Treating Iron Deficiency Anemia in Migrant Farmworker Children in Utah

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Background

Migrant farmworkers in Utah are primarily hispanic, foreign-born, and seasonal workers.[1] This population faces increased barriers to healthcare and a higher risk of iron deficiency anemia.[2-5]

This study aimed to determine if there is clinically significant improvement in hemoglobin levels in migrant farm children empirically treated for iron deficiency anemia at Migrant Head Start daycare programs in Utah.

This treatment is provided during annual physicals exams performed in partnership with the Clinica de Buena Salud, Centro de la Familia, and The University of Utah Physician Assistant Program. The method for treatment has been ongoing since 1989.

Methods

Project Design: Retrospective chart analysis.
Outcomes: Prevalence of anemia, treatment success, and average time to follow-up.
Inclusion Criteria:
- Children aged 1-5 in Migrant Head Start programs between 2019-2023 with low hemoglobin as defined by the CDC.
- Encounters without follow-up data.

Exclusion Criteria:
- Those not prescribed iron, despite meeting anemic standards.
- Follow up outside of the 3 weeks to 6-month period.

Analysis: Success, defined as a hemoglobin of 11.3 g/dL or greater for children aged 1-2, and 11.6 g/dL or greater for children 2-5 years old, at follow-up. Prevalence and follow-up were calculated as a percentage with prevalence further being compared to national data by a z-test. A chi-squared test was used to determine statistical significance.

Results

- Collected data on 619 Total Encounters, with 108 patients found to have low hemoglobin (Figure 1).
- Incident rate for anemia was 17.4%, as opposed to the national rate of 7.1% for this age group.
- 101 patients with low hemoglobin who received treatment (Figure 2).
- Chi-square analysis: No significant difference in treatment success was found between sites (Table 1).
- Intervention success rate with intent-to-treat principal 41.6%. A Chi-square test showed a statistically significant improvement with treatment.
- With 46 Lost to follow-up removed, intervention success rate is 76.4%.
- Follow-up rates across sites varied (Table 2).

Figure 1. Encounters logged during data collection and logged as anemic, stratified by Migrant Head Start program location
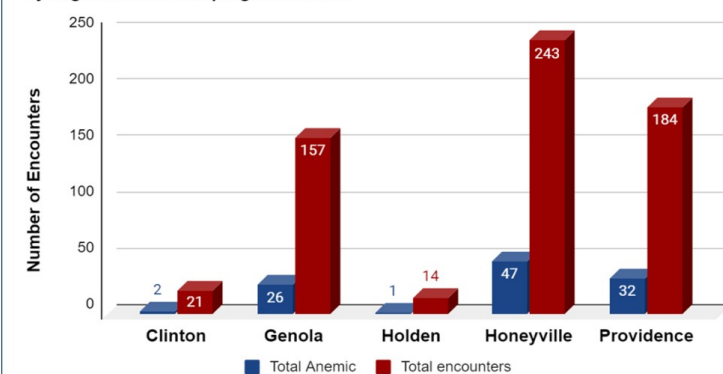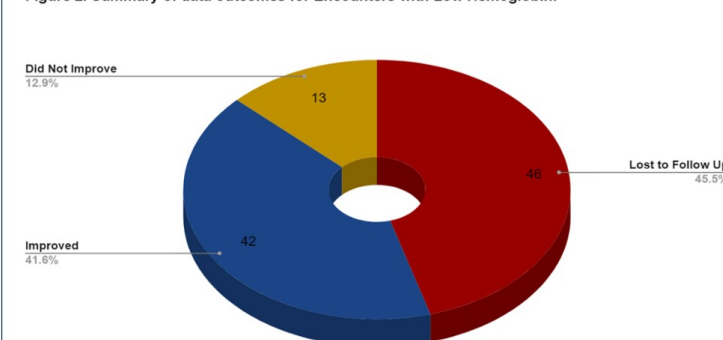

Figure 2. Summary of data outcomes for Encounters with Low Hemoglobin.

Table 1. Rate of treatment success at each Migrant Head Start site.

Location	Anemia Rate (%)	Treatment Success Rate (Improved/total treated)	Improved	Total Treated	Confidence Interval
Clinton	9.52	100% (2/2)	2	2	[0.0222, 0.3256]
Genola	15.92	17.39% (4/23)	4	23	[0.000, 0.000]
Holden	6.67	0% (0/1)	0	1	[0.4930, 0.7796]
Honeyville	21.88	63.63% (28/44)	28	44	[0.0964, 0.4198]
Providence	19.46	25.81% (8/31)	8	31	[0.0222, 0.3256]

Table 2. Follow-up rates at each Migrant Head Start site.

Location	Follow-up % (successful follow-up/total treated)	Average time to follow-up (weeks)
Clinton	100% (2/2)	15.1
Genola	17.39% (4/23)	7.9
Holden	0% (0/1)	N/A
Honeyville	88.64% (39/44)	7.5
Providence	32.26% (10/31)	10.2
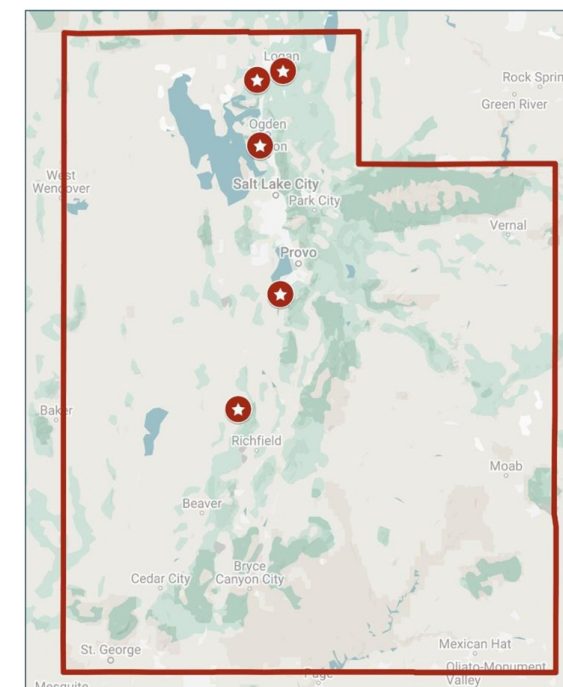
Migrant Head Start locations, from top to bottom: Providence, Honeyville, Clinton, Genola, Holden

Conclusions

Children of migrant farm workers in Utah have a higher prevalence of anemia as compared to the national average.[6] This study highlights the importance of interventions such as the collaboration between UPAP, Centro de la Familia, and Clinica de Buena Salud in addressing these health disparities. Data analysis proved a clinically significant improvement in hemoglobin values when treatment and follow-up were completed as intended. Our study identified lack of standardization in follow-up procedure as a significant barrier to treatment success.

Limitations to this study include low sample size and non-stratified anemia based on severity. Utilizing an intent-to-treat model was the strength of this study. Future research to identify and define specific barriers to follow-up is recommended and may aid in development and implementation of a feasible and standardized follow-up protocol to be applied across all Migrant Head Start sites.

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