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Research Article

KNOWLEDGE OF TEACHERS TOWARD SICKLE CELL DISEASE IN JAZAN REGION, SAUDI ARABIA

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Abstract:

Background: Sickle cell disease (SCD) is one of Hemoglobin disorder , It's a chronic disease, Saudi Arabia suffer a burden of SCD especially in eastern and western region That is due to high consanguinity (57.7%) and may up to (80%) in some rural area. The Quality of life of the patient with SCD usually impaired and they die early which due to many life-threatening complications like vaso-occlusive crisis, stroke and organ failure.

Objective: This study conducted to measure the Knowledge of teachers toward the sickle cell disease.

Methods: This is a cross-sectional study carried out in 510 teachers in jazan region, using self-administrated questionnaire from April 2018 to June 2018.

Results: A total of 510 Saudi teachers participated in this study. more than half of respondents were female 365 (71.6%) and 145 (28.4%) were male. A total number of 286 (56.1%) of were live in rural area and 224 (43.9%) were live in urban area, where 216 (42.4%), 233 (45.7%) and 61 (12.0%) of study population lived in coastal, lowlanders and mountain area respectively. The majority of study population were married 363 (71.2%) , 108 (21.2%) were single, 16 (3.1%) were divorced and 5 (1.0%) were widow. Most of participants 242 (47.5%) had monthly income from 10,000 to 15,000SR, 146 (28.6%) of them had less than 10,000 RS, and 122 (23.9%) had more than 15,000. A total of 185 of participants (36.3%) had between one to three children, 155 (30.4%) had more than four children and 170 (33.3%) had no children. Around half of participants 250 (49.0%) were consanguine, and 260 (51.0%) were not. According to the relationship the majority of participant 168 (32.9%) were related from paternal side and 86 (16.9%) from maternal side. The level of Knowledge of Participant the maximum percentage (50.9%) had average knowledge on SCD, around (41.3%) had Inadequate knowledge, where (2.7%) had adequate Knowledge .

Conclusion: The level of knowledge of SCD is average in teachers in jazan region.

Keywords: Sickle cell disease, Sickle cell disease, Knowledge, Teachers, Genetic Screening, Jazan Region, Saudi Arabia.

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INTRODUCTION:

Hemoglobinopathies is a group of disorders which can lead to death. [1] The gene who responsible for these disorders is present in 5% of healthy people in the world. [2][3] Sickle cell disease (SCD) is one of Hemoglobin disorder [4] , It's a chronic disease, caused by inheritance of hemoglobin S which cause production of abnormal shape of RBC. [5] WHO reported that approximately 300,000 child in the world born with sickle cell disease yearly. [2] and it's considers the most common inherited disorder affecting people in Asian, African, Middle east, Indian, Mediterranean, south and central America. [4,5,6] The highest prevalence of SCD occur in Africa which about 10% - 40% according to World Health Organization (WHO). [7] Saudi Arabia suffer a burden of SCD especially in eastern and western region. [7,8] the percentage of Sickle cell trait in Saudi population are about (2.27%) , (0.26%) are adult according to Saudi Premarital screening program. And 4.2% of people are have SCD [7]. That is due to high consanguinity (57.7%) and may up to (80%) in some rural area. [7,9] The Quality of life of the patient with SCD usually impaired and they die early which due to many life-threatening complication like vaso-occlusive crisis, stroke and organ failure. [10,11] and as a rule they complain of recurrent pain, infection, delayed growth. [2] in addition to the complication for mother and fetus. [2,12] But with early neonatal screening and good management for the patient can detract morbidity and mortality [10,11,13]

It was noted that information about the disease and It's complication was insufficient in poor and also in developing countries [14] . There is a a previous different studies was conducted in a different countries to assess the knowledge about the sickle cell disease some of them noticed that the people had a hight information about the disease and other were unaware about the Disease [2,15-17]

Although there is no studies to assess the prevalence of SCD in jazan region , it is observed that it is common among population. So we need to increase the public awareness regarding SCD in the school, collage and communities ..

The objective of this study is to measure the Knowledge of teachers toward the sickle cell disease.

METHODOLOGY:

This is descriptive cross-sectional study was conducted from April 2018 to June 2018 in jazan . Jazan also spelled *Jizan*, *Gizan* or *Gazan*, is a port city and the capital of Jizan Region, which lies in the

southwest corner of Saudi Arabia and directly north of the border with Yemen. Jazan City is situated on the coast of the Red Sea and serves a large agricultural heartland that has a population of 1.5 million, according to a 2010 census. The area is noted for its high-quality production of tropical fruits like mango, figs, and papaya.

A representative sample of 510 teachers included Females and males school teachers in jazan region and excluded School teachers who aren't from jazan and People who are not teachers.

A modified online self-administered questionnaire used to select the data, it was distributed online randomly. The questionnaire was written in Arabic language, it contains 38 questions arranged in two parts, the first one contains the Socio- demographic variables considered in the analysis included age, sex ,marital status, number of children and Financial income . while the other section contain many questions about the knowledge [17,18]. A pilot study was conducted on 25 participants to measure the clarity and reliability of the questionnaire, then included in the study.

The knowledge level was categorized by using the percentiles i.e. 0-6= Inadequate knowledge, 6-12= Average knowledge and above 12= Adequate knowledge.

The collected data were analyzed by using descriptive and inferential statistics (chi square and Karl pearson correlation test) in Statistical Package for Social Sciences (SPSS) software version 24.0. Means, median modes and standard deviation were calculated for categorical variable. A p-value less than 0.05 will be considered statistically significant.

Ethical considerations:

- consent was obtained from the participants.
- Purpose of the study, its benefits and risks were clearly explained to the participants.
- Confidentiality of all information collected was ensured, and was used only for the stated research purposes.

RESULTS:**Table I: The background characteristics of the study population**

Demographic characteristics		Gender – Frequency (%)		Total (%)	χ^2	p Value
		Male	Female			
		145 (28.4)	365 (71.6)			
Residency	Urban	49 (9.6)	175 (34.3)	224 (43.9)	8.438	0.004
	Rural	96 (18.8)	190 (37.3)	286 (56.1)		
Geographical Distribution	Coastal	46 (9.0)	170 (33.3)	216 (42.4)	5.212	.074
	Lowlanders	77 (15.1)	156 (30.6)	233 (45.7)		
	Mountain	22 (4.3)	39 (7.6)	61 (12.0)		
Marital Status	Single	14 (2.7)	108 (21.2)	122 (23.9)	35.503	.000
	Married	129 (25.3)	234 (45.9)	363 (71.2)		
	Divorced	0 (0.0)	16 (3.1)	16 (3.1)		
	Widow	0 (0.0)	5 (1.0)	5 (1.0)		
Monthly Income	Less than 10000 SR	31 (6.1)	115 (22.5)	146 (28.6)	5.212	.074
	10000-15000 SR	76 (14.9)	166 (32.5)	242 (47.5)		
	More than 15000	38 (7.5)	84 (16.5)	122 (23.9)		
Number of children	0	30 (5.9)	140 (27.5)	170 (33.3)	14.961	.001
	1-3	60 (11.8)	125 (24.5)	185 (36.3)		
	> 4	55 (10.8)	100 (19.6)	155 (30.4)		
Consanguinity	Yes	82 (16.1)	168 (32.9)	250 (49.0)	4.599	.032
	No	63 (12.4)	197 (38.6)	260 (51.0)		
Relationship	Paternal side	57 (11.2)	27 (5.3)	84 (16.9)	5.532	.063
	Maternal side	111 (21.8)	59 (11.6)	170 (32.9)		

Age: Mean: 37.39 ± 6.627 Median: 37 Mode: 40 Skewness: 0.622 Kurtosis: 0.709 Minimum: 25
Maximum: 65 Rang: 40 Variance: 43.911

A total of 510 Saudi teachers participated in this study (response rate 100.0%). Table 1 shows more than half of respondents were female 365 (71.6%) and 145 (28.4%) were male. The age of participant range from 25 – 65 years (Mean: 37.39 ± 6.627 , median: 37 years , mode: 40 years). A total number of 286 (56.1%) of were live in rural area and 224 (43.9%) were live in urban area, where 216 (42.4%),233 (45.7%) and 61 (12.0%) of study population lived in coastal, lowlanders and mountain area respectively. The majority of study population were married 363 (71.2%) , 108 (21.2%) were single, 16 (3.1%) were divorced and 5 (1.0%) were widow. Most of participants 242 (47.5%) had monthly income from 10,000 to 15,000SR, 146 (28.6%) of them had less than 10,000 RS, and 122 (23.9%) had more than 15,000. A total of 185 of participants (36.3%) had between one to three children, 155 (30.4%) had more than four children and 170 (33.3%) had no children. Around half of participants 250 (49.0%) were consanguine, and 260 (51.0%) were not. According to the relationship the majority of participant 168 (32.9%) were related from paternal side and 86 (16.9%) from maternal side.

Table II : Knowledge of participants toward SCD

		Gender – Frequency (%)		Total (%)	χ^2	p Value
		Male	Female			
Have you heard of sickle cell disease?	Yes	142 (27.8)	359(70.4)	501(98.2)	108	.742
	No	3 (0.6)	6(1.2)	9(1.8)		
What is the source of your information?	Family	60(11.8)	147 (28.8)	207 (40.6)	1.025	.906
	Friends	37 (7.3)	86 (16.9)	123 (24.1)		
	The media	44(8.6)	122(23.9)	166(32.5)		
	School	1(0.2)	1(0.2)	2(0.4)		
What is your genetic structure?	Normal	100(19.6)	246(48.2)	346(67.8)	7.966	.047
	Trait	25(4.9)	44(8.6)	69(13.5)		
	Disease	11(2.2)	23(4.5)	34(6.7)		
	I don't know	9(1.8)	52(10.2)	61(12.0)		
Do you want to know it?	Yes	48(9.4)	135(26.5)	183(35.9)	.884	.643
	No	14(2.7)	29(5.7)	43(8.4)		
The best way to know the genetic structure	Electrophoresis	102(20)	205(40.2)	307(60.2)	15.926	.001
	Genetic test	15(2.9)	82(16.1)	97(19.0)		
	I don't know	28(5.5)	78(15.3)	106(20.8)		
History of genetic disease in your family	Yes	48(9.4)	157(30.8)	205(40.2)	4.240	.039
	No	97(19.0)	208(40.8)	305(59.8)		
History of SCA in your family	Yes	48(9.4)	117(22.9)	165(32.4)	.052	.819
	No	97(19.0)	248(48.6)	345(67.6)		
Your relationship to the patient	My father	0(0.0)	10(2.0)	10(2.0)	36.910	.033
	My mother	1(0.2)	13(2.5)	14(2.7)		
	My sisters	9(1.8)	15(2.9)	24(4.7)		
	My brother	5(1.0)	12(2.4)	17(3.3)		
	Cousin	12(2.4)	27(5.3)	39(7.6)		
Method of transmission of the disease	Yes	76(14.9)	194(38.0)	270(52.9)	.023	.880
	No	69(13.5)	171(33.5)	240(47.1)		

The level of knowledge toward SCD among the teachers shown in Table 2, according to the gender there is no statistical significance difference in the level of knowledge (p -value = 0.742) or the source of information (p -value = 0.902) . There is clear statistical significance difference in the knowing the way to know the genetic structure (p -value = 0.001).

Table III : knowledge of participants toward pre-marital screening

		Gender – Frequency (%)		Total (%)	χ^2	p Value
		Male	Female			
		145 (28.4)	365 (71.6)			
Is there one of your brother or sister married to your relatives?	Yes	115 (22.5)	265 (52.0)	380 (74.5)	2.458	.117
	No	30 (5.9)	100 (19.6)	130 (25.5)		
Is one of your Family married to Sickle cell trait?	Yes	48 (9.4)	131 (25.7)	179 (35.1)	.354	.552
	No	97 (19.0)	234 (45.9)	331 (64.9)		
Have you ever attended a lecture about anemia?	Yes	29 (5.7)	97 (19.0)	126 (24.7)	2.241	.120
	No	116 (22.7)	268 (52.5)	384 (75.3)		
Do you have knowledge of pre- marital screening?	Yes	145 (28.4)	365 (71.6)	510 (100.0)		
What are your sources about pre- marital screening?	Intern	13 (2.5)	45 (8.8)	58 (11.4)	107.419	.001
	Social Media	10 (2.0)	36 (7.1)	46 (9.0)		
	Family	10 (2.0)	42 (8.2)	52 (10.2)		
	Friend	10 (2.0)	11 (2.2)	21 (4.1)		
	Book	2 (0.4)	1 (0.2)	3 (0.6)		
	studying	1 (0.2)	13 (2.5)	14 (2.7)		
	Newspaper	6 (1.2)	8 (1.8)	14 (2.7)		
	Lecture	1 (0.2)	0 (0.0)	1 (0.2)		
All of the Above	2 (0.4)	0 (0.0)	2 (0.4)			
Why people do pre- marital screening?	As part of the routine requirements for marriage in Saudi Arabia	15 (2.9)	33 (6.5)	48 (9.4)	.938	.816
	Benefit and attention to result	10 (2.0)	34 (6.7)	44 (8.6)		
	Reduce the incidence of genetic diseases	119 (23.3)	296 (58.0)	415 (81.4)		
	I don't know	1 (0.2)	2 (0.4)	3 (0.6)		
Where you can do a pre- marital screening	Government hospital	132 (25.9)	336 (65.9)	468 (91.8)	1.884	.597
	Private hospital	0 (0.0)	1 (0.2)	1 (0.2)		
	I don't know	13 (2.6)	28 (5.5)	41 (8.1)		
Do you know the diseases involved in pre-marital screening?	Yes	98 (19.2)	223 (43.7)	321 (62.9)	1.874	.171
	No	47 (9.2)	142 (27.8)	189 (37.1)		
What are these diseases?	Thalassemia	1 (0.2)	7 (1.4)	8 (1.6)	35.839	.476
	SCA	4 (0.8)	25 (4.9)	29 (5.7)		
	HIV	3 (0.6)	4 (0.8)	7 (1.4)		
	Syphilis	0 (0.0)	1 (0.2)	1 (0.2)		
	Hepatitis A	0 (0.0)	4 (0.8)	4 (0.8)		
	Hepatitis B	1 (0.2)	1 (0.2)	2 (0.4)		
Hepatitis C	1 (0.2)	1 (0.2)	2 (0.4)			

Table 3 show the knowledge toward premarital screening, when we asked about the pre-marital screening all participant was know it, with the different resources ,There is clear statistical significance difference in the source of knowledge about pre-marital screening between male **145 (28.4)** and female **365 (71.6)** (p -value = 0.001) . but there is no statistical significance difference in the disease that involve in that test and the place of doing the test (p -value = 0.476 and 0.618 respectively) .

Table IV: Knowledge of participants toward SCA treatment and crisis :

		Gender – Frequency (%)		Total (%)	χ^2	p Value
		Male	Female			
The best way for the treatment	Bone marrow transplantation	27(5.3)	58(11.4)	85(16.7)	4.684	.321
	Drugs	7(1.4)	20(3.9)	27(5.3)		
	Avoid marrying from diseased people	66(12.9)	200(39.2)	266(52.2)		
	I don't know	23(4.5)	40(7.8)	63(12.4)		
The percentage of disease child from disease parent	25%	42(8.2)	121(23.7)	163(32.0)	1.807	.613
	50%	53(10.4)	126(24.7)	179(35.1)		
	100%	20(3.9)	38(7.5)	58(11.4)		
	I don't know	30(5.9)	80(15.7)	110(21.6)		
Precene of disease child lead to physical ,psychological and social costs	Strongly agree	91(17.8)	224(43.9)	315(61.8)	3.846	.427
	Agree	35(6.9)	97(19.0)	132(25.9)		
	Disagree	1(0.2)	11(2.2)	12(2.4)		
	Strongly disagree	2(0.4)	4(0.8)	6(1.2)		
	I don't know	16(3.1)	29(5.7)	45(8.8)		
Factors that increase the occurrence of Sickle crisis	Yes	61(12.0)	179(35.1)	240(47.1)	2.025	.155
	No	84(16.5)	186(36.5)	270(52.9)		

Only 86(16.7%) of teachers know the way of treatment of SCD, and more than half 315 (61.8%) belief that SCD can cause physical and psychosocial cost with on statistical difference between male and female (p value = 427), a total 240(47.1%) belief that there is factor can increase the occurrence of Sickle Cell crisis, these factor demonstrate in figure 1.

Figure 1: Factor that increase occurrence of Sickle Cell Crisis

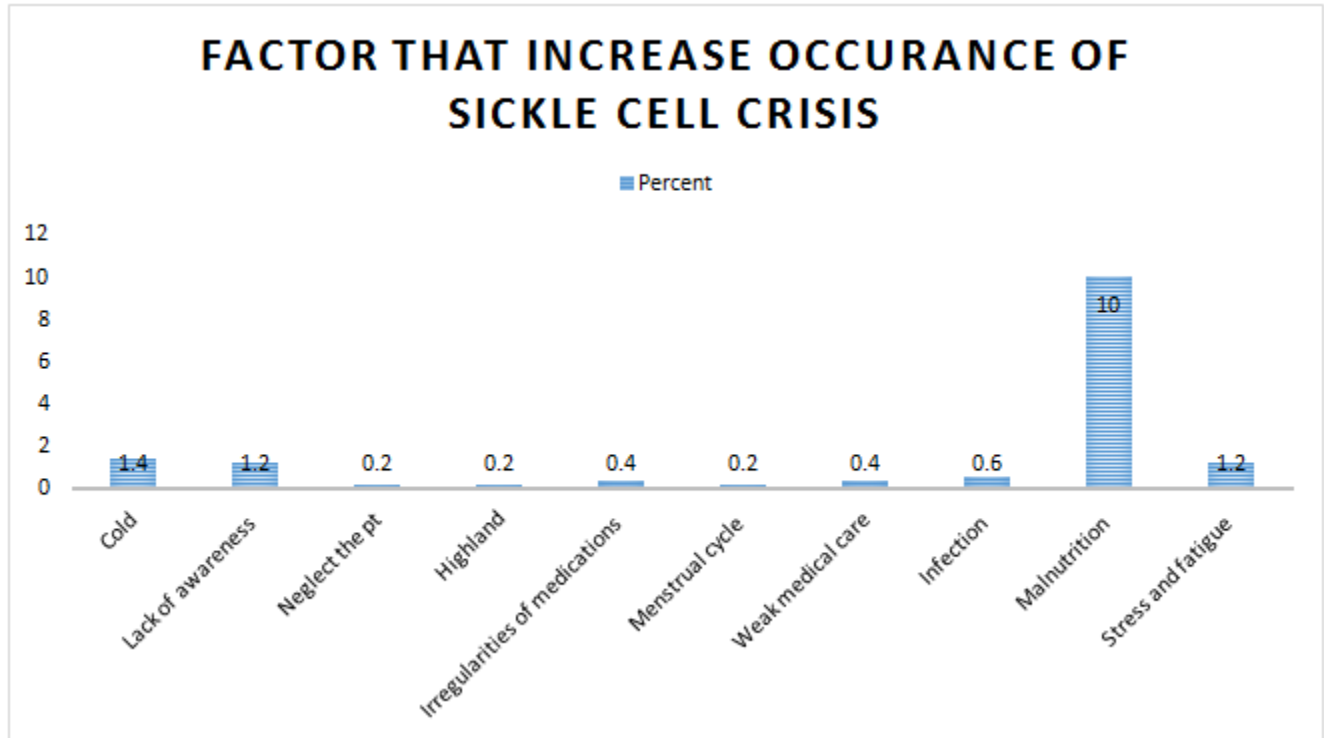


Table V: knowledge about the prevention of SCD:

		Gender – Frequency (%)		Total (%)	χ^2	p Value
		Male	Female			
SCD can be prevented	Strongly agree	88(17.3)	203(39.8)	291(57.1)	8.342	.138
	Agree	48(9.4)	122(23.9)	170(33.3)		
	Disagree	2(0.4)	3(0.9)	5(1.0)		
	Strongly disagree	2(0.4)	1(0.2)	3(0.6)		
	I don't know	5(1.0)	35(6.9)	40(7.8)		
The best way to prevent the disease	Pre-marital screening	67(13.1)	167(32.7)	234(45.9)	3.565	.468
	Knowing genetic structure	9(1.8)	11(2.2)	20(3.9)		
	Prevent marriage from diseased people	47(9.2)	122(23.9)	169(33.1)		
SCD is a serious disease	Strongly agree	60(11.8)	173(33.9)	233(45.7)	2.862	.721
	Agree	61(12.0)	133(26.1)	194(38.0)		
	Disagree	11(2.2)	23(4.5)	34(6.7)		
	Strongly disagree	0(0.0)	2(0.4)	2(0.4)		
	I don't know	11(2.2)	30(5.9)	41(8.0)		

In term of health beliefs 233 (45.7%) strongly agree that the SCD is a serious disease, and 234 (45.7%) of participant beliefs that the pre-marital screening can prevent the disease and 169 (33.1) beliefs that the prevent the marriage from disease people can prevent the SCD without statistical difference (p value = 0.468) Table V .

Table VI: Practice of teachers toward SCA:

		Gender – Frequency (%)		Total (%)	χ^2	p Value
		Male	Female			
Has any of your students ever had sickle cell crisis in the school	Yes	77(15.1)	151(29.6)	228(44.7)	5.780	.016
	No	68(13.3)	214(42.0)	282(55.3)		
How to deal with it	Continue the lesson	2(0.4)	2(0.4)	4(0.8)	4.915	.178
	Give him pain relief	5(1.0)	7(1.4)	12(2.4)		
	Call the parent and transfer to the hospital	82(16.1)	181(35.5)	263(51.6)		

228 (44.7%) of the teachers provide that the students had Sickle cell crisis in the class, 263 (51.6%) report that they will Call the parent and transfer the student to the hospital, 12(2.4%), 12 (2.4%) will give him pain relief, 4 (0.8%) will continue the class without statistical difference (p value = 178).

Table VIII: Correlation between Knowledge and source of information

		Source of information (%)				Total (%)	χ^2	p Value
		Family	School	Friends	Media			
The best way to know the genetic structure	Electrophoresis	132 (25.9)	0 (0.0)	68 (13.3)	101(19.8)	301 (59)	21.152	.048
	Genetic testing	39 (7.6)	2 (0.4)	23(4.5)	32 (6.3)	98(19.2)		
	I don't Know	36 (7.1)	0 (0.0)	32 (6.3)	33 (6.5)	101 (19.8)		
Method of transmission of the disease	Yes	134(26.3)	2(0.4)	47(9.2)	83(16.3)	266(52.2)	26.473	.000
	No	73(14.3)	0(0.0)	76(14.9)	83(16.3)	232(45.5)		
The best way for the treatment	Bone marrow transplantation	43 (8.4)	0(0.0)	18(3.5)	23 (4.5)	84(16.5)	47.960	.000
	Drugs	9(1.8)	0(0.0)	6(1.2)	7(1.4)	22(4.3)		
	Avoid marrying from diseased people	105(20.6)	2(0.4)	61(12.0)	95(18.6)	263(51.6)		
	I don't know	22(4.3)	0(0.0)	14(2.7)	24(4.7)	60(11.8)		
The percentage of disease child from diseased parents	25%	70(13.7)	0(0.0)	34(6.7)	57(11.2)	161(31.6)	24.212	.019
	50%	75(14.7)	2(0.4)	41(8.0)	59(11.6)	177(34.7)		
	100%	31(6.1)	0(0.0)	12(2.4)	12(2.4)	55(10.8)		
	I don't know	31(6.1)	0(0.0)	36(7.1)	38(7.5)	105(20.6)		
Factors that increase the occurrence of SCA	Yes	89(17.5)	0(0.0)	57(11.2)	90(17.6)	236(46.3)	7.497	.112
	No	118(23.1)	2(0.4)	66(12.9)	76(14.9)	262(51.4)		
The best way to prevent the disease	Pre-marital screening	109(21.4)	1(0.2)	64(12.6)	77(15.1)	251(49.2)	28.704	.026
	Knowing genetic structure	5(1.0)	0(0.0)	2(0.4)	11(2.2)	18(3.5)		
	Prevent the marriage from infected people	78(15.3)	1(0.2)	35(6.9)	52(10.2)	166(32.5)		

Table IX: Correlation between Knowledge and source of information II

		Source of information (%)				Total (%)	χ^2	p Value
		Family	School	Friend	Media			
Why do people do pre marital screening	As a part of routine requirements for marriage in Saudi Arabia	18(3.5)	0(0.0)	11(2.2)	18(3.5)	47(9.2)	7.492	.823
	Benefits and attention to results	17(3.3)	0(0.0)	8(1.6)	16(3.1)	41(8.0)		
	Reduce the incidence of genetic disease	170(33.3)	2(0.4)	104(20.4)	131(25.7)	407(79.8)		
	I don't know	2(0.4)	0(0.0)	0(0.0)	1(0.2)	3(0.6)		
What are these diseases	Thalassemia	2(0.4)	0(0.0)	2(0.4)	4(0.8)	8(1.6)	465.684	.000
	SCA	9(1.8)	0(0.0)	9(1.8)	9(1.8)	27(5.3)		
	HIV	2(0.4)	0(0.0)	2(0.4)	3(0.6)	7(1.4)		
	Syphilis	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(0.2)		
	Hepatitis A	1(0.2)	0(0.0)	1(0.2)	2(0.4)	4(0.8)		
	Hepatitis B	1(0.2)	0(0.0)	0(0.0)	1(0.2)	2(0.4)		
	Hepatitis C	1(0.2)	0(0.0)	0(0.0)	1(0.2)	2(0.4)		

The level of knowledge of participants related to the source of information is shown in Table VIII & IX , which reveals the electrophoresis as a test to detect the genetic structure where 301(59%) of teachers know the that, the most of them 132 (25.9%) their families where their source, 101(19.8%) was the media and only 68(13.3%) with no clear statistical significance difference in prevalence according to the gender (p -value = 0.048). There is clear statistical significance difference in knowing the treatment of this disease (p -value = 0.048) where only 83(16.5)

know the way of treatment and most of them know it from their families 43(8.4%) . according the best way to prevent the disease 251(49.2%) think that the premarital screening as the best method, 109(21.4%) of them know that from the families, 77(15.1%) from media, 64(12.6%) from friends and only 1(0.2%) know that from the school with no clear statistical significance difference (p -value = 0.026) .a total 407(79.8%) said that the pre-marital screening is doing to reduce the incidence of genetic disease, 170(33.3%) have that knowledge from their families.

Figure 2: Knowledge level of Participant on Sickle Cell disease

THE LEVEL OF KNOWLEDGE

Inadequate Knowledge

Average Knowledge

Adequate Knowledge

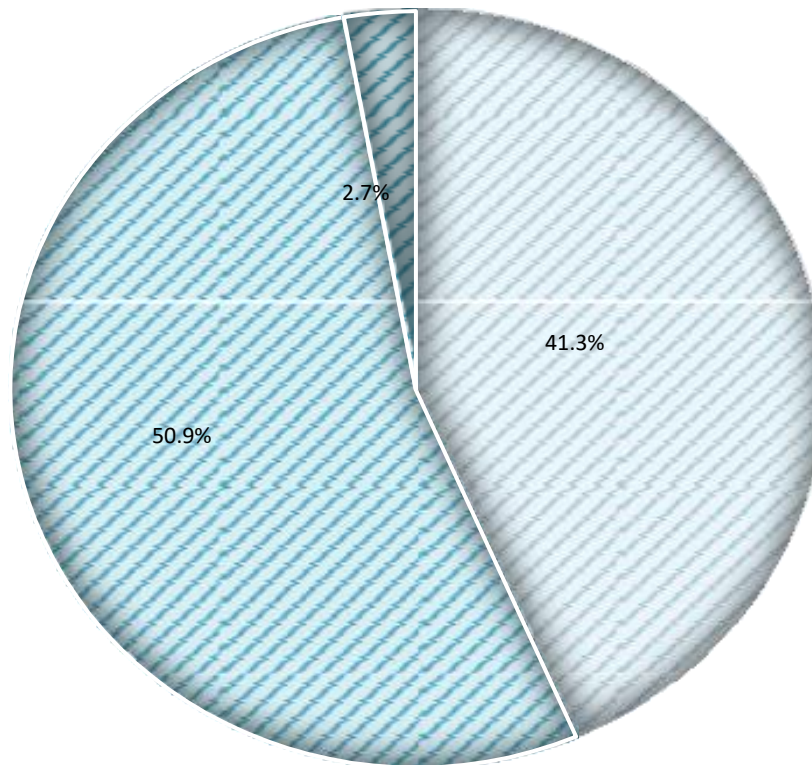


Figure 2 shows the level of Knowledge of Participant the maximum percentage (50.9%) had average knowledge on SCD, around (41.3%) had Inadequate knowledge, where (2.7%) had adequate Knowledge .

DISCUSSION:

This is the first study determining the knowledge of SCA among teachers in Jazan region. A total of 501 (98.2%) of participants had heard about SCD, so we suggest a good level of awareness, it's slightly higher than a study in Nigeria were about (95%) (19). also (60.2%) of study participant knew it can be diagnose by simple blood test it's higher than the study was conducted in the USA they found about 91% had a good knowledge about the genetic cause of SCA, also Omanis population were the level of knowledge (67.8), but lower than a study was done in Bahrine about 89% of public knew that SCA diagnose by simple blood test [17].

Regarding the treatment of sickle cell anemia only (16.7%) were knew the correct treatment, in other hand (71.7%) of participant in a study was done in Nepal among higher Secondary Student mentioned that SCD had a treatment [3].The average level of knowledge of participants is due to different source of information include Family (40.6%) , media (32.5%), Friend (24.1%) and school (0.4%), it was similar to the sources in another study [20].

Despite average of knowledge of mode of diagnosis and inheritance of disease we found there is luck of information about the preventive measure of the disease where (57.1%) think the disease can be prevented, and just (74.1%) of participants aware about the factors that cause sickle cell crisis.

All the participant mentioned that they knew about the pre-marital screening, but about (12.0%) did not know their genetic structure, in contrast in another study they found only (30%) know their hemoglobin genotype [21].

(45.7%) of participants of the current study beliefs that the SCD is a serious disease, (61.6%) beliefs it can cause a great stress and social impact on the family, It's similar to the result in another study. It also affect the school performance of the patient, as it cause a frequent absence from the school due to frequent pain and the need for continuous health care –this supported by previous study [17,22].

The current study has some limitation. First, the study was conducted among the Teachers in jazan region , which can't represent the whole population. Second: the study conducted in jazan region only, which a small area in Saudi Arabia, So we can't generalized the result to the whole of the Saudi Arabia. Also some of participant mentioned that they didn't did Pre-marital screening , these individuals may not get married yet or planning to get married.

CONCLUSION:

Despite the high number of Sickle cell disease patient in the region The level of knowledge of SCA in most participants were average (50.9%) , and most of them has inadequate knowledge (41.3%) and only (2.7%) of them had adequate knowledge, These findings highlights the poor knowledge about SCA , thus indicating the need to increase the awareness about SCA among teachers, and increase awareness of the sequel of marriage between the SCA patients which cause physical ,psychological and social costs on the family and it will affect the school performance of the patients. So educational programs or campaign are needed in order to increase teachers and public awareness in general of SCD.

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