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Suicidal Behaviours in Sickle Cell Patients at the Douala Sickle Cell Care Centre in Cameroon

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Abstract

Introduction: Sickle cell anaemia is a hereditary disease that combines physical and psychological manifestations, including suicidal tendencies. So far, to our knowledge, no study has been conducted on suicidal behaviours among people with sickle cell disease in Cameroon. This is what justifies our study on the prevalence and factors related to suicidal behaviors in our study population. **Methods**: We conducted a cross-sectional, analytical study of 171 sickle cell patients aged from 12 years upwards who came to the sickle cell disease care service of the Laquintinie Hospital in Douala, over a period of 6 months, that is, from 1 January to 31 June 2022. Data were collected using a structured questionnaire with questions on suicidal behaviours based on the "MINI" (Mini International Neuropsychiatric Interview). The data were processed using the SPSS 26.0 software. The related factors were studied in both a bivariate and multivariate analysis. **Results**: Female sickle cell patients accounted for 60.2% of the sample. The mean age was 23.36 ± 8.42 years. Suicidal ideation was prevalent in 56% of cases and 13% attempted suicide. The factors most associated with suicidal ideation were: primary level of education (OR = 0.08 (0.09 - 0.79); p = 0.03), feeling unworthy of life (OR = 0.40 (0.08 - 1.96); p = 0.02), not often being considered by those around them (OR = 2.97 (1.26 - 6.99); p = 0.01), lack of family support (OR = 0.34 (0.15 - 0.77); p = 0.01). Meanwhile, the factors associated with suicide attempts were: the fact of being rarely exposed to suicide-related media (OR = 4.17 (1.40 - 71.80); p = 0.03), and a constant feeling of sadness when returning home (OR = 18.02

(1.59 - 20.55); p = 0.01). **Conclusion**: More than half of sickle cell patients had had suicidal thoughts and 1/6 had made at least one suicide attempt, women and young adults being the most concerned. It is therefore necessary to ensure optimum psychological care for patients with sickle cell disease.

Keywords

Sickle Cell Disease, Suicidal Behaviours, Self-Harm

1. Introduction

Sickle cell anaemia is a hereditary disease caused by an occasional mutation of a haemoglobin gene, resulting in the replacement of the normal *haemoglobin A* by the abnormal *haemoglobin S*. Recognized by the World Health Organisation (WHO) in 2006, sickle cell anaemia is the most widespread genetic disease in the world, mainly affecting people in sub-Saharan Africa [1]. It affects over 5 million people worldwide and accounts for most of the 300,000 new cases per year with a major haemoglobin abnormality [1] [2] [3]. It combines not only clinical manifestations (chronic haemolytic anaemia, vaso-occlusive phenomena, increased susceptibility to infections) but also psychological symptoms that are often disconcerting and can take various forms such as anxiety, stress, depression [4] [5] [6] [7] [8]. Such complications may themselves be a prelude to suicide. Suicide is the act of deliberately taking one's own life [9] [10]. It is one of the world's biggest public health problems, with 700,000 deaths recorded annually worldwide according to the WHO [11]. However, suicide is only the outcome of a process and is just one aspect of **suicidal behaviour** (**SB**): SB is a generic term encompassing different entities, including **suicidal ideation** (**SI**), **suicide attempts** (**SA**) and suicide [9] [12]. A suicide mortality rate of 7.6% (4 patients dead) was reported in a study on adults with sickle cell disease carried out in France and England in 2002 [13]. In 2009, a study of Black adult patients with sickle cell disease in the United States revealed that 29% of patients reported an episode of suicidal ideation and 8% reported a suicide attempt in their lifetime [14]. In 2017 in Jamaica, Kalina K. *et al.* reported 12.4% of suicide attempts among adolescents with sickle cell disease, compared to 6.6% in the national sample, adolescence and the female sex being the factors most associated with suicide attempts [15]. To the best of our knowledge, few studies in Africa, and particularly in Cameroon, have examined suicidal behaviour in this population, hence our interest in the study, which will enable us to collect data for setting up appropriate follow-up measures in our context. This study will therefore assess the prevalence and determine the factors associated with suicidal behaviour in adolescents and adults with sickle cell disease at the Laquintinie Hospital in Douala (HLD), Cameroon.

2. Methods

- **Design and site of the study:** We conducted a cross-sectional, analytical study over a period of 6 months (from 1 January 2022 to 30 June 2022). It was carried out in the sickle cell disease care unit of the Laquintinie Hospital in Douala (HLD), which is the only care centre for this disease in the said town.
- **Study population:** The study population included patients with the sickle cell disease, aged 12 years or older, who came for consultation at the Laquintinie Hospital's Sickle Cell Department during the study period. All patients with the sickle cell disease who were consulted at the Laquintinie Hospital's Sickle Cell Department and who gave their consent, or who had the consent of a parent if they were a minor, were considered to be part of the study. Those with another comorbidity and/or who could not read or write were excluded.

  The sampling was done randomly.
- **Sampling:** Sampling was consecutive and non-exhaustive.
- **Data collection:** The questionnaire on suicidal behaviours was based on the "suicidal risk" section of the Mini International Neuropsychiatric Interview (MINI) of the Diagnostic Statistical Manual IV (DSM IV) of the American Psychiatric Association [16]. Based on a pre-established hetero-questionnaire, we were able to determine:

- Lifetime suicidal behaviours (**SB**) and yes/no response options were modified into never, rarely, often and always, apart from responses to the question "Have you ever attempted suicide?".
- Socio-demographic data (age, sex, address, region of origin, profession, marital status, level of education, religion, monthly family income, family structure (presence of child(ren); sickle-cell and non-sickle-cell; parent(s) alive; parent(s) with sickle-cell; rank among siblings; siblings with sickle-cell.
- Clinical data (age at diagnosis of the disease, circumstances of discovery of the disease, most frequent reason for hospitalization, any complications, type of complications, number of hospitalizations in the last 12 months, number of vaso-occlusive crises in the last 12 months, number of blood transfusions in the last 12 months, hydroxyurea intake and duration of intake).
- Characteristics of suicidal behaviours (presence of a triggering event for suicidal behaviour, type of triggering event (emotional problems; issues at school or work; family problems; financial difficulties; death of a close relative; sickle-cell anaemia-related event; others), suicidal methods (drugs; chemicals; firearms; knives; others), whether or not suicidal behaviours were communicated to family and friends, type of suicidal behaviours: premeditated or impulsive), and the extent to which suicidal behaviours had been reported, and factors associated with suicidal behaviours (personal and family factors (alcohol or drug abuse, family history of suicide (attempted suicide or suicide) within close family circle, socio-professional factors, protective factors (reli-

gious beliefs, family support, social support, personal convictions), poor integration into living environment, interpersonal conflict/disagreements, inappropriate media coverage with access to suicidal means, and traumatic life events were recorded.

- **Data analysis:** The data collected was entered and analysed using version 26 of the SPSS® (statistical package for social science) software. This enabled us to determine the different numbers and percentages for the qualitative variables, and the mean and standard deviations for the quantitative variables. The variables were considered statistically significant for values $p \leq 0.05$. A univariate analysis was carried out to determine the risk factors associated with suicidal behaviours in patients with sickle cell disease, then a multivariate analysis using logistic regression was carried out on all the related factors found to be statically significant ($p \leq 0.05$) and slightly non-significant ($p \leq 0.05$) to eliminate bias and identify the independent factors associated with suicidal behaviours.
- **Ethical considerations:** The data collected were kept confidential in accordance with the Helsinki Declaration, and a request for ethical clearance was made. The study was submitted to the Institutional Research Ethics Committee of the University of Douala for ethical clearance, and to the hospital authorities for research authorization. The study was conducted in strict compliance with the fundamental principles of medical research, which include: the principle of the interest and benefit of the research, the harmlessness of the research, confidentiality, justice.

3. Results

In all, 171 patients were involved in the study out of the 191 sickle cell disease patients that were initially approached.

3.1. Socio-Demographic and Clinical Features of the Study Population

Females accounted for 60.20% (n = 103) of the sample population size as compared to 39.80% (n = 68) for males.

The mean age was 23.36 ± 8.42 years, with extremes ranging from 12 to 50 years, and the median was 22 years. The most represented age group was [20 - 30[, *i.e.* 45.60% (n = 78). We found out that 46.20% (n = 79) of the sickle cell patients were single compared to 43.30% (n = 74) who did not have a partner and 5.90% (n = 10) who were married. The secondary education level was the most represented, with 48% (n = 82) of the population, and the "student" variable had a higher frequency of 39.20% (n = 67).

In the study, 36.97% (n = 61) of the sickle cell patients had not been hospitalized over the previous 12 months, compared to 60.03% (n = 104) who had been hospitalized at least once.

The average number of hospital admissions over the previous 12 months was

1.96 ± 2.57. Vascular occlusive crises (VOC) were by far the most frequent reason for hospitalization in 70.27% (n = 104) of the population, followed by anaemia in 33.78% (n = 50) and infections in 16.89% (n = 25). During the last 12 months, at least one vaso-occlusive crisis (VOC) had been recorded in 82% (n = 123) of sickle cell patients. The average VOC was 3.97 ± 4.38 over the previous 12 months. We also found out that 83.63% (n = 138) of the population did not take hydroxyurea, which is part of the treatment for sickle cell patients (Table 1).

Table 1. Socio-demographic and clinical characteristics of adolescents and adults with sickle cell disease at the Laquintinie hospital in Douala, Cameroon.

Variables	Categories	N	%
Sex	Masculine	103	60.20
	Feminine	68	39.80
Age range	[12 - 20[	61	35.70
	[20 - 30[	78	45.60
	[30 - 40[	21	12.30
	[40 - 50]	11	6.40
Profession	Pupil	67	39.20
	Student	39	22.80
	Private sector	26	15.20
	Unemployed	25	14.60
	Non formal sector	8	4.70
	Public sector/parapublic	6	3.50
Marital status	Single	79	46.20
	None	74	43.30
	Married	10	5.90
	Fianced	8	4.70
Level of education	Secondary	82	48.00
	University	79	46.20
	Primary	8	4.70
	Non scolarised	2	1.20
Residence	Urban zone	149	86.00
	Rural zone	24	14.00
Religion	Catholic	94	55.0
	Presbyterian	35	20.50
	Others	31	18.10
	Muslim	7	4.10
	None	3	1.80
	Animist	1	0.60

Continued

Homozygous sickle cell parents	None	145	88.96
	Both	7	4.29
	Father	7	4.29
	Mother	4	2.45
Sickle cell disease in siblings	Yes	115	71.43
	No	44	27.33
	Not known	2	1.24
Age at disease diagnosis (in months)	[12 - 48]	66	37.67
	[60 - 108]	32	18.49
	[120 - 168]	32	18.49
	[6 - 11]	25	14.38
	<6	10	6.16
	>168	8	4.79
Number of hospitalizations during last 12 months	None	61	36.97
	1 time	30	18.18
	>3 times	29	17.58
	2 times	23	13.94
	3 times	22	13.33
Common reason for hospitalizations	Vaso-occlusive crises	104	70.27
	Anemia	50	33.78
	Infections	25	16.89
Number of vaso-occlusive crises during the last 12 months	>3 times	64	42.67
	None	27	18.00
	1 time	23	15.33
	2 times	23	15.33
	3 times	13	8.67
Type of complications	Acute	103	76.00
	Chronic	32	24.00
Number of blood transfusions in the last 12 months	None	25	64.10
	>3 times	8	20.51
	2 times	5	12.82
	1 time	1	2.56
Taking hydroxyurea	No	143	83.63
	Yes	28	16.37

3.2. Prevalence of Suicidal Behaviours

In the sample, 95 out of 171 had had SIs, giving a SI prevalence of 56% (Figure 1). Of these sickle cell patients, 22 out of 171 had attempted suicide, giving a prevalence of 13% for suicide attempts (Figure 2). We found out that all of the 22 sickle cell patients who attempted suicide had had suicidal thoughts. Among the 22 patients who attempted suicide, 14 (64%) relapsed after their first suicidal trial (Figure 3).

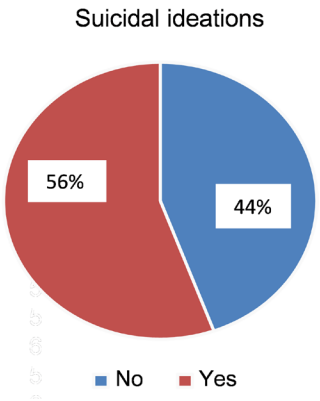

Figure 1. Prevalence of suicidal ideations.

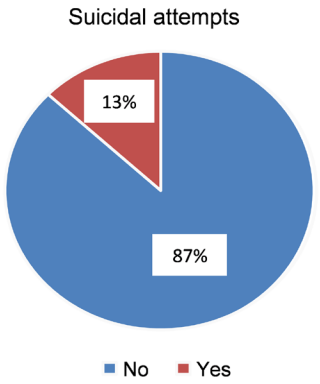

Figure 2. Prevalence of suicidal attempts.

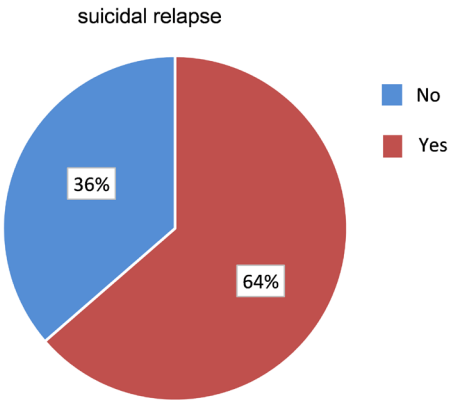

Figure 3. Percentage of suicidal relapse.

3.3. Characteristics of Suicidal Behaviours

Sickle cell disease-related complications were the main triggers for suicide attempts, accounting for 36.25% (n = 29), followed by school or work issues and family problems. The use of knives and drug overdose were the most frequently used means of suicide, each accounting for 38.10% (n = 8), followed by other means such as hanging and chemical substance consumption.

3.4. Factors Associated with Suicidal Behaviours

After a multivariate logistic regression analysis, the factors found to be independently associated with suicidal ideation (Table 2) were the lack of family support (OR = 0.34 (0.15 - 0.77); p = 0.01), feeling of worthlessness (OR = 0.40 (0.08 - 1.96); p = 0.02), not often being considered by people around them (OR = 2.97 (1.26 - 6.99); p = 0.01) and having just the primary level of education (OR = 0.08 (0.09 - 0.79); p = 0.03).

After a multivariate logistic regression analysis, the following (Table 3) were found to be independently associated with suicide attempts: the fact of being rarely exposed to suicide-related content in the media (OR = 4.17 (1.40 - 71.80); p = 0.03) and a constant feeling of sadness when returning home (OR = 18.02 (1.59 - 20.55); p = 0.01).

3.5. Events Which Triggered Suicidal Attempts (Table 4)

The triggering event of the suicide attempt was linked to complications linked to sickle cell disease (29 people, or 36.25%); secondly came school problems (17.5%).

3.6. Means Used for Attempted Suicide (Table 5)

For committing a suicidal act, the means most used in our sample was stabbing (38.5%) or taking medication at a lethal dose (38.5%).

Table 2. Factors associated with suicidal ideation among adolescents and adults with sickle cell disease at Laquintinie Hospital in Douala, Cameroon.

Variables	Categories	Suicidal thoughts		Univariate analysis			Multivariate analyses		
		Yes	No	OR	CI 95%	p-value	OR	CI 95%	p-value
Sex	Feminine	59	44	1.192	0.64 - 2.20	0.576			
	Masculine	36	32	Ref		Ref			
Age range	[12 - 20[	22	39	1.013	0.267 - 3.849	0.985	1.013	0.267 - 3.849	0.985
	[20 - 30[	51	27	0.303	0.081 - 1.126	0.075	0.303	0.081 - 1.126	0.075
	[30 - 40[	16	5	0.179	0.037 - 0.873	0.033	0.196	0.037 - 0.873	0.108
	[40 - 50]	4	7	Ref		Ref	Ref		Ref
Level of education	Non scolarised	1	1	0.58	0.03 - 9.62	0.704	0.093	0.05 - 1.89	0.123
	Primairy	1	7	0.083	0.01 - 0.70	0.023	0.085	0.09 - 0.79	**0.03**
	Secondary	43	39	0.639	0.34 - 1.20	0.164	0.7	0.34 - 1.41	0.32
	University	50	29	Ref		Ref	Ref		Ref

Continued

Abuse/trauma		30	135	4.92	1.78 - 13.63	0.002	1.933	0.58 - 6.41	0.282
Conflicts in close entourage	Constantly	7	3	6.22	1.31 - 29.44	0.021	2.098	0.32 - 13.51	0.436
	Rarely	33	22	4	1.56 - 10.20	0.004	2.516	0.84 - 7.50	0.098
	sometimes	45	26	4.61	1.86 - 11.41	0.001	2.46	0.85 - 7.06	0.094
	Never	9	24	Ref		Ref	Ref		Ref
Family support		120	51	0.233	0.10 - 0.49	0.000	0.346	0.15 - 0.77	**0.01**
Consideration by entourage	Never	1	1	1.462	0.08 - 24.07	0.791	0.492	0.02 - 10.23	0.647
	Rarely	13	3	6.333	1.69 - 23.70	0.006	3.386	0.71 - 15.96	0.123
	Sometimes	42	14	4.38	2.11 - 9.09	0.000	2.978	1.26 - 6.99	**0.012**
	Constantly	39	57	Ref		Ref	Ref		Ref
Do you think you are worthy of living?		151	17	0.241	0.06 - 0.87	0.03	0.408	0.08 - 1.96	**0.026**
Have you ever run away from your house?	Constantly	2	0	NA		NA	NA		NA
	Rarely	13	2	6.791	1.47 - 31.23	0.014	3.477	0.68 - 17.75	0.134
	Sometimes	13	3	4.527	1.23 - 16.60	0.023	0.956	0.18 - 4.95	0.957
	Never	67	70	Ref		Ref	Ref		Ref
How do you feel when you come home?	Nothing	50	121	2.702	1.32 - 5.51	0.006	0.979	0.24 - 3.96	0.977
	Joy	95	76	0.198	0.10 - 0.38	0.000	0.376	0.09 - 1.53	0.172
	Disturbed	11	160	8.824	1.10 - 70.55	0.04	2.375	0.17 - 31.70	0.513
	Angry	6	165	Ref		Ref	Ref		Ref

Table 3. Factors associated with suicide attempts among adolescents and adults with sickle cell disease at Laquintinie Hospital in Douala, Cameroon.

Variables	**Categories**	Suicidal thoughts		Uni variate analysis			**Multivariate analysis**		
		Yes	**No**	**OR**	**CI 95%**	**p-value**	**OR**	**CI 95%**	**p-value**
Sex	Feminine	16	87						
	Masculine	6	62	Ref		Ref			
Age range	[12 - 20[	4	55	0.941	0.14 - 6.25	0.762			
	[20 - 30[	12	66	0.127	0.01 - 0.91	0.585			
	[30 - 40[	5	16	0.364	0.05 - 2.44	0.329			
	[40 - 50]	1	10	0.667	0.06 - 6.87	Ref	Ref		Ref
Number of hospitalizations in the last 12 months	>3 times	8	21	4.267	1.25 - 14.52	0.020	2.204	0.48 - 10.04	0.307
	1 time	4	26	1.723	0.42 - 6.95	0.444			
	2 times	3	20	1.68	0.36 - 7.67	0.503			
	3 times	2	20	1.12	0.20 - 6.23	0.897			
	None	5	56	Ref		Ref	Ref		Ref

Continued

Abuse/trauma		8	22	3.143	1.17 - 8.37	0.022	0.743	0.09 - 5.69	0.775
Understanding with the partner	Very bad	4	2	16.66	2.08 - 133.05	0.008	11.539	0.21 - 242.47	0.091
	Bad	3	2	12.5	1.45 - 107.63	0.021	7.191	0.21 - 242.47	0.272
Family support		10	110	3.385	1.35 - 8.45	0.009	2.931	0.53 - 16.18	0.217
Consideration by entourage	Sometimes	13	43	3.844	1.43 - 10.32	0.008	1.638	0.27 - 9.67	0.586
	Rarely	2	14	1.81	0.34 - 9.64	0.484			
	Never	0	2	NA		NA			
	Constantly	7	89	Ref		Ref	Ref		Ref
Media exposure to suicide	Constantly	1	1	10.61	0.62 - 17.79	0.102			
	Rarely	6	5	12.73	3.41 - 47.49	0.000	4.176	1.40 - 71.80	**0.030**
	Sometimes	2	4	5.308	0.88 - 31.79	0.068			
	Never	13	138	Ref		Ref			
	Never	13	138	Ref		Ref			
People who do not rely on religion to deal with problems		16	129	0.31	0.10 - 0.91	0.034	0.267	0.05 - 1.36	0.112
How do you feel when you come home?	Nothing	4	46	0.498	0.15 - 1.55	0.229			
	Joy	7	88	0.323	0.12 - 0.84	0.021	1.202	0.10 - 13.6	0.882
	Sadness	8	6	13.61	4.13 - 44.87	0.000	18.02	1.59 - 20.55	**0.019**
	Disturbed	3	8	2.783	0.67 - 11.40	0.155			
	Angry	3	3	7.684	1.44 - 40.82	0.017	5.006	0.45 - 55.42	0.189

Table 4. Triggering event of suicidal behavior.

Triggering event	Number	Percentage (%)
Complications related to sickle cell disease	29	36.25
School or work problems	14	17.5
Family problems	13	16.25
Emotional problems	12	15
Death of a loved one	9	11.25
Others	3	3.75

Table 5. Means used for suicide attempt.

Suicidal means	Number	Percentage (%)
Stabbing	8	38.10
Drugs	8	38.10
Others	3	14.29
Chemical products	2	9.52

4. Discussion

The general objective of this study was to determine the prevalence and factors associated with suicidal behaviours in adolescents and adults with sickle cell disease at the Laquintinie Hospital, Douala. The study revealed a lifetime prevalence of SIs in 56% of the sickle cell disease patients. In a study by Eyoum *et al*. in 2023 on the general population of Douala, the lifetime prevalence of SI was 36.4% [17]. Meanwhile the prevalence in our results is about 1.5 times higher than theirs. This higher prevalence in our population over the general population is due to the fact that Sickle cell patients are subject to physical as well as psychological pain combined with suffering, and frequently faced the reality of death from an early age; leading to fear, sadness, with suicidal ideation emerging during the rumination phase [18].

A 13% lifetime prevalence of SA was found in the study population. This prevalence is almost similar to that of Komal *et al*. in Jamaica, who found a SA prevalence of 12.4% in adolescents with sickle cell disease [15]. This prevalence is approximately twice that found by Eyoum *et al*. in the general population of Douala, who reported a 7.8% lifetime prevalence of SA [17]. The fact that the rate was higher in our population confirms that sickle cell disease is a risk factor for suicide attempts. All the sickle cell patients who had attempted suicide had had SI. The presence of SI therefore favours the occurrence of suicide attempts, and SIs are a potential suicidal act.

The primary factors identified as having triggered suicidal behaviours were complications related to the sickle cell disease, followed by issues at school or work and family problems. This result differs from that of Eyoum *et al*. carried out in the general population, who reported family problems as the first triggering event, followed by school problems. This may reflect the greater psychological impact of the disease itself compared to external factors. Knives and drug overdose were the most frequently used methods of suicide in the study population. These methods were found by Eyoum *et al*. in 2023 in the general population [17]. This can be explained by the easy access to these means in our context. The primary level of education was found to be a factor associated with suicidal ideation. This could be explained by the fact that in our context, during adolescence, most children are in secondary school; being in primary school would therefore correspond to a delay in schooling, which could be linked to difficulties in having a regular school course over one or more years due to hospitalisations and frequent consultations imposed by the disease; a cause of failure at school. The study established a link between the fact of not being considered by those around them and the absence of family support as a favouring factor to the occurrence of suicidal ideations. This could be explained by the fact that these elements are associated with a feeling of isolation, which often goes in hand with depression and a feeling of loneliness and despair. The feeling of not being worthy of life has also been associated with suicidal ideation, since this feeling results from a low self-esteem and therefore a feeling of despair. Being rarely ex-

posed to suicide-related content in the media and frequently experiencing sadness upon returning home were equally associated with suicide attempts. This low level of exposure could be associated with a lack of awareness of the harmful consequences of suicide on the individual, his/her family and society, which would justify its being a risk factor for suicide attempts. The use of a cross-sectional design limits the ability to draw causal relationships in this study.

5. Conclusion

The prevalence of suicidal behaviours among sickle cell patients is very high, suicidal ideation being present in 1/2 of the patients and suicide attempts in 1/6. It is reported to be more common among women and young adults, and the most common age group identified with suicidal behaviour is between 20 and 29. The factors most closely associated with suicidal ideation are the fact of having just a primary level of education, a feeling of worthlessness, no consideration from people around, and a lack of family support. Being rarely exposed to suicide-related content in the media and frequently experiencing sadness upon returning home were independently associated with suicide attempts. As a result, preventive measures need to be put in place at individual, family and societal level. Sickle cell patients must be aware of their illness and develop individual means of coping with the heavy psychological impact, including seeking help from psychologists. Families should be there for their sickle cell family member(s) and support them in all aspects of life as much as possible. The general public must be aware of the disease in order to integrate sickle cell patients in the society, and hospital staff must provide comprehensive care especially medical and psychological care for sickle cell patients and their families. They must systematically screen adolescents and adults with sickle cell disease to identify suicide tendencies and refer them to a psychiatrist or psychologist for appropriate treatment.

Authors' Contributions

All authors contributed to this study and have read and validated the final version of this manuscript.

Limitations of the Study

Our study would benefit from being able to be carried out in a multi centered manner in order to guarantee better validity to our results.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Organisation mondiale de la Santé (2006) Drépanocytose [en ligne]. Organisation

Mondiale de la Santé, Genève.
https://apps.who.int/gb/ebwha/pdf_files/WHA59/59_9-fr.pdf

[2] Serjeant, G.R. (1997) Sickle-Cell Disease. *Lancet*, **350**, 725-730. https://doi.org/10.1016/S0140-6736(97)07330-3

[3] (2017) Anémie chez l'adulte et l'enfant. Dans: Herbraux C, Paillassa J. KB/iKB Hématologie Oncohématologie. 4eéd. VernazobresGrego, Paris, 77-139.

[4] Osunkwo, I., Andemariam, B., Minniti, C.P., Inusa, B.P.D., El Rassi, F., Francis-Gibson, B., *et al*. (2021) Impact of Sickle Cell Disease on Patients' Daily Lives, Symptoms Reported, and disease Management Strategies: Results from the International Sickle Cell World Assessment Survey (SWAY). *American Journal of Hematology*, **96**, 404‑417. https://doi.org/10.1002/ajh.26063

[5] Anie, K.A., Egunjobi, F.E. and Akinyanju, O.O. (2010) Psychosocial Impact of Sickle Cell Disorder: Perspectives from a Nigerian Setting. *Global Health*, **6**, 2. https://doi.org/10.1186/1744-8603-6-2

[6] Mpandzou, G.A., Sounga Bandzouzi, P.E., Engoba, M., Boukoulou, M.J., Diatewa, J.E., Motoula Latou, D.H., *et al*. (2021) Profil Psychologique des Enfants et Adolescents Vivant avec la Drépanocytose Homozygote à Brazzaville. *Health Sciences and Disease*, **22**, 11-18. https://doi.org/10.1016/j.neurol.2021.02.225

[7] Lainé, A., Bonnet, D., Keclard, L. and Romana, M. (2004) La drépanocytose: Regards croisés sur une maladie orpheline. Karthala, Paris, 338 p.

[8] Kalina, K., Kutolbena, M.B., Azaleko, K.A. and Gbati, K.Y. (2017) Répercussions psychologiques de la drépanocytose et coping chez les adolescents à Lomé. *AJOL*, **19**, 147-163.

[9] Raynaud, J.P. and Oliac, B. (2010) Risque et conduites suicidaires chez l'enfant, l'adolescent et l'adulte: Identification et prise en charge chez l'enfant et l'adolescent. *La Revue du Praticien*, **60**, 1149-1154.

[10] (2016) Conduites suicidaires. Dans: Chatillon O, Galvao F. ECN Psychiatrie Pédo-psychiatrie. 4eéd. VernazobresGrego, Paris, 183-196.

[11] Organisation Mondiale de la Santé (2020) Suicide [en ligne]. Organisation mondiale de la Santé, Genève.
https://www.who.int/news-room/fact-sheets/detail/suicide

[12] Gavoille, A. (2022) Codex Psychiatrie ECN/EDN. 3e éd. S-EDITIONS, Paris, 121 p.

[13] Peronne, V., Roberts-Harewood, M., Bachir, D., Roudot-Thoraval, F., Delord, J.M., Turret, I., *et al*. (2002) Patterns of Mortality in Sickle Cell Disease in Adults in France and England. *Journal of Hematology*, **3**, 56-60. https://doi.org/10.1038/sj.thj.6200147

[14] Edwards, C.L., Green, M., Wellington, C.C., Muhammad, M., Wood, M., Feliu, M., *et al*. (2009) Depression, Suicidal Ideation, and Attempts in Black Patients with Sickle Cell Disease. *Journal of the National Medical Association*, **101**, 1090-1095. https://doi.org/10.1016/S0027-9684(15)31103-2

[15] Komal, B.P., Kenneth, J., Marvin, R., Abigail, H. and Monika, A. (2016) Increased Rates of Body Dissatisfaction, Depressive Symptoms, and Suicide Attempts in Jamaican Teens with Sickle Cell Disease. *Pediatric Blood & Cancer*, **63**, 2159-2166. https://doi.org/10.1002/pbc.26091

[16] Sheehan, D.V., Lecrubier, Y., Sheehan, K.H., Amorim, P., Janavs, J., Weiller, E., *et al*. (1998) Le mini-interview neuropsychiatrique international (MINI): Le développement et la validation d'un entretien psychiatrique diagnostique structuré pour le DSM-IV et la CIM-10. *The Journal of Clinical Psychiatry*, **59**, 22-33.

[17] Eyoum, C., Etouke, E.J., Bita, F.A., Mbongo'o, G.C., Basseguin, A.J., Kamga, O.J., *et al.* (2023) Conduite suicidaires chez l'adolescent et l'adulte jeune en milieu scolaire dans la ville de Douala (Cameroun). *Health Sciences and Disease*, **24**, 23-29.

[18] Hasan, S., Hashmi, S., Alhassen, M., Lawson, W. and Castro, O. (2003) Depression in Sickle Cell Disease. *Journal of National Medical Association*, **95**, 533-537.

Survey Sheet for the Study on the Prevalence and Factors Associated with Suicidal Behavior among Adolescents and Adults with Sickle Cell Disease at Laquintinie Hospital in Douala

The following questionnaire concerns suicidal behavior. Please answer all the questions in the section reserved for answers based on the different proposals.

Number	Questions/Modalities	Answers
	SECTION1: IDENTIFICATION	
S1Q1	Sexe: 1. Masculine 2. Feminine	
S1Q2	Age:	
S1Q3	Contact:	
	SECTION 2: SOCIO-DÉMOGRAPHIC DATA	
S2Q1	Home: 1. Urban area 2. Rural area	
S2Q2	Region of origin: 1. West, 2. North-west, 3. South-west, 4. Centre, 5. South, 6. East, 7. Littoral, 8. North, 9. Far north, 10. Adamaoua	
S2Q3	Profession: 1. Public/parapublic sector 2. Private sector 3. Informal sector 4. Student 5. Student 6. Unemployed	
S2Q4	Marital status: 1. Single, 2. Married, 3. Engaged, 4. Divorced, 5. Widowed, 6. No partner	
S2Q5	Monthly family income (in FCFA): 1. Less than 50,000, 2. 50,000 to 100,000, 3. 100,000 to 150,000, 4. 150,000 to 200,000, 5. More than 200,000, 6. No fixed income	
S2Q6	Level of study: 1. No schooling, 2. Primary, 4. Secondary, 5. University	
S2Q7	Religion: 1. Animist, 2. Catholic, 3. Protestant, 4. Revival Church, 5. Muslim, 6. Jehovah's Witnesses 7. Others (specify)	
S2Q8	Do you have children? : 1. No 2. Yes If yes, specify the number	
S2Q9	Children: 1. Non-sickle cell patients (number) 2. Sickle cell patients (number) 3. Not known	
S2Q10	Parents alive: 1. None, 2. Father, 3. Mother, 4. Both	
S2Q11	Sickle cell parents: 1. None, 2. Father, 3. Mother, 4. Both	
S2Q12	Do you have brothers or sisters? : 1. No 2. Yes (specify the number)	
S2Q13	Are there any sickle cell patients among your brothers and sisters? : 1. No 2. Yes (specify number) 3. Not known	
S2Q14	What is your rank among your brothers and sisters? : 1. First, 2. Middle (specify), 3. Last	
	SECTION 3 : CLINICAL DATA	
S3Q1	How old were you when the disease was diagnosed?	
S3Q2	Under what circumstances was the disease discovered? 1. Systematic screening (systematic screening, family assessment) 2. Anemia, 3. Pain, 4. Infection 5. Other complications	
S3Q3	Number of hospitalizations during the last 12 months:	
S3Q4	Frequent reason for hospitalizations (if more than 3): 1. Vaso-occlusive crises, 2. Anemia, 3. Infections	
S3Q5	Number of vaso-occlusive crises during the last 12 months:	
S3Q6	Concept of complications: 1. No 2. Yes If yes, Type of complications: 1. Acute (specify) 2. Chronic (specify)	

Continued

S3Q7	Blood transfusions in the last 12 months: 1. No 2. Yes (specify number) Taking hydroxyurea: 1. No 2. Yes If yes, since when?
S3Q8	Taking hydroxyurea: 1. No 2. Yes If yes, since when?
	SECTION 4 :PREVALENCE OF SUICIDAL BEHAVIOR
S4Q1	Have you ever felt like you'd be better off not being alive anymore? 1. Never, 2. Rarely, 3. Often, 4. Constantly
S4Q2	Have you ever wanted to hurt yourself? 1. Never, 2. Rarely, 3. Often, 4. Constantly
S4Q3	Have you ever thought about ending your life? 1. Never, 2. Rarely, 3. Often, 4. Constantly
S4Q4	Have you already established how you plan to end your life? 1. No 2. Yes
S4Q5	Have you ever attempted suicide? 1. No 2. Yes If yes, how many times? 1. Once, 2. Twice, 3. Three times, 4. More than three times
	SECTION 5 : CHARACTERISTICS OF SUICIDAL BEHAVIOR
S5Q1	Was there an event that triggered suicidal thoughts/attempts? 1. No 2. Yes
S5Q2	If yes, what was it (specify the problem)? 1. Emotional problems, 2. Family problem, 3. School or professional problems, 4. Problem related to sickle cell anemia, 5. Death of a loved one (brother, sister, companion, friend with sickle cell disease or not), 6. Others
S5Q3	As a result of the problem, was the suicide attempt: 1. Premeditated 2. Impulsive
S5Q4	What method did you use to attempt to end your life (Patients who answered yes to the question)? 1. Drugs, 2. Chemicals, 3. Firearm, 4. Bladed weapon, 5. Other (Specify)
S5Q5	Have you informed loved ones of your death wish? 1. No 2. Yes
S5Q6	If you didn't talk about it, what was the reason? 1. Just like that, 2. Guilt, 3. Lack of friends, 4. Fear that the person will divulge the information
S5Q7	If you talked about it, what was the reason? 1. Just like that, 2. Need help, 3. Liberation
	SECTION 6: INDIVIDUAL AND FAMILY FACTORS ASSOCIATED WITH SUICIDAL BEHAVIOR
S6Q1	Do you consume alcohol? 1. No 2.Yes
S6Q2	Do you take drugs? 1. No 2. Yes If yes, specify: amphetamine, cocaine, weed, etc.
S6Q3	Is there a history of suicide attempts or suicide in those close to you or in the family? 1. No 2. Yes
	SECTION 7: SOCIOPROFESSIONAL FACTORS ASSOCIATED WITH CONDUCT SUICIDAL
S7Q1	Do you have community support/advice? 1. No 2. Yes
S7Q2	Is your family practically supportive of your problems of all kinds? 1. No 2. Yes
S7Q3	Do you have children who rely on you and depend on your well-being? 1. No 2. Yes
S7Q4	Does your faith or spirituality help you deal with your problems? 1. No 2. Yes
S7Q5	Do you think you are worthy of living? 1. No 2. Yes
S7Q6	Have you ever suffered abuse (physical, sexual) or trauma? 1. No 2. Yes
S7Q7	Are you comfortable in your living environment? 1. No 2. Yes

Continued

S7Q8	How do you feel when you come home? 1. Nothing, 2. Joy, 3. Sadness, 4. Annoyance, 5. Anger
S7Q9	Do you feel considered by those around you? 1. Never, 2. Rarely, 3. Often, 4. Constantly
S7Q10	Do you have trusted friends? 1. No 2. Yes
S7Q11	Are there conflicts in your immediate circle? 1. Never, 2. Rarely, 3. Often, 4. Constantly
S7Q12	How do you get along with your boyfriend (girlfriend) or husband (wife)? 1. Fairly good, 2. Good, 3. Bad, 4. Very bad
S7Q13	Have you ever run away from your house? 1. Never, 2. Rarely, 3. Often, 4. Constantly
S7Q14	Has a video, poster or document inciting or encouraging suicide already caught your attention? 1.Never, 2. Rarely, 3. Often, 4. Constantly