belief model," Graduate Theses, Dissertations, and Problem Reports. 11576, 2022.

[7] A. Grygiel *et al.*, "Sickle cell disease in Grenada: Quality of life and barriers to care," *Molecular Genetics & Genomic Medicine*, vol. 9, no. 1, p. e1567, 2021. https://doi.org/10.1002/mgg3.1567

[8] N. Slick, P. Bodas, S. M. Badawy, and B. Wildman, "Accuracy of online medical information: the case of social media in sickle cell disease," *Pediatric Hematology and Oncology*, vol. 40, no. 2, pp. 99-107, 2023.

[9] T. L. Mayo-Gamble *et al.*, "Engaging individuals with sickle cell disease in patient-centered outcomes research: A community health ambassador training model," *Journal of Health Care for the Poor and Underserved*, vol. 31, no. 1, pp. 353-369, 2020. https://dx.doi.org/10.1353/hpu.2020.0027

[10] T. Albalawi, H. Alhujaylan, A. Alshamrani, and F. Albalawi, "Health misinformation on Twitter: Analyzing tweets about COVID-19 and health in Arabic," *Frontiers in Public Health*, vol. 10, p. Article 964847, 2022.

[11] K. Ayodele, "Health literacy and medication adherence: An empirical analysis among adolescents living with chronic diseases," *Patient Education and Counseling*, vol. 99, no. 7, pp. 1079–1086, 2023.

[12] A. E. Richford, O. Adejumo, A. A. Olatunji, and B. O. Ogunbanwo, "Cognitive restructuring and its effect on health behavior among adolescents with chronic illness in Nigeria," *International Journal of Psychology and Behavioral Sciences*, vol. 12, no. 2, pp. 45–52, 2022.

[13] P. E. J. Spaan, M. Dupont, D. Rietdijk, and J. C. van Kesteren, "The effectiveness of cognitive behavioral therapy for patients with terminal illness: A systematic review," *Journal of Psychosocial Oncology*, vol. 36, no. 5, pp. 593–610, 2018.

[14] E. F. Okonji, F. C. Mukumbang, Z. Orth, S. A. Vickerman-Delport, and B. Van Wyk, "Psychosocial support interventions for improved adherence and retention in ART care for young people living with HIV (10–24 years): A scoping review," *BMC Public Health*, vol. 20, no. 1, p. 1841, 2020. https://doi.org/10.1186/s12889-020-09717-y

[15] A. A. Olatunji, J. O. Adeolu, and O. Adejumo, "Cognitive restructuring and reduction of substance abuse among adolescents in Nigeria," *International Journal of Psychology and Behavioral Sciences*, vol. 10, no. 1, pp. 1–7, 2020.

[16] S. A. AlMuammar *et al.*, "The use of internet and social media for health information and its consequences among the population in Saudi Arabia," *Cureus*, vol. 13, no. 9, p. e18338, 2021. https://doi.org/10.7759/cureus.18338

[17] C. Di Novi, M. Kovacic, and C. E. Orso, "Online health information seeking behavior, healthcare access, and health status during exceptional times," *Journal of Economic Behavior & Organization*, vol. 220, pp. 675-690, 2024. https://doi.org/10.1016/j.jebo.2024.02.032