

**INTERNATIONAL JOURNAL OF CURRENT RESEARCH IN
CHEMISTRY AND PHARMACEUTICAL SCIENCES**

(p-ISSN: 2348-5213; e-ISSN: 2348-5221)

www.ijcreps.com

(A Peer Reviewed, Referred, Indexed and Open Access Journal)

DOI: 10.22192/ijcreps

Coden: IJCROO(USA)

Volume 11, Issue 12- 2024

Review Article



DOI: <http://dx.doi.org/10.22192/ijcreps.2024.11.12.003>

**Sickle Cell Trait Awareness and Education in
Zimbabwe: Bridging the Knowledge Gap**

***Emmanuel Ifeanyi Obeagu**

Department of Biomedical and Laboratory Science, Africa University, Zimbabwe

*Corresponding Author: emmanuelobeagu@yahoo.com

Copyright © 2024. Emmanuel Ifeanyi Obeagu- This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Sickle Cell Trait (SCT) is a genetic condition that significantly contributes to the prevalence of Sickle Cell Anemia (SCA) in Zimbabwe. Despite its widespread presence, a significant knowledge gap exists regarding SCT among the general population, healthcare providers, and policymakers. This lack of awareness exacerbates the transmission of the disease and hinders efforts to reduce its prevalence. This review explores the current state of SCT awareness in Zimbabwe, identifies barriers to effective education, and discusses strategies for bridging the knowledge gap, including public awareness campaigns, school-based education programs, and community engagement. Raising awareness about SCT is crucial in preventing the birth of children with SCA, as individuals who carry the trait are often unaware of their genetic status. By improving understanding of how SCT is inherited and its implications for family planning, Zimbabwe can reduce the burden of SCA. Public awareness initiatives, which include mass media outreach and local community efforts, can play a pivotal role in dispelling myths and providing accurate information about the condition. Additionally, integrating SCT education into school curricula can help instill knowledge in younger generations, ultimately fostering a more informed public.

Keywords: Sickle Cell Trait, Awareness, Education, Zimbabwe, Genetic Counseling

Introduction

Sickle Cell Anemia (SCA) is a major public health concern in Zimbabwe, affecting thousands of individuals, particularly those of African descent. The disease is inherited in an autosomal

recessive pattern, meaning that an individual must inherit two copies of the sickle cell gene to exhibit the symptoms of the disease. However, individuals who inherit only one sickle cell gene are classified as carriers, possessing what is known as Sickle Cell Trait (SCT). While SCT

does not typically result in the symptoms of SCA, carriers are still at risk of passing the trait to their offspring, potentially leading to the birth of children with SCA if both parents carry the gene. Despite the significant implications of SCT on public health, awareness about the condition remains limited, especially in Zimbabwe's rural areas [1-4]. The knowledge gap surrounding SCT is a crucial factor contributing to the continued high prevalence of SCA in Zimbabwe. Many individuals who carry the sickle cell gene are unaware of their genetic status, as SCT is asymptomatic. Without proper awareness, individuals may unknowingly marry others who also carry the trait, which increases the likelihood of their children inheriting two sickle cell genes, resulting in SCA. Consequently, raising awareness about SCT is critical for preventing the further spread of SCA and for helping individuals make informed decisions about family planning and genetic counseling. In Zimbabwe, where the prevalence of SCT is high, comprehensive educational programs on the trait are necessary to reduce the disease burden [5-8].

Currently, there is a significant lack of targeted education and awareness programs in Zimbabwe regarding SCT. While efforts have been made to address the medical management and treatment of SCA, much less focus has been placed on educating the population about the genetic carrier state. Many people, particularly in rural and underserved areas, remain unaware of the genetic risks associated with having children who could inherit the trait. This lack of awareness is exacerbated by misconceptions and myths surrounding the condition, which often prevent individuals from seeking information or genetic counseling. For example, some people mistakenly believe that SCT is a form of SCA or that carriers are always affected by the disease, leading to confusion and reluctance to discuss the issue openly [9-11]. One of the significant challenges in addressing the knowledge gap is the limited access to healthcare and genetic counseling services, especially in rural Zimbabwe. While urban areas have better access to healthcare professionals, genetic testing, and

counseling, rural regions often lack the necessary resources and infrastructure to provide such services. In these areas, the healthcare system may not prioritize the diagnosis of SCT in individuals who are not symptomatic, further hindering the efforts to raise awareness. Moreover, healthcare providers in these regions may not be adequately trained to identify SCT or inform patients about its implications, further perpetuating the knowledge gap [12-14]. To address these challenges, it is essential to implement a multi-pronged strategy that focuses on public education, healthcare training, and community engagement. Public awareness campaigns are crucial in reaching a wide audience and informing them about the nature of SCT, how it is inherited, and the potential risks for offspring. These campaigns should use diverse media outlets such as radio, television, and social media to disseminate accurate information, with particular attention given to rural areas where access to information is more limited. Additionally, integrating education about SCT into school curricula would provide younger generations with a foundational understanding of genetic disorders and the risks associated with carrying the sickle cell gene [15-16]. Another key strategy for improving awareness is the integration of SCT education into routine healthcare services. Healthcare workers, especially those in maternal and child health services, should be trained to screen for SCT and provide genetic counseling to couples. Incorporating genetic screening for SCT as part of routine medical checkups or during pregnancy would enable more people to learn about their carrier status early on. By providing genetic counseling, healthcare providers can help individuals and couples understand their genetic risks and the options available for family planning, such as genetic testing or reproductive counseling [17].

Current Status of Sickle Cell Trait Awareness in Zimbabwe

The current status of Sickle Cell Trait (SCT) awareness in Zimbabwe is characterized by a significant knowledge gap, particularly among

the general population and in rural communities. Despite the high prevalence of Sickle Cell Anemia (SCA) and SCT in the country, public awareness about the trait remains limited. Most individuals, including healthcare workers, lack detailed knowledge about SCT, its inheritance patterns, and the risks it poses for offspring. This is especially concerning in Zimbabwe, where the prevalence of SCT is estimated to be between 20% to 30%, which means that a substantial portion of the population carries the trait unknowingly [18-19]. Many people in Zimbabwe are not familiar with SCT, as it does not manifest symptoms in carriers, which contributes to a lack of awareness. As a result, individuals who carry the trait may not understand the potential genetic risks of passing the condition to their children. Additionally, misconceptions and myths about SCT abound. Some individuals mistakenly believe that carrying the trait means that one has SCA, or they may be unaware of the possibility of having a child with SCA if both parents are carriers. These misunderstandings prevent open discussion about SCT and hinder efforts to address the issue effectively. This lack of awareness has contributed to an environment where the transmission of SCT and SCA continues without informed intervention or preventive measures [20].

In urban areas, there is slightly more awareness of SCT, especially among educated individuals and those who have access to healthcare services. However, even in these areas, awareness remains low, and routine screening for SCT is not common practice. Healthcare providers often do not routinely offer genetic counseling or testing for SCT, which means that individuals may remain unaware of their carrier status unless they have children diagnosed with SCA. In rural areas, where access to healthcare is more limited, the situation is even more dire. Limited access to healthcare professionals, genetic testing, and counseling services means that individuals living in rural Zimbabwe are even less likely to have the opportunity to learn about their genetic status or the potential risks of

SCT [21-22]. Moreover, there is a lack of targeted national awareness campaigns that specifically address SCT. Although some initiatives focus on raising awareness about SCA, there is minimal focus on the prevention of the disease through understanding SCT. Public health messages in Zimbabwe often emphasize the importance of managing SCA, but they do not adequately address the root cause of the disease—Sickle Cell Trait. Without a widespread and sustained effort to educate the public about SCT, Zimbabwe will continue to face challenges in reducing the prevalence of SCA and ensuring that individuals can make informed decisions about their reproductive health [23-24]. Thus, while there is some recognition of the issue within healthcare circles and among a small percentage of the educated population, the current awareness of SCT in Zimbabwe is insufficient. There is a critical need for more effective educational initiatives, particularly in rural areas, to raise awareness about SCT and its implications. These efforts should aim to dispel myths, educate the public about genetic inheritance patterns, and emphasize the importance of early testing and counseling. With improved awareness, individuals can better understand the implications of SCT and take proactive steps to prevent the transmission of SCA [25-26].

Strategies for Bridging the Knowledge Gap

To address the current knowledge gap surrounding Sickle Cell Trait (SCT) awareness in Zimbabwe, a multi-faceted approach is necessary, focusing on education, healthcare integration, and community involvement. Bridging this gap requires sustained efforts from both the government and non-governmental organizations, along with active participation from healthcare providers and local communities. The following strategies can help improve awareness and understanding of SCT, ultimately leading to better health outcomes and a reduction in the prevalence of Sickle Cell Anemia (SCA) [27].

1. Public Awareness Campaigns

A nationwide public awareness campaign is essential to educate the general population about SCT and its implications. These campaigns should use various media platforms, including radio, television, print media, and social media, to reach a wide audience. In Zimbabwe, where many people rely on radio as a primary source of information, radio programs that explain the inheritance of SCT, the potential risks of having children with SCA, and the importance of genetic testing can be particularly effective. Television and social media campaigns can also complement these efforts by featuring real-life stories from individuals and families affected by SCA and SCT, humanizing the issue and encouraging people to learn about their genetic status [28-29]. To ensure the effectiveness of these campaigns, it is essential to provide culturally relevant information in local languages, catering to the diverse linguistic and cultural groups in Zimbabwe. Engaging community leaders and influencers to disseminate information can further enhance the credibility of the campaign and increase public trust. Additionally, incorporating myths and misconceptions in the content and providing evidence-based information can help correct misunderstandings about SCT [30].

2. Integration of SCT Education into School Curricula

Incorporating SCT education into school curricula can help raise awareness among young people and equip them with the knowledge to make informed decisions later in life. Teaching students about basic genetics, including the inheritance of genetic traits such as SCT, can create a foundation for understanding how these conditions are passed down through generations. Schools can integrate SCT education into subjects like biology, health sciences, or life orientation. By introducing this topic at an early age, students are more likely to understand the implications of genetic inheritance and the importance of family planning when it comes to preventing SCA. Moreover, providing age-

appropriate materials and interactive learning activities can make the content more engaging. For example, using simple diagrams, storytelling, and case studies of individuals with SCT and SCA can help students grasp the concepts more easily. Students who learn about SCT in school are more likely to discuss the trait with their families and communities, thereby spreading awareness beyond the classroom [31-33].

3. Community-Based Education and Engagement

Community-based education is crucial in rural areas where healthcare access is limited, and knowledge of SCT is scarce. Engaging local community leaders, traditional healers, and village health workers in awareness efforts can help bridge the gap and ensure that information reaches those who need it most. Community health workers can be trained to educate people about SCT during routine healthcare visits, such as immunization campaigns or maternal health check-ups. By integrating SCT education into already established health initiatives, communities can become more receptive to the message. Organizing community meetings and outreach programs, where people can ask questions and learn more about SCT in a comfortable setting, can also be effective. These forums can provide opportunities for individuals to share their experiences with SCA and SCT, dispelling myths and encouraging open dialogue. Furthermore, providing resources like pamphlets, posters, and videos in local languages can help reinforce the information shared during these meetings and serve as valuable takeaways for community members [34-36].

4. Genetic Screening and Counseling Services

Routine genetic screening for SCT should be integrated into general healthcare services, particularly for individuals who are planning to marry or have children. Offering simple, affordable tests for SCT during medical visits, particularly in family planning and maternal

health settings, would enable people to learn their carrier status early. Providing access to genetic counseling alongside these screening services can help individuals and couples make informed decisions about family planning, offering guidance on the potential risks of having children with SCA and available options such as genetic testing or prenatal screening. Training healthcare providers to discuss SCT in a non-judgmental and informative manner is also essential for effective counseling. Many individuals may be hesitant to seek counseling or genetic testing due to fear, stigma, or a lack of understanding, so healthcare workers must be equipped with the knowledge and sensitivity to address these concerns appropriately [37-38].

5. Strengthening Healthcare Provider Education

Healthcare providers play a critical role in bridging the knowledge gap, as they are often the first point of contact for individuals seeking information about genetic disorders. In Zimbabwe, there is a need to enhance the training of healthcare professionals on the identification, diagnosis, and counseling of SCT carriers. This can be achieved through continuing medical education programs, workshops, and inclusion of SCT education in medical and nursing school curricula. Healthcare providers should be trained not only to recognize the signs of SCA but also to educate patients about the implications of SCT and provide counseling services. Additionally, making genetic counseling a routine part of healthcare services, especially for couples planning to have children, would encourage more individuals to learn about their genetic status. By promoting genetic testing and counseling as accessible and routine healthcare services, Zimbabwe can create an environment where individuals are more likely to seek information and make informed decisions [39-42].

6. Collaboration with Non-Governmental Organizations (NGOs)

Non-governmental organizations (NGOs) with a focus on health and genetic disorders can play an essential role in bridging the knowledge gap. Collaborating with the Zimbabwean government and local health authorities, NGOs can help fund awareness campaigns, support genetic counseling programs, and facilitate screening services. NGOs can also contribute by providing educational materials and resources, advocating for policy changes, and organizing community events that focus on SCT awareness. Additionally, these organizations can partner with international agencies and research institutions to conduct studies that assess the prevalence of SCT and SCA in Zimbabwe, which can inform future public health strategies [43-45].

7. Use of Technology and Digital Platforms

The use of technology and digital platforms presents a unique opportunity to enhance SCT awareness in Zimbabwe. Mobile health (mHealth) platforms can be used to disseminate information about SCT and SCA to a broader audience, including rural and hard-to-reach populations. These platforms can provide educational messages, reminders for genetic screening, and access to counseling services through text messages, mobile apps, or online platforms. Mobile-based education campaigns can help bridge the gap in knowledge and facilitate real-time communication between individuals and healthcare professionals [46-48].

Conclusion

Bridging the knowledge gap regarding Sickle Cell Trait (SCT) awareness in Zimbabwe is essential to reducing the prevalence of Sickle Cell Anemia (SCA) and ensuring better health outcomes for future generations. Despite the substantial burden of SCT in the population, there remains a significant lack of awareness, particularly in rural areas, among less-educated populations, and within healthcare systems.

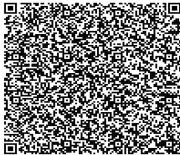
Through targeted public awareness campaigns, the integration of SCT education into school curricula, community-based education efforts, and the provision of genetic screening and counseling services, it is possible to increase awareness and understanding of SCT and its potential risks. Moreover, strengthening the capacity of healthcare providers to educate and counsel individuals on SCT, along with fostering collaboration with non-governmental organizations, will create a more holistic approach to addressing the issue. Technology and digital platforms offer exciting opportunities to expand outreach efforts, particularly in remote areas, by providing accessible information and facilitating genetic screening. By implementing these strategies in a coordinated and sustained manner, Zimbabwe can ensure that more individuals are informed about SCT, make informed decisions about family planning, and contribute to reducing the incidence of SCA in the country

References

1. Obeagu EI, Ochei KC, Nwachukwu BN, Nchuma BO. Sick cell anaemia: a review. *Scholars Journal of Applied Medical Sciences*. 2015; 3(6B):2244-2252.
2. Obeagu EI. Erythropoietin in sickle cell anaemia: a review. *International Journal of Research Studies in Medical and Health Sciences*. 2020; 5(2):22-28.
3. Obeagu EI, Obeagu GU. Sick cell anaemia in pregnancy: a review. *International Research in Medical and Health Sciences*. 2023; 6(2):10-13.
4. Obeagu EI. Sick cell anaemia: haemolysis and anemia. *Int. J. Curr. Res. Chem. Pharm. Sci*. 2018; 5(10):20-21.
5. Musuka HW, Iradukunda PG, Mano O, Saramba E, Gashema P, Moyo E, Dzinamarira T. Evolving Landscape of Sick Cell Anemia Management in Africa: A Critical Review. *Tropical Medicine and Infectious Disease*. 2024; 9(12):292.
6. Hagan Asamoah E. *Perceptions and Experiences of Sick Cell Disease Patients and Parents/Caretakers on Alternative Treatment Options for Pain Management*. 2021.
7. Asamoah EH. *Perceptions and Experiences of Sick Cell Disease Patients and Parents/Caretakers on Alternative Treatment Options for Pain Management* (Doctoral dissertation, Walden University). 2021.
8. Obeagu EI, Ogunnaya FU, Obeagu GU, Ndidi AC. Sick cell anaemia: a gestational enigma. *Migration*. 2023; 17:18.
9. Obeagu EI, Obeagu GU. Implications of climatic change on sickle cell anemia: A review. *Medicine*. 2024; 103(6):e37127.
10. Obeagu EI, Ubosi NI, Obeagu GU, Egba SI, Bluth MH. Understanding apoptosis in sickle cell anemia patients: Mechanisms and implications. *Medicine*. 2024; 103(2):e36898.
11. Tibi P, McClure RS, Huang J, Baker RA, Fitzgerald D, Mazer CD, Stone M, Chu D, Stammers AH, Dickinson T, Shore-Lesserson L. STS/SCA/AmSECT/SABM update to the clinical practice guidelines on patient blood management. *The Journal of ExtraCorporeal Technology*. 2021; 53(2):97-124.
12. Obeagu EI, Adias TC, Obeagu GU. Advancing life: innovative approaches to enhance survival in sickle cell anemia patients. *Annals of Medicine and Surgery*. 2024 Oct 1;86(10):6021-36.
13. Kong MH, Peterson ED, Fonarow GC, Sanders GD, Yancy CW, Russo AM, Curtis AB, Sears Jr SF, Thomas KL, Campbell S, Carlson MD. Addressing disparities in sudden cardiac arrest care and the underutilization of effective therapies. *American heart journal*. 2010; 160(4):605-618.
14. Chahine M, Fontaine JM, Boutjdir M. Racial disparities in ion Channelopathies and inherited cardiovascular diseases associated with sudden cardiac death. *Journal of the American Heart Association*. 2022; 11(6):e023446.
15. Wahab S, Kelly K, Klingler M, Pirovic A, Futch K, Rennie C, Durham D, Herber D, Gramling G, Price S, Costin JM. Impact of Race, Socioeconomic Status, and Geography on Healthcare Outcomes for Children with

- Sickle Cell Disease in the United States: A Scoping Review. *Cureus*. 2024; 16(3).
16. Obeagu EI, Babar Q. Covid-19 and sickle cell anemia: susceptibility and severity. *J. Clinical and Laboratory Research*. 2021; 3(5):2768-2787.
 17. Obeagu EI. Maximizing longevity: erythropoietin's impact on sickle cell anaemia survival rates. *Annals of Medicine and Surgery*. 2024; 86(3):1570-1574.
 18. Obeagu EI, Obeagu GU. Improving outcomes: integrated strategies for diabetes and sickle cell anemia. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2024; 11(2):20-29.
 19. Obeagu EI, Obeagu GU. Oxidative Damage and Vascular Complications in Sickle Cell Anemia: A Review. *Elite Journal of Haematology*. 2024; 2(3):58-66.
 20. Obeagu EI, Obeagu GU. Malnutrition in sickle cell anemia: Prevalence, impact, and interventions: A Review. *Medicine*. 2024; 103(20):e38164.
 21. Obeagu EI, Obeagu GU. Hemolysis Challenges for Pregnant Women with Sickle Cell Anemia: A Review. *Elite Journal of Haematology*. 2024; 2(3):67-80.
 22. Obeagu EI. Sickle cell anaemia: Historical perspective, Pathophysiology and Clinical manifestations. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2018;5(11):13-15.
 23. Gustafson SL, Gettig EA, Watt-Morse M, Krishnamurti L. Health beliefs among African American women regarding genetic testing and counseling for sickle cell disease. *Genetics in Medicine*. 2007; 9(5):303-310.
 24. Long KA, Thomas SB, Grubs RE, Gettig EA, Krishnamurti L. Attitudes and beliefs of African-Americans toward genetics, genetic testing, and sickle cell disease education and awareness. *Journal of genetic counseling*. 2011; 20:572-592.
 25. Stevens EM, Patterson CA, Tchume-Johnson T, Antiel RM, Flake A, Smith-Whitley K, Barakat LP. Parental attitudes towards prenatal genetic testing for sickle cell disease. *Journal of pediatric hematology/oncology*. 2019; 41(8):579-585.
 26. Obeagu EI, Obeagu GU. From Classroom to Home: Strengthening the Continuum of Sickle Cell Disease Knowledge. *Elite Journal of Health Science*. 2023; 1(1):23-29.
 27. Obeagu EI, Obeagu GU. From Awareness to Action: Encouraging Adolescent Engagement in Sickle Cell Disease Prevention. *Elite Journal of Public Health*. 2023; 1(1):42-50.
 28. Hines J, Mitchell MJ, Crosby LE, Johnson A, Valenzuela JM, Kalinyak K, Joiner C. Engaging patients with sickle cell disease and their families in disease education, research, and community awareness. *Journal of prevention & intervention in the community*. 2011; 39(3):256-272.
 29. Poku BA, Pilnick A. Research knowledge transfer to improve the care and support of adolescents with sickle cell disease in Ghana. *Health Expectations*. 2022; 25(5):2515-2524.
 30. Obeagu EI, Obeagu GU. Community Leaders as Educators: Mobilizing for Sickle Cell Disease Reduction. *Elite Journal of Health Science*. 2023; 1(1):37-43.
 31. Obeagu EI, Adias TC. Global Partnerships: Collaborative Efforts for International Sickle Cell Disease Education. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2024; 11(5):31-37.
 32. Obeagu EI, Obeagu GU. Immunization strategies for individuals with sickle cell anemia: A narrative review. *Medicine*. 2024; 103(38):e39756.
 33. Obeagu EI, Obeagu GU. Dual management: diabetes and sickle cell anemia in patient care. *Elite Journal of Medicine*. 2024; 2(1):47-56.
 34. Hines J, Mitchell MJ, Crosby LE, Johnson A, Valenzuela JM, Kalinyak K, Joiner C. Engaging patients with sickle cell disease and their families in disease education, research, and community awareness. *Journal of prevention & intervention in the community*. 2011; 39(3):256-272.
 35. Aygun B, Odame I. A global perspective on sickle cell disease. *Pediatric blood & cancer*. 2012; 59(2):386-390.
 36. Obeagu EI. Comprehensive Insights into Eosinophil Interactions in Sickle Cell Anemia Severity. *Haematol Int J*. 2024; 8(1):00223.
 37. Obeagu EI. Potassium dynamics in sickle cell anemia: clinical implications and pathophysiological insights. *Annals of Medicine and Surgery*. 2024; 86(10):6037-45.

38. Anie KA. The intersection of sickle cell disease, stigma, and pain in Africa. *Hematology*. 2024; 2024(1):240-245.
39. Bulgin D, Tanabe P, Jenerette C. Stigma of sickle cell disease: a systematic review. *Issues in mental health nursing*. 2018; 39(8):675-686.
40. Obeagu EI, Obeagu GU. Addressing Myths and Stigmas: Breaking Barriers in Adolescent Sickle Cell Disease Education. *Elite Journal of Health Science*. 2024;2(2):7-15.
41. Burnes DP, Antle BJ, Williams CC, Cook L. Mothers raising children with sickle cell disease at the intersection of race, gender, and illness stigma. *Health & Social Work*. 2008; 33(3):211-220.
42. Obeagu EI, Obeagu GU. Management of diabetes mellitus patients with sickle cell anemia: Challenges and therapeutic approaches. *Medicine*. 2024; 103(17):e37941.
43. Obeagu EI, Obeagu GU, Egba SI. Coexisting conditions: addressing diabetes in sickle cell anemia care. *Int J Curr Res Med Sci*. 2023; 9:23-28.
44. Desine S, Eskin L, Bonham VL, Koehly LM. Social support networks of adults with sickle cell disease. *Journal of Genetic Counseling*. 2021; 30(5):1418-1427.
45. Sehlo MG, Kamfar HZ. Depression and quality of life in children with sickle cell disease: the effect of social support. *BMC psychiatry*. 2015; 15:1-8.
46. Hsu LL, Green NS, Ivy ED, Neunert CE, Smaldone A, Johnson S, Castillo S, Castillo A, Thompson T, Hampton K, Strouse JJ. Community health workers as support for sickle cell care. *American journal of preventive medicine*. 2016; 51(1):S87-98.
47. Matthie N, Jenerette C, McMillan S. Role of self-care in sickle cell disease. *Pain Management Nursing*. 2015; 16(3):257-266.
48. Noll RB, Vannatta K, Kalinyak KA, Swiecki E, Garstein M, Davies W, Bukowski WM. Parental distress, family conflict, and role of social support for caregivers with or without a child with sickle cell disease. *Family Systems Medicine*. 1994; 12(3):281.

Access this Article in Online	
	Website: www.ijcrps.com
	Subject: Hematology
Quick Response Code	
DOI: 10.22192/ijcrps.2024.11.12.003	

How to cite this article:

Emmanuel Ifeanyi Obeagu. (2024). Sickle Cell Trait Awareness and Education in Zimbabwe: Bridging the Knowledge Gap. *Int. J. Curr. Res. Chem. Pharm. Sci.* 11(12): 22-29.
DOI: <http://dx.doi.org/10.22192/ijcrps.2024.11.12.003>