

Article

Understanding Caregiver Knowledge to Improve Home-Based Management of Sickle Cell Disease in Zaria, Nigeria

Musilimat H. Faleye ¹, Hadiza Lawal ², Olukemi Ajamufua ³, Niyi M. Adebisi ⁴, Jamilu A. Faruk ^{4,5},
Zainab M. Hassan ⁶ and Hafsah R. Ahmad ^{4,5,*}

¹ Department of Nursing, Ahmadu Bello University Teaching Hospital, P.M.B. 06, Zaria 810001, Nigeria; musilimatfaleye@gmail.com

² College of Nursing, University of Rio Grande, Rio Grande, OH 45674, USA; hlawal@rio.edu

³ Guy's and St Thomas' NHS Foundation Trust, Evelina Children's Hospital, Westminster Bridge Road, London SE1 7EH, UK; olukemi.ajamufua@gstt.nhs.uk

⁴ Department of Paediatrics, Ahmadu Bello University Teaching Hospital, P.M.B. 06, Zaria 810001, Nigeria; haose.nma@gmail.com (N.M.A.); jafaruk@abu.edu.ng (J.A.F.)

⁵ Department of Paediatrics, Ahmadu Bello University, Zaria 810211, Nigeria

⁶ Department of Psychiatry, Aminu Kano Teaching Hospital, Kano 700101, Nigeria; hassannzainab@gmail.com

* Correspondence: hrahmad@abu.edu.ng; Tel.: +234-8026834766

Abstract

Background: Sickle cell disease (SCD) is a hereditary blood disorder marked by the production of abnormally shaped, rigid red blood cells that obstruct blood flow, resulting in pain, organ damage, and increased infection risk. SCD poses a significant public health challenge in Nigeria, which has the highest global burden, with about 150,000 affected children born annually. The high prevalence is exacerbated by limited healthcare infrastructure, low public awareness, and socio-economic barriers, making effective disease management difficult. Understanding the knowledge of home-based caregivers is essential to identify gaps that may impact care quality. This study was performed within the African Research and Innovative Initiative for Sickle Cell Education (ARISE, EC GA No 824021) project to develop best practice in the clinical management of SCD. **Aim:** This study explores the knowledge, experiences, and educational needs of home-based caregivers of children with SCD attending the Paediatric Haematology Clinic, ABUTH, Zaria. **Methods:** A qualitative case study design was used, involving in-depth interviews with ten purposively selected caregivers. Interviews were conducted in Hausa, transcribed, and translated into English. Thematic analysis was performed. **Results:** Four themes emerged: 1. Understanding of SCD aetiology 2. Knowledge of symptoms 3. Awareness of complications and 4. Knowledge of SCD type. **Conclusions:** Home-based caregivers had limited knowledge of the genetic basis of the disease, but possess some knowledge of SCD key symptoms, enabling basic disease management and healthcare seeking. However, there is a need to enhance caregiver education to improve care quality and health-seeking behaviour for children with SCD.

Keywords: home-based caregivers; knowledge; sickle cell disease

Academic Editor: Pier Paolo Piccaluga

Received: 15 December 2025

Revised: 9 February 2026

Accepted: 26 February 2026

Published: 28 February 2026

Copyright: © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and

conditions of the [Creative Commons Attribution \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) license.

1. Introduction

Sickle cell disease (SCD) is a hereditary blood disorder characterized by the production of abnormal haemoglobin, known as haemoglobin S or sickle haemoglobin. This abnormal haemoglobin causes red blood cells to become rigid and sickle-shaped, which can obstruct blood flow and lead to painful episodes, organ damage, and increased risk of infection [1]. The condition is most prevalent among individuals of African, Mediterranean, Middle Eastern, and Indian ancestry, with the highest burden seen in Sub-Saharan Africa. In this region, it is estimated that about 275,000–305,000 infants are born with SCD annually, making it a significant public health concern [2–5]. In Nigeria alone, more than 150,000 newborns are affected each year, representing the highest national burden globally [6,7]. SCD is also a major cause of childhood mortality in Africa, accounting for up to 6% of under-five deaths in some countries [6,8].

Home-based caregivers, most often parents and close relatives, play a central role in the management of SCD, providing essential support to patients in their daily lives. The knowledge and understanding of these caregivers significantly impact the quality of care and the overall well-being of the individuals they support [8–10]. Effective caregiving for SCD requires a comprehensive understanding of the disease, including its symptoms, triggers, complications, and treatment protocols. Studies have shown that caregivers with higher levels of disease-specific knowledge are better equipped to manage acute pain episodes, recognize early signs of complications, and adhere to treatment regimens, thereby improving patient outcomes [2,4,9,10]. However, research across Africa and in Nigeria consistently finds that a substantial proportion of caregivers have inadequate knowledge of SCD and its management, particularly regarding the genetic basis, crisis triggers and potential complications [4,6,9–11]. This knowledge gap can lead to delayed or inadequate care, increasing the risk of severe complications and hospitalizations [4,6,10].

SCD remains a pressing health issue in Nigeria. In Kaduna State, many families ultimately resort to seeking care from tertiary centres [7]. Knowledge and practices of home-based caregivers in this context are crucial for effective management, significantly influencing patient outcomes and quality of life [11]. Caregivers need to be proficient in both pharmacologic and non-pharmacologic pain management strategies, including administering prescribed medications, ensuring hydration, and applying compresses [2,10]. They must also be able to identify situations that necessitate medical intervention, such as severe pain not relieved by home measures, signs of acute chest syndrome, or stroke symptoms [1,10]. However, studies indicate that many caregivers lack comprehensive understanding of SCD pathophysiology, complications, and management strategies, including awareness of triggers such as dehydration, extreme temperatures, and infections [2,4,7,9–11]. Stigma, financial barriers, and limited access to accurate information further complicate caregiving [6–8]. Knowledge gaps in these areas can result in delayed recognition of complications and poorer outcomes [6,9,10].

This study therefore aimed to explore the knowledge of home-based caregivers on SCD in Ahmadu Bello University Teaching Hospital, Zaria, Nigeria, seeking to gather in-depth insights into caregiver experiences, perceptions, and educational needs.

2. Materials and Methods

A qualitative research method was employed to obtain in-depth insights into caregiver knowledge and experiences. This approach was appropriate as it facilitated the acquisition of information, insights, and awareness, as well as exploring complex perceptions and contextual factors influencing home-based management of SCD. The study was conducted at the Paediatric Haematology Unit at Ahmadu Bello University Teaching Hospital, Zaria, Nigeria, which provides care for SCD crises in children at both the emergency

and main wards and operates a weekly follow-up clinic led by Paediatricians. Data was collected from ten (10) purposively selected home-based caregivers, with five (5) having children with SCD aged 0–5 years and the other five (5) having children with SCD aged 6–10 years.

Study Population: The study population comprised home-based caregivers of children with SCD whose children were attending follow-up appointments at the clinic.

Inclusion Criteria: Caregivers of children aged 6 months to 10 years diagnosed with haemoglobin SS phenotype who provided informed consent to participate in the study were included. This age range reflects the typical distribution of younger and older patients mostly seen in the clinic.

Exclusion Criteria: Caregivers of newly diagnosed patients, patients not in steady state and those with other co-morbidities in addition to SCD. Steady state in this study was defined as absence of pain crisis, infections and blood transfusion for at least 3 months prior to enrolment.

Sampling: a group health talk about the study was conducted and caregivers were encouraged to participate. Those willing to participate were then screened for eligibility and administered consent. Purposive sampling was used to select participants with direct caregiving experience. This method allowed us to choose a sample based on the participants' experiences, enabling the selection of information-rich cases that provide insights and a deep understanding of their experiences and knowledge. Saturation was achieved after interviewing 10 participants: five with children aged 6 months to 5 years and five with children aged 6 to 10 years. Saturation occurs when data collection reaches a point of diminishing returns, with no new information being added.

Data Collection Procedure: Focus in-depth interviews using an interview guide (Supplementary File S1) were conducted. The interviews were carried out in Hausa (the participant local language) or English depending on participants' preference. Those willing to join the study were given written consent forms in English, translated into a language they understood (Hausa in all the cases). The interviews took place in a quiet room at the hospital, ensuring participants' anonymity and privacy, and lasted about 50 to 60 min. Detailed field notes capturing the environment, nonverbal cues, interruptions, and personal reflections were maintained. The interviews were audio recorded with consent, transcribed in Hausa, and later translated into English. A pilot with two participants was conducted which guided the standardization of the interview guide, its translation into Hausa language, duration of interview and other logistics of data management and analysis. (MF, HRA and JAF).

Data Analysis. Manual thematic content analysis was used to analyse the data, involving a descriptive presentation of qualitative data. This method entailed examining all the data to identify key themes that encapsulate the views collected. In our study, this was accomplished by coding major ideas, which were subsequently reorganized into themes that summarized the participant insights. Thematic content analysis was conducted following an inductive approach. Transcripts were read repeatedly to ensure familiarity, coded line-by-line, and grouped into categories that were later refined into major themes. Coding was conducted manually by the primary researcher and reviewed by a second and third qualitative researcher to enhance analytic rigor and credibility (MF, NMA, JAF).

Ethical Considerations. Ethical clearance for this study was secured, along with permission from the Health Research Ethics Committee (HREC) of ABUTH, Zaria (ABUTH/HREC/). Written informed consent was obtained from all home-based caregivers prior to enrolment in the study, with assurances that their responses would remain anonymous. No participant identifiers were collected.

3. Results

All ten caregivers interviewed were biological mothers of the patients, all except one were of Hausa ethnicity and six were engaged in petty trading at home; the remaining four were full-time housewives not engaged in any income-earning job. The age range was 25 to 42 years for caregivers, and 2 to 10 years for the children with the modal age at 2 years. Seven of the children were boys and six were enrolled at school as at the time of the study. Other details are as shown in Table 1 below.

Table 1. Sociodemographic characteristics of children with sickle cell disease and their caregivers.

Serial No	Child			Caregiver			
Characteristic	Age (yrs)	Sex (m/f)	School (yes/no)	Age (yrs)	Education Level	Total Number of Children	Number of Children with SCD
1	2	m	no	42	tertiary	8	1
2	2	f	no	32	secondary	4	1
3	4	m	no	28	secondary	3	1
4	2	m	no	39	tertiary	4	1
5	4	m	yes	25	tertiary	3	1
6	8	m	yes	30	secondary	3	1
7	7	m	yes	31	secondary	3	1
8	8	f	yes	35	tertiary	3	1
9	10	f	yes	27	tertiary	2	1
10	10	m	yes	33	tertiary	5	1

Knowledge of home-based caregivers on SCD in Children. Participants were asked about their knowledge of SCD, and four overarching themes emerged from their responses.

Theme 1: Understanding SCD aetiology:

Most caregivers had limited knowledge of the genetic basis of SCD. Only two correctly identified SCD as a hereditary condition passed from parents to children:

“It is hereditary. If your parents have the genes, you can inherit it. I believe it is not an infectious disease that you can easily contract; you inherit it from your parents. It’s something hereditary. If your parents have it, you’re likely to get it as well,” (Participant 4)

“We were told it is genetic and passed from parents. ... Based on what I know from attending the clinic, we were informed that sickle cell is genetic, passed from parents to children. That’s the only way it can be acquired—it’s related to blood inheritance.” (Participant 10)

One caregiver attributed SCD to misconceptions such as worms and poor feeding, while another attributed it to blood incompatibility:

“Some say worms cause it when children do not eat well. Some people believe diseases or worms cause it. They say that if children don’t eat, the worms get stronger and eat inside their stomach, but when they eat, the worms become weak. If you eat, they get weaker, but if you don’t eat, they get stronger, right? It’s all about your food” (Participant 6)

“What I understand is that it involves certain types marrying each other. I’m not sure, but I think it has to do with the man and the woman. I don’t know if it’s about blood type or something else. It’s like if one is positive and the other is negative.” “I think it has to do with blood types—maybe positive and negative.” (Participant 7)

Theme 2: Knowledge of symptoms

Caregiver demonstrated good awareness of common symptoms, including pain, fever, swelling, and difficulty breathing:

"Sometimes his hands swell; he complains of chest and back pain. The boy sometimes has pain in his back and chest and struggles to breathe." (Participant 1)

"He develops fever, joint pains, and sometimes cough. but since he's a child, I'm not always sure if it's true" (Participant 6)

Theme 3: Awareness of complications

Knowledge of complications was limited. Only two caregivers identified anaemia or infection as possible complications:

"They are very stressed and exhausted. They get tired easily, maybe from the disease. They are very stressed and exhausted, but I'm not sure if it's due to the disease. They get tired easily." (Participant 3)

"Complications like anemia and infections happen. Some complications include anemia and infections." (Participant 5)

Most caregivers recognized symptoms but could not link them to specific complications such as acute chest syndrome, stroke, or severe anaemia. (Participants 1, 2, 4, 9 and 10)

Theme 4: Knowledge of SCD Type

Seven caregivers knew the specific phenotypic diagnosis (e.g., HBSS) of their children. Three caregivers were unaware:

"They did not tell me the type my child has. hmmmmm, but they did not tell me the type of SCD the child had." (Participant 8)

4. Discussion

The findings of all caregivers being mothers, and housewives with some engaged in petty trading reflects the sociocultural reality of Northern Nigeria. This is in spite of the fact that up to six mothers had attained tertiary level of education. This reality is important in designing relevant social and culturally acceptable strategies for health education and community engagement to improve health-seeking behaviour [12] and acceptance of preventive measures to curb SCD births such as premarital, prenatal and newborn screening. The findings from the study revealed considerable gaps in caregivers' knowledge of SCD aetiology and complications despite adequate recognition of symptoms. While they demonstrate adequate knowledge of the signs and symptoms of SCD, such as pain, fever, and yellowing of the eyes or urine, there are significant gaps in their understanding of the underlying causes and potential complications of the disease. These findings are similar to other studies in Nigeria, Ghana and Rwanda [2,11,13]. The finding that some caregivers attributed SCD to worms, poor feeding, or incompatible marriages indicates persistent myths also reported in previous Nigerian studies [13]. Such misconceptions hinder informed decision-making, including partner genotype screening and early diagnosis.

The study further highlights that most caregivers could not recognize SCD as a hereditary condition passed down from parents to children. Furthermore, a concerning number of caregivers attribute the disease to local superstitions or misconceptions, such as believing it is caused by worms or the result of certain types of marriages [14,15]. This lack of understanding about the genetic basis of SCD is a significant barrier to effective disease management and prevention. While caregivers are generally aware of the common signs and symptoms of SCD, they often struggle to effectively identify and monitor disease-related crises or complications. Only a few caregivers were able to recognize complications like anemia and infections as potential consequences of the disease [1,11].

The findings highlight the need for more comprehensive education and support for caregivers of children with SCD [9,11,14].

The limited understanding of complications is concerning. Complications like acute chest syndrome, severe infections, and stroke are major causes of morbidity and mortality among children with SCD, and caregiver recognition is critical for prompt medical intervention [15]. The inability to identify worsening symptoms increases the risk of delayed treatment and avoidable crises. Although caregivers generally recognized their children's symptoms, the gaps in underlying understanding reflect limited health literacy. Similar findings in other African contexts show that caregivers often equate SCD primarily with pain and fever while overlooking life-threatening complications [16]. Discrepancies in SCD knowledge and care are not simply temporal, but also deeply rooted in geographic locations, structural inequities including access to health education, health system capacity and sociocultural factors. Our findings underscore the need for locally tailored education and health system interventions, rather than comparisons that may unintentionally imply deficit without context. The fact that most caregivers knew their child's haemoglobin phenotype status suggests effective communication at the clinic. However, this knowledge did not translate into deeper understanding of the disease process, highlighting the need for strengthened caregiver education, reinforced counselling, and culturally appropriate health communication strategies.

Limitations

This study is limited by the small sample size of only ten caregivers from a single tertiary institution. This limits generalizability of findings to other clinical, educational, social and geographical scenarios. The interviews were translated from English to Hausa and transcribed from Hausa to English, which may introduce loss of nuance despite efforts to ensure accuracy. The study also did not include fathers and significant other family members who may have different knowledge levels. The absence of fathers among the participants demonstrates a sociocultural reality in our setting where mothers (and generally female relatives) are the main primary caregivers of children while fathers shoulder the responsibility of the financial component of childcare and upkeep. Fathers' perspectives will be prioritized in future inquiries such as this.

5. Conclusions

While caregivers demonstrate a basic understanding of the symptoms of SCD, significant gaps exist in their knowledge of the diseases' aetiology and potential complications. This lack of comprehensive understanding and the misconceptions about disease aetiology hinder effective home disease management, crisis prevention and lead to suboptimal outcomes by delaying timely medical care. To address these gaps, healthcare providers and policymakers must prioritize the development and implementation of targeted educational interventions for home-based caregivers. Strengthening health education for caregivers is essential to improving child outcomes and reducing preventable SCD-related complications in Northern Nigeria.

6. Recommendations

Based on the findings from this study, the following recommendations were made to address the knowledge gaps among home-based caregivers of children with sickle cell disease (SCD):

To improve the understanding of SCDs aetiology and inheritance, caregiver education was re-enforced at the clinic with documentation of topics discussed during consultations including prevention of SCD pregnancies via population and prenatal screening,

prenatal and newborn diagnosis and subsequent early initiation of comprehensive care. Flyers and leaflets were developed and translated into Hausa language. Caregiver support groups are formally included to promote shared learning and peer support.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/hemato7010007/s1>.

Author Contributions: Conceptualisation, M.H.F. and N.M.A.; methodology, M.H.F., N.M.A. and H.L.; validation, N.M.A., J.A.F. and H.R.A.; formal analysis, M.H.F., O.A., N.M.A. and J.A.F.; resources, H.R.A., J.A.F. and N.M.A.; writing—original draft preparation, M.H.F.; writing—review and editing, H.R.A., J.A.F., N.M.A., Z.M.H., H.L. and O.A.; visualisation, H.R.A., J.A.F. and Z.M.H.; supervision, H.R.A. and J.A.F.; project administration, M.H.F. and N.M.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding. M.F received training at Guys and St. Thomas NHS under supervision of O.A. This staff exchange program was conducted under the ARISE Project. The ARISE project had received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 824021.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the ABUTH Ethics Committee on 27 January 2023 (ABUTH-NHREC/29/08//23).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the patient(s) to publish this paper.

Data Availability Statement: Raw data from the study were not shared and will not be shared. Only aggregated data will be disseminated and presented as results of the study. Primary (raw) data, transcripts and recordings will be available only to study principal investigator and authorised study team members, bound by professional secrecy. Only aggregated data (e.g., cumulative data and statistics) may be made available to third parties, if requested, for specific and verified purposes (e.g., summary of research activities, abstracts/presentations or other scientific articles).

Acknowledgments: We thank the management of Ahmadu Bello University (ABU), Zaria and ABUTH for permitting a staff exchange programme between ABU, ABUTH and Guy’s and St Thomas’ NHS Foundation Trust, Evelina Children’s Hospital, Westminster Bridge Road, London SE1 7EH, UK. We thank ABUTH doctors, nurses, medical laboratory scientists, health information officers, research assistants and all the staff. We thank the people living with sickle cell disease, parents/guardians and all the caregivers; this work would not have been possible without them. During the preparation of this manuscript/study, the author(s) used consensus app for the purposes of editing, rephrasing and generation of in-text and list citations. The authors have reviewed and edited the output and take full responsibility for the content of this publication.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Abbreviations

The following abbreviations are used in this manuscript:

ABU	Ahmadu Bello University
ABUTH	Ahmadu Bello University Teaching Hospital
HBSS	Haemoglobin SS
HREC	Health Research Ethics Committee
SCD	Sickle cell disease

References

1. Piel, F.B.; Hay, S.I.; Gupta, S.; Weatherall, D.J.; Williams, T.N. Global burden of sickle cell anaemia in children under five, 2010–2050: Modelling based on demographics, excess mortality, and interventions. *PLoS Medicine* **2017**, *10*, e1001484.
2. Ajinkpang, S.; Anim-Boamah, O.; Bimpong, K.; Kanton, F.; Pwavra, J.; Abdul-Mumin, A. Sickle Cell Disease in Children: Knowledge and Home-Based Management Strategies among Caregivers at a Tertiary Facility in Northern Ghana. *BioMed Res. Int.* **2022**, *2022*, 3384813. <https://doi.org/10.1155/2022/3384813>.
3. Nangunia, N.; Mukuku, O.; Feza, V.; Kyembwa, Y.; Kabesha, T.; Mutombo, A.; Wembonyama, S. Assessment of healthcare workers' knowledge and availability of resources for sickle cell disease management in Bukavu, Democratic Republic of the Congo. *BMC Health Serv. Res.* **2025**, *25*, 164. <https://doi.org/10.1186/s12913-025-12330-7>.
4. Ohemeng, A.; Nartey, E.; Quaidoo, E.; Ansong, R.; Asiedu, M. Knowledge and nutrition-related practices among caregivers of adolescents with sickle cell disease in the Greater Accra region of Ghana. *BMC Public Health* **2023**, *23*, 434. <https://doi.org/10.1186/s12889-023-15343-1>.
5. Oluwole, E.; Adeyemo, T.; Osinaike, B.; Akintan, P. Sickle cell disease: Caregiver's awareness and phenotype distribution among children presenting to children emergency of a tertiary hospital in Lagos, Nigeria. *Nigerian Journal of Paediatrics*. **2022**, *49*, 56. <https://doi.org/10.4314/njp.v49i1.10>.
6. Mumuni, N.; Osman, W.; Alhassan, B.; Alhassan, A. Burden experienced by informal caregivers of children with sickle cell disease (SCD): A qualitative exploratory study at Tamale Teaching Hospital, Ghana. *BMJ Open* **2023**, *13*, e066311. <https://doi.org/10.1136/bmjopen-2022-066311>.
7. Bello-Manga, H.; Musa, H.; Usman, B.; Ahmed, K.; Ijei-Enesi, I.; Coleman, R.; Picinich, A.; Lukanen, E.; Qashua, N.; King, A. Understanding the Experiences of Caregivers for Children Five Years and Above Living with Sickle Cell Diseases in Kaduna, Nigeria. *Blood* **2024**, *144*, 2245. <https://doi.org/10.1182/blood-2024-211353>.
8. Lelo, P.; Kitetele, F.; Akele, C.; Sam, D.; Boivin, M.; Kashala-Abotnes, E. Caregivers' Perspective on the Psychological Burden of Living with Children Affected by Sickle Cell Disease in Kinshasa, the Democratic Republic of Congo. *Children* **2023**, *10*, 261. <https://doi.org/10.3390/children10020261>.
9. Amour, M.; Jumanne, S. Caregivers' level of knowledge and home- based practices for prevention of Sickle cell disease related complications among children attending Mnazi mmoja hospital in Zanzibar. *Int. J. Afr. Nurs. Sci.* **2021**, *14*, 100303. <https://doi.org/10.1016/j.ijans.2021.100303>.
10. Geoffrey, M. Knowledge and Practices of Caregivers Towards Home-Based Care of Sickle Cell Anaemia Among Children Below Ten Years of Age Attending Jinja Regional Referral Hospital, Jinja City. *IDOSR J. Appl. Sci.* **2023**, *8*, 45–58. <https://doi.org/10.59298/idosr/2023/10.2.1413>.
11. Adesola, A.; Akoki, D.; Lawal, J.; Oyedokun, A.; Agboola, O.; Babawale, A.; Brown, B. A mixed-method study on awareness, haemoglobin phenotype result accuracy and sickle cell knowledge among parents of children with sickle cell disease in ibadan, Nigeria. *BMC Public Health* **2025**, *25*, 2700. <https://doi.org/10.1186/s12889-025-23953-0>.
12. Adamu, A.; Ango, U.M. Health-seeking Behavior among Mothers of Under-five Children in Sokoto Metropolis, Sokoto, Nigeria. *Ann. Afr. Med.* **2024**, *23*, 335–342. https://doi.org/10.4103/aam.aam_112_23.
13. Havugarurema, P.; Nyirimanzi, N.; Kanyamuhunga, A. P-097: Knowledge and Experiences of Parents with Children Affected By Sickle Cell Disease Followed At Chuk: A Qualitative Study. *HemaSphere* **2022**, *6*, 60–61. <https://doi.org/10.1097/01.hs9.0000873276.80032.b4>.
14. Buser, J.; Bakari, A.; Seidu, A.; Osei-Akoto, A.; Paintsil, V.; Amoah, R.; Otoo, B.; Moyer, C. Caregiver Perception of Sickle Cell Disease Stigma in Ghana: An Ecological Approach. *J. Pediatr. Health Care Off. Publ. Natl. Assoc. Pediatr. Nurse Assoc. Pract.* **2020**, *35*, 84–90. <https://doi.org/10.1016/j.pedhc.2020.08.002>.
15. Smith, W.R.; Penberthy, L.T.; Bovbjerg, V.E.; McClish, D.K.; Roberts, J.D.; Dahman, B.A.; Aisiku, I.P.; Levenson, J.L.; Roseff, S. D. Daily assessment of pain in adults with sickle cell disease. *Ann. Intern. Med.* **2008**, *148*, 94–101.
16. Osunkwo, I.; Andemariam, B.; Minniti, C.P.; Inusa, B. Evidence-based management of sickle cell disease: Expert panel report. *Br. J. Haematol.* **2014**, *187*, 594–603.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.