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Research Article

“Impact of Nurse-Directed Educational Intervention on Knowledge and Health Promotion Behaviours among Patients with Sickle Cell Anemia”

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Abstract

The study aimed to assess the knowledge and health promotion behavior of adolescents regarding sickle cell anemia and to evaluate the effectiveness of a nurse-directed intervention. Specific objectives included assessing knowledge in the experimental and control groups, evaluating the effect of the intervention on health promotion behavior, and comparing demographic variables with pretest scores between groups.

An interventional research approach with a quasi-experimental design was adopted at Parul Sevashram Hospital, Vadodara. A total of 20 adolescents were selected using simple random sampling. Data were collected through pretest and posttest assessments on knowledge and health promotion behavior.

Findings revealed that in the experimental group, 50% of respondents had poor and average knowledge at pretest, whereas post-test results showed 100% had average knowledge. In the control group, 100% of respondents had poor knowledge at pretest; post-test showed 60% attained average knowledge, while 40% remained in the poor category. Regarding lifestyle behavioral changes, in the experimental group, 50% reported a neutral attitude and 40% an agreeable attitude at pretest, whereas post-test results indicated 70% agreed and 30% strongly agreed with positive health behaviors. In the control group, pretest results showed 50% neutral, 30% agreeable, and 20% disagreeable attitudes; posttest results indicated 50% neutral, 40% agreeable, and 10% disagreeable attitudes.

The study concludes that nurse-directed intervention was effective in improving both knowledge and health promotion behavior among adolescents with sickle cell anemia in the experimental group compared to the control group.

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Introduction

Sickle cell disease (SCD) is a hereditary hemoglobinopathy characterized by abnormal sickle-shaped red blood cells, which lead to chronic haemolytic anemia, vaso-occlusive crises, multiple organ damage, and intermittent severe pain episodes. As a chronic and lifelong condition, SCD places a considerable burden on patients, families, and healthcare systems, particularly

in resource-constrained regions. In India, regions with tribal populations show higher prevalence, making the disease a significant public health concern.

Adolescents with SCD are especially vulnerable, since this is a period when individuals assume greater responsibility for self-care, adherence to treatment regimens, and lifestyle behaviors that may affect disease course and quality of life. Knowledge about the disease,

its triggers (such as dehydration, infection, extreme temperature), preventive measures, and health-seeking behavior are crucial in reducing complications and improving outcomes. However, existing studies indicate that awareness, health literacy, and self-efficacy remain moderate to low among adolescents with SCD. For example, a study in central India showed that most adolescents with SCD had only moderate self-efficacy, with better outcomes associated with higher education, better socioeconomic status, and urban residence. Another study from the tribal district of Maharashtra reported that only about 5% of school-going adolescents showed awareness of SCD, highlighting substantial knowledge gaps.

Nurses are central to patient education and health promotion. Nurse-led or nurse-directed interventions (educational, counseling, follow-ups) have been shown in various chronic disease settings (such as hypertension, diabetes, renal disease) to improve patient knowledge, self-management behaviors, medication adherence, and lifestyle changes.

Therefore, the present study aims to fill this gap by examining the impact of a nurse-directed educational intervention on knowledge and health promotion behaviors among adolescents with SCD. The goals are to assess baseline knowledge and behaviors, deliver

structured education, and evaluate post-intervention changes compared to a control group without the intervention. This has potential implications for designing interventions to improve self-care, reduce complications, and enhance quality of life in this population.

Material and method

To assess the adolescence, a quasi-experimental research study was carried out. A control group and an observational group participated in the investigation. The study has a sample size of twenty. Utilizing an easy random sample technique based on inclusion and exclusion standards. The age group of adolescents was chosen.

Disoriented patients and research participants who declined to participate were removed from the study. To assess self-efficiency, data from sickle cell patients were gathered for this study. Check lists and knowledge questionnaires were the study's instruments. At the Parul Seva-Shram Hospital, data were gathered from patients with sickle cell anemia in the paediatric ward and outpatient department. Inferential statistics and descriptive analysis were used to analyse the collected data.

Result:

SECTION-1

Table-1 frequency and percentage distribution of sociodemographic variable of Adolescent. n=20

SR.	Socio-Demographic characteristics		Control Group		Exp. Group	
			Frequency	Percent	Frequency	Percent
1.	AGE	10-12 Year	3	30.0	6	60.0
		12-14Year	7	70.0	4	40.0
2.	SEX	Girl	0	0	9	90
		Boy	10	100.0	1	10
3.	RELIGION	Hindu	9	90.0	10	100
		Muslim	1	10.0	0	0
		Christian	0	0	0	0
4.	TYPE OF FAMILY	Nuclear family	2	20.0	1	10.0
		Joint family	5	50.0	4	40.0
		Extended family	3	30.0	5	50.0
5.	MOTHER'S OCCUPATION	Unemployed	5	50.0	2	20.0
		Agriculture	4	40.0	5	50.0
		Labour	1	10.0	1	10.0
6.	FATHER'S OCCUPATION	Unemployed	0	0	2	20
		Agriculture	6	60.0	2	20.0
		Labour	3	30.0	5	50.0
		Skilled Worker	1	10.0	1	10.0
7.	ORDER OF CHILD	2	5	50.0	5	50.0
		3	4	40.0	4	40.0
		4	1	10.0	1	10.0
8.	FOOD PATTERN	Vegetarian	8	80.0	3	30.0
		Non-vegetarian	2	20.0	7	70.0
9.	SOURCE OF INFORMATION	Newspaper/magazine	0	0	1	10
		Radio/television	3	30.0	2	20
		Friends/ relatives	3	30.0	0	0
		Health professionals	4	40.0	7	70

10.	EDUCATION OF CHILD	Primary school	10	100.0	9	90.0
		Secondary school	0	0	1	1
11.	HISTORY OF ANEMIA	Yes	8	80.0	0	0
		No	2	20.0	10	100.0
12.	INCOME	Below 5000/month	4	40.0	2	20
		Unemployed	6	60.0	8	80
		Total	10			100

SECTION-2

Table-2 Frequency, and percentage distribution of knowledge score about sickle cell anemia among adolescent. n=20

	C. Group				Exp. Group			
	Pre test		Post test		Pre test		Post test	
	F	%	F	%	F	%	F	%
Poor	10	100	4	40	5	50.0	0	0
Average	0	0	6	60	5	50.0	10	100
Good	0	0	0	0	0	0	0	0
Total	10	100.0						

Table-3 Mean and standard deviation on knowledge regarding sickle cell anemia. n=20

Knowledge comparison		Mean	sd
Control group	Pre test	1.000	0.00
	Post test	1.60	0.516
Observational group	Pre test	1.50	0.527
	Post test	2.00	0.000

Table 3: Shows that the mean knowledge mean score is 1.00 in control group with a standard deviation of 0.00 in pretest. In the post test of control group mean knowledge score is 1.60 with 0.516 standard deviation. Likewise in observational group pretest score is 1.50 with 0.527 standard deviation and post-test mean knowledge score is 2 of adolescent in sickle cell anemia.

Table-4 Frequency and percentage distribution of pretest and posttest level of HBPS Scale on sickle cell anemia among adolescent. n=20

		C. Group				Exp. Group			
		Pre test		Post test		Pre test		Post test	
		F	%	F	%	F	%	F	%
HPBS Scoring	Strongly Disagree	0	0	0	0	0	0	0	0
	Disagree	2	20.0	0	0	1	10.0	0	0
	Neither agree nor disagree	5	50.0	3	30	5	50.0	0	0
	Agree	3	30.0	4	40	4	40.0	7	70
	Strongly Agree	0	0	5	50	0	0	3	30
	Total	10	100.0	10	100	10	100	10	100

Table-5 Mean and standard deviation on Practice regarding sickle cell anemia. n=20

		Mean	sd
Control group	Pre test	3.10	0.738
	Post test	4.20	0.789
observational group	Pre test	3.30	0.675
	Post test	4.30	0.483

Table 5: Shows that the mean Practice mean score is 3.10 in control group with a standard deviation of 0.738 in pretest. In the post test of control group mean practice score is 4.20 with 0.789 standard deviation. Likewise in observational group pretest mean score is 3.30 with 0.675 standard deviation and post-test mean practice score is 4.30 with 0.483 standard deviation of adolescent in sickle cell anemia.

SECTION-4

Association between pre-test knowledge Score regarding sickle cell anemia among adolescent with socio demographic variables in control group.

No statistics are computed because prescore is constant. All my participants are having poor knowledge score.

Table-6 Association between pre-test Knowledge regarding sickle cell anemia among adolescent with socio demographic variables in observational group. n=20

SR.NO	Socio-Demographic characteristics						
			POOR	AVERAGE	Chi Square	df	p value
1.	AGE	10-12 Year	3	3	0.000a	1	1
		12-14Year	2	2			
2.	SEX	Girl	4	5	1.111a	1	0.292
		Boy	1	0			
3.	RELIGION	Hindu	5	5	-	-	-
		Muslim	0	0			
		Christian	0	0			
4.	TYPE OF FAMILY	Nuclear family	0	1	1.200a	2	0.549
		Joint family	2	2			
		Extended family	3	2			
5.	MOTHER'S OCCUPATION	Unemployed	0	2	5.200a	3	0.158
		Agriculture	2	0			
		Laborer	3	2			
6.	FATHER'S OCCUPATION	Unemployed	0	2	5.200a	3	0.158
		Agriculture	2	0			
		Laborer	3	2			
		Skilled Worker	0	1			
7.	ORDER OF CHILD	2	2	3	1.200a	2	0.549
		3	2	2			
		4	1	0			
8.	FOOD PATTERN	Vegetarian	2	1	0.476a	1	0.49
		Non-vegetarian	3	4			
9.	SOURCE OF INFORMATION	Newspaper/magazine	1	0	3.143a	2	0.208
		Radio/television	0	2			
		Friends/ relatives					
		Health professionals	4	3			
10.	EDUCATION OF CHILD	Primary school	4	5	1.111a	1	0.292
		Secondary school	1	0			
11.	HISTORY OF ANEMIA	Yes			-	-	-
		No	5	5			
12.	INCOME	Below 5000/month	1	1	0.000a	1	1
		Unemployed	4	4			
		Total					

p<0.05indicates level of significant association.

The findings reveals that there was no significant association found between observation group knowledge score of adolescents about sickle cell anaemia with socio demographic variable

Table-7 Association between pre-test practice regarding sickle cell anemia among adolescent with selected socio demographic variables in control group

n = 20

S R.	Socio-Demographic characteristics					Chi value	d f	P value
			Disagree	Neither Disagree Nor	Agree			
1.	AGE	10-12 Year	0	1	2	3.016a	2	0.221
		12-14Year	2	4	1			
2.	SEX	Girl	0	0	0			

		Boy	2	5	3			
3.	RELIGION	Hindu	2	4	3	1.111a	2	0.574
		Muslim	0	1	0			
		Christian	0	0	0			
4.	TYPE OF FAMILY	Nuclear family	1	1	0	3.878a	4	0.423
		Joint family	1	3	1			
		Extended family	0	1	2			
5.	MOTHER'S OCCUPATION	Unemployed	1	2	2	5.600a	4	0.231
		Agriculture	0	3	1	a		
		Laborer	1	0	0			
6.	FATHER'S OCCUPATION	Unemployed	0	0	0	8.167a	4	0.086
		Agriculture	1	2	3			
		Laborer	0	3	0			
		Skilled Worker	1	0	0			
7.	ORDER OF CHILD	2	2	1	2	4.400a	4	0.355
		3	0	3	1			
		4	0	1	0			
8.	FOOD PATTERN	Vegetarian	2	4	2	0.833a	2	0.659
		Non-vegetarian	0	1	1			
9.	SOURCE OF INFORMATION	Newspaper/magazine	0	0	0	1.306a	4	0.860
		Radio/television	0	2	1			
		Friends/relatives	1	1	1			
		Health professionals	1	2	1			
10.	EDUCATION OF CHILD	Primary school	2	5	3			
		Secondary school	0	0	0			
11.	HISTORY OF ANEMIA	Yes	2	4	2	0.833a	2	0.659
		No	0	1	1			
12.	INCOME	Below 5000/month	0	3	1	2.222a	2	0.329
		Unemployed	2	2	2			
13.		Total						

p<0.05 indicates level of significant association.

The findings reveals that there was no significant association found between control group practice score of adolescents about sickle cell anaemia with socio demographic variable.

Table-8 Association between pre-test practices regarding sickle cell anemia among adolescent with selected socio demographic variables in observational group. n = 20

SR.	Socio-Demographic characteristics					Chi value	df	P value
			Disagree	Neither Disagree Nor disagree	Agree			
1.	AGE	10-12 Year	1	3	2	0.833a	2	0.659
		12-14Year	0	2	2			
2.	SEX	Girl	1	4	4	1.111a	2	0.574
		Boy	0	1	0			
3.	RELIGION	Hindu	1	5	4	-	-	-
		Muslim	0	0	0			
		Christian	0	0	0			

4.	TYPE OF FAMILY	Nuclear family	1	0	0	11.225a	4	0.29
		Joint family	0	3	1			
		Extended family	0	2	3			
5.	MOTHER'S OCCUPATION	Unemployed	1	1	0	8.600a	6	0.197
		Agriculture	0	2	0			
		Laborer	0	2	4			
6.	FATHER'S OCCUPATION	Unemployed	1	1	0	8.600a	6	0.197
		Agriculture	0	2	0			
		Laborer	0	2	3			
		Skilled Worker	0	0	1			
7.	ORDER OF CHILD	2	1	2	2	2.100a	4	0.717
		3	0	2	2			
		4	0	1	0			
8.	FOOD PATTERN	Vegetarian	1	1	3	2.619a	2	0.270
		Non-vegetarian	0	4	3			
9.	SOURCE OF INFORMATION	Newspaper/magazine	0	1	0	4.429a	4	0.351
		Radio/television	0	0	2			
		Friends/relatives	0	0	0			
		Health professionals	1	4	2			
10.	EDUCATION OF CHILD	Primary school	1	5	3	1.667a	2	0.435
		Secondary school	0	0	1			
11.	HISTORY OF ANEMIA	Yes	0	0	0	-		
		No	1	5	4			
12.	INCOME	Below 5000/month	0	1	1	0.33a	2	0.855
		Unemployed	1	4	3			
13.		Total						

p<0.05 indicates level of significant association.

The findings reveals that there was no significant association found between observation group practice score of adolescents about sickle cell anaemia with socio demographic variable.

CONCLUSION

Findings reveled that nurse directed intervention was effective in improving the knowledge and life style-behavioral changes regarding sickle cell anemia in excremental group as compare to control group, In this study the distribution of pre-test and post-test level of knowledge regarding sickle cell anemia among adolescence. In experimental group pre-test majority (50%) of respondents had poor & average knowledge while in post-test majority (100%) of respondents had average knowledge regarding sickle cell anemia.

In control group pre-test majority 10 (100%) of respondents had poor knowledge and while in post-test 6(60%) or respondents had average knowledge and 4(40%) had poor knowledge regarding sickle cell anemia.

The distribution of pre-test and post-test level of lifestyle behavioral changes regarding sickle cell anemia among adolescence. In experimental group pretest majority

5(50%) of respondents neither agree nor disagree attitude and 4(40%) had agree attitude while in post-test majority 7(70%) had agree attitude and 3(30%) had strongly agree attitude regarding sickle cell anemia.

In control group pre-test majority 50(50%) of respondents had neither agree nor disagree attitude and 3(30%) had agree attitude and 2(20%) had disagree attitude while in post-test majority 5(50%) of respondents had neither agree nor disagree attitude and 4(40%) had agree & 1(10%) disagree attitude towards regarding sickle cell anemia.

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