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Research Article

### IMPROVE ADHERENCE TO HYDROXYUREA TO ACHIEVE CLINICAL OUTCOME IN SICKLE CELL DISEASE PATIENTS AT KING FAHAD UNIVERSITY HOSPITAL

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#### Abstract:

**Background:** Non adherence to hydroxyurea in SCD patients becomes a major problem that needs immediate attention by health care providers, using patient counselling which in turn may increase rate of adherence that may contribute in improving their clinical outcomes and reduce hospitalization for pain crisis.

#### Problem statements:

Many sickle cell disease patients quit taking their hydroxyurea medication which in turn deteriorates their health status and increase rate of pain crisis. Hypothesis: Dose pharmacists counseling improve (SCD) patient's adherence to hydroxyurea at king Fahad university hospital. Dose adherence to hydroxyurea can decrease rate of pain crisis. **Objectives:** To measures impact of pharmacist intervention on patient adherence to hydroxyurea and to decrease number of in-patient visits due to pain crisis. **Methods:** We used .....MMAS-4 items (to measure adherence level), Questionnaire for Data Collection and noted number of ER visits pre and post clinical pharmacist intervention (using hospital information system plus direct phone call to the patient).

**Results:** Two of these patients before the counseling showed low adherence and two showed medium adherence. However after counseling there was a significantly better adherence as shown by decrease in total score. Post counseling patients two of them showed high adherence and two were medium adhere. **Conclusion:** We conclude that pharmacy counseling and education significantly increased adherence of medication in patients of sickle cell disease. However further study with large sample size and longer duration is required to substantiate the result.

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**INTRODUCTION:**

Sickle cell disease (SCD) is a lifelong debilitating disease that results in significant morbidity and early mortality over time. Abnormal Sickling cells do not have the ability to supply different body organs with nutrition and oxygen effectively which in turn lead to many complications such as chronic anemia, acute and chronic pain, acute chest syndrome and long term end organ damage. The prevalence of SCD in Saudi Arabia varies significantly in different parts of the country, with the highest prevalence is in the Eastern province, followed by the southwestern provinces. The reported prevalence for sickle-cell trait ranges from 2% to 27%, and up to 2.6% will have SCD in some areas. There has been accumulating evidence to support the safety, efficacy and cost effectiveness of using hydroxyurea in sickle cell disease patients with demonstrated benefit related to morbidity, mortality and domains of health related quality of life. Hydroxyurea (HU) is an antimetabolite agent work by increasing the production of fetal hemoglobin in red blood cells resulting in significant reduction in the frequency of painful crisis, acute chest syndrome, hospitalization, and the need for blood transfusion.

**METHODS:**

A pilot prospective cohort study conducted at king Fahd university hospital (KFUH). The study

duration was 7 months. The patients inclusion criteria considered Both gender male and female sickle cell disease patients below 65 years old with moderate to low adherence to hydroxyurea, and with Emergency department /in-patients visits  $\geq 2$  pain crisis last year in (1/1/2017- 31/12/2017). Whereas exclusion criteria consider Patients with high adherence and above age of 65 or hydroxyurea not indicated for sickle cell disease.

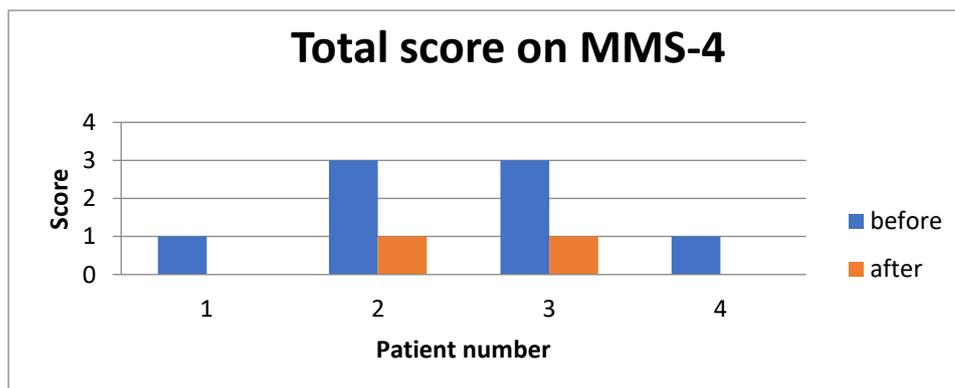
According to the criteria, a telephone Questionnaire (picture 1) has been done regarding their use of hydroxyurea for sickle cell disease and number of pain crises. In addition to that the adherence of the patients to hydroxyurea has been measured by Morisky Medication Adherence Scale "MMS-4".

**RESULT:**

We screen 12 patients out of which 4 were enrolled. However 8 patients were lost to follow up and the rest completed the study. Two of these patients before the counseling showed low adherence and two showed medium adherence. However after counseling there was a significantly better adherence as shown by decrease in total score. Post counseling patients two of them showed high adherence and two were medium adhere.

**Response to Questions on MMS-4 Scale and Total Score**

		Mean	Std. Deviation	P value
Pair 1	Baseline- q1	.50 <sup>a</sup>	.577	.
	Follow up q1	.50 <sup>a</sup>	.577	0.046
Pair 2	Baseline- q2	1.00 <sup>a</sup>	.000	.
	Follow up-q2	.00 <sup>a</sup>	.000	.
Pair 3	q3	.50	.577	.
	fq3	.00	.000	0.181
Pair 4	q4	.00 <sup>a</sup>	.000	.
	fq4	.00 <sup>a</sup>	.000	.
Pair 5	Total score	2.00	1.155	.
	Follow up –total score	.50	.577	0.0332



**DISCUSSION:**

Our study contributes to the emerging literature on hydroxyurea. A

Unique feature of our study is its focus on examining the role of pharmacist counseling toward hydroxyurea adherence using the Modified Morisky Adherence Scale 4-items.

We found that a significant number of our participants had challenges with hydroxyurea adherence related to negative beliefs, recall barriers, and/or access barriers. However Health care providers (HCP) including pharmacists can reduce these barriers and thereby promote adherence leading to better clinical outcome and reduce hospitalization for pain crisis. Guidelines recommend counseling by pharmacists to improve medication adherence, especially at the start of therapy. The first dispensing of a new drug should be accompanied with general information and instructions for use. At the first refill, counseling should focus on exploring patients' experiences with the medication. However, our small sample size and the relatively low statistical power limited our ability to examine some important relationships of potential significance, particularly among hydroxyurea adherence barriers, adherence rates.

**RECOMMENDATIONS:**

- We suggest that pharmaceutical counseling should be done to all patients.
- Counseling should be considered as integral part of teaching and practical training.

**LIMITATION:**

- Inability to access the patient.
- Longitudinal time of research needed to monitor the effect of pharmacist counseling on decreasing level of patient pain crisis.

- Small sample size.

**CONCLUSION:**

We conclude that pharmacy counseling and education significantly increasing adherence of medication in patients of sickle cell disease. However further study with large sample size and longer duration is required to substantiate the result.

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