



Paediatrics

A QUALITY IMPROVEMENT INITIATIVE TO ENHANCE GROWTH ASSESSMENT AMONG CHILDREN ATTENDING THE PEDIATRIC OUTPATIENT DEPARTMENT OF A TERTIARY CARE TEACHING HOSPITAL

Akul Pania*	Junior Resident, Department of Pediatrics, MGM Medical College and Hospital, Chh. Sambhajinagar, Maharashtra, India. *Corresponding Author
Avinash Sangle	Associate Professor, Department of Pediatrics, MGM Medical College and Hospital, Chh. Sambhajinagar, Maharashtra, India.
Madhuri Engade	Professor And Head, Department of Pediatrics, MGM Medical College and Hospital, Chh. Sambhajinagar, Maharashtra, India.
Yaswanth Reddy	Junior Resident, Department of Pediatrics, MGM Medical College and Hospital, Chh. Sambhajinagar, Maharashtra, India.
Rajnandini Kulkarni	Junior Resident, Department of Pediatrics, MGM Medical College and Hospital, Chh. Sambhajinagar, Maharashtra, India.

ABSTRACT

Introduction: Accurate anthropometric measurements is a cornerstone for assessing nutritional status, growth monitoring, and for timely interventions. Despite of its significant importance, growth assessment is not assessed as per standard even in most of the tertiary care settings. The present study is undertaken enhance the process of growth assessment in the paediatric OPD through quality improvements. **Objective:** To increase the percentage of anthropometry documentation for paediatric patients visiting OPD and to increase the correct interpretation of the same. **Methodology:** Systematic observations are made about the process of assessment and documentation of growth monitoring. Observations are graphically presented. Three plan-do-study-act (PDSA) cycles were undertaken to achieve desired outcomes. **Results & Conclusion:** We were able to increase the percentage of anthropometry documentation for paediatric patients visiting OPD from current 36% to above 60% and its appropriate interpretation from current 5% to above 60% over 4 weeks.

KEYWORDS : Child health, Growth, Quality Improvement, PDSA Cycle, Measurement, Anthropometry, Paediatrics

INTRODUCTION:

Malnutrition is the major cause of childhood morbidity and mortality globally. Paediatricians play a vital role in identification and timely management of malnutrition (1,2). Anthropometry is used for clinically diagnosing malnutrition and for growth monitoring (3). Anthropometry is the single most portable, universally acceptable, inexpensive and non-invasive technique for assessing the size, proportions and composition of human body. Routinely collected anthropometric measurements in children include weight, height or length, and head circumference. It can be administered even in resource constrained areas. The importance of anthropometry in child's health is well documented in literature. Also, it is emphasized by WHO, UNICEF and various international and National bodies such as IAP (4). Accurate anthropometric measurements are particularly important in inpatient settings for appropriate pharmaceutical dosing that uses weight or total body surface area, as well as early detection of malnutrition which can affect hospital outcomes and duration of stay. Improper measurement and improper documentation of anthropometry may lead to misinterpretation of a child's health. This finally leads to losing an opportunity for proper intervention. In OPDs, the growth assessment is generally done by staff nurse. Despite of proper training, there are instances where growth assessment is not done according to standards. The present study is undertaken to assess the various key areas of the process, in which the correct interventions would lead to improved documentation with adequate interpretation of growth assessment.

AIM & OBJECTIVES:**AIM:**

To increase the percentage of anthropometry documentation for paediatric patients visiting OPD and to increase the correct interpretation of the same.

OBJECTIVES:

1. To standardize and improve the accuracy of growth assessments for children attending the Paediatric OPD
2. To evaluate the effectiveness of the implemented quality improvement intervention by comparing pre- and post-intervention rates of accurate growth assessments and early detection of growth disorders in children visiting the Paediatric OPD.
3. To improve the consistency and timeliness of growth assessments
4. To foster a culture of continuous quality improvement in the Paediatric OPD by conducting regular audits, gathering staff feedback, and adjusting the intervention based on data-driven insights.

MATERIAL & METHODS:

Research Setting And Study Area: The present study is hospital-based study undertaken in Paediatrics OPD of MGM Medical College, Chh. Sambhajinagar. This is tertiary care teaching hospital with dedicated Paediatrics department.

Study Type & Duration: This study is pre-and post-interventional study. The observations are made before and after the interventions. The changes in the parameters were studied. The study was conducted for 1 months.

Ethical Considerations: The study was conducted after the approval from appropriate authorities. The institutional ethics committee permission was taken. Also, permission from scientific advisory committee was taken. The data was kept anonymous without revealing identity of those who are involved in this study. Confidentiality was maintained throughout the procedure.

Sample Size And Sampling Methods:

This was time bound study which was conducted for one month from the date of approval from authorities. After data cleaning, pre-intervention sample size was 361 and post intervention sample size was 500. Sampling method was purposive sampling.

Study Instrument:

The data was collected with the help of pre-designed, semi-structured questionnaire. The pilot study was first conducted to check understanding of questionnaire and appropriate changes were made after getting the feedback.

Study Procedure:

The complete process of assessment and documentation of growth assessment is observed by the investigators. After the systematic review of the process, the observations are described in the form of fishbone diagram as described in fig. 1.

Study Interventions:

After these observations, With the Point of Care Quality Improvement methodology, investigators performed three PDSA cycle to improve the percentage of anthropometry data documentation and its interpretation.

Data Management And Analysis:

The data was collected using the predesigned, semi structured

questionnaire. The data was entered in MS excel office 365 and analysed using statistical package for social science (SPSS) software version 25.0. The data was presented with the help of tabular and graphical forms. Tests of significance were applied to find p value. The p value of less than 0.05 was deemed to be statistically significant.

RESULTS:

The documentation process is observed by the investigators. They have collected the feedback of the whole process. The investigators observed that there are in total four important domains viz; people, place, process and policy. They have observed different components of these domains and finally reached to the root cause. The findings are shown in following figure.

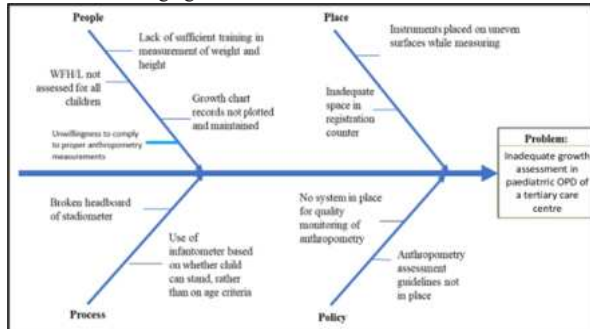


Fig. 1: Fishbone diagram of observations

In order to address these shortcomings, investigators undertook three plan-do-study-act (PDSA) cycles.

First PDSA Cycle:

There was availability of only one nurse who was responsible for assessment of growth of children visiting the OPD. The shortage of manpower was hampering the quality and process of the anthropometry documentation and also of its interpretation. In order to deal with this shortcoming, an additional staff nurse was appointed to help the previous nurse. Along with the staff nurses, the resident doctors who were posted in paediatrics OPD were also oriented about the importance of quality and accuracy of the documentation and interpretation of anthropometric data. This was conducted as the part of first plan-do-study-act (PDSA) cycle.

Second PDSA Cycle:

It was found by the observers that there was no dedicated space which was available for the documentation of the anthropometric data on the OPD case paper. Hence, in order to mention these findings and to save the time, separate stamp was prepared, and it was put on all the OPS papers. Along with this initiative, the resident doctors were sensitized about the interpretation of this anthropometric data.

Third PDSA Cycle:

It was found that plotting of the anthropometric data was time consuming for interpretation. Hence, the investigators decided to use IAP growth chart mobile app instead of physical way of plotting. The app is available free of cost on app store for both android and apple phone users. The training was conducted in small groups in order to overcome difficulties about the interpretation of the anthropometric data. This helped in quick interpretation of anthropometric data.

Throughout three cycles, an independent person who was trained about the correct methodology to assess the process was maintaining the surveillance in provided data collection sheet

Changes In Parameters:

Three PDSA cycles brought about the change in documentation as well as interpretation of anthropometric assessment. It was found that there was an improvement in documentation of data related to weight, height/length and head circumference of child. These changes were statistically significant in most of the sub-parameters. The details are depicted in table 1.

Table 1: Changes In Parameters

PARAMETER	AGE	PRE-INTERVENTION N=361 (%)	POST INTERVENTION N=500 (%)	p VALUE
Weight	0-2 months	31 (91)	40 (100)	p= 0.0924
	3 months- 5 years	163 (94)	203 (100)	p= 0.0004

Height/Length	5 years- 18 years	149 (97)	257 (100)	p= 0.0071
	0-2 months	10 (29)	39 (98)	p<0.0001
	3 months- 5 years	86 (50)	203 (100)	p<0.0001
Head Circumference	6 years- 18 years	131 (85)	257 (100)	p<0.0001
	0-2 months	4 (12)	39 (98)	p<0.0001
	3 months- 5 years	26 (15)	195 (96)	p<0.0001
Interpretation	0-2 months	0 (0)	29 (73)	p<0.0001
	3 months- 5 years	0 (0)	164 (81)	p<0.0001
	3 months- 5 years	7 (5)	168 (65)	p<0.0001

DISCUSSION:

Accuracy in the anthropometric measurement are critical for care and intervention. Failure to accurately measure these parameters has been associated with misdiagnosis and treatment of malnutrition including undernutrition and obesity in hospital setting (6). Insufficient training, lacking equipments, lack of motivation of staff, difficulty in conducting standard anthropometry in clinical settings may explain the lack of improvement in height measurements. The literature review suggest that training of the staff can improve the anthropometric measurements (7). Future research may consider investigating whether the training provided in this quality improvement project could be revised or built upon; hands-on training sessions, like the Scorpio method (8).

CONCLUSION:

The investigators were able to increase the percentage of anthropometry documentation for paediatric patients visiting OPD from current 36% to above 60% and its appropriate interpretation from current 5% to above 60% over 4 weeks. They were able to improve the documentation of anthropometry which helped in management of children; especially those with inadequate growth. This study bridged the knowledge gap.

REFERENCES:

- Suchdev PS. What pediatricians can do to address malnutrition globally and at home. *Pediatrics*. 2017;139(2):e20161666.
- Becker PJ, Nieman Carney L, Corkins MR, et al. Consensus statement of the academy of nutrition and dietetics/American Society for Parenteral and Enteral Nutrition: indicators recommended for the identification and documentation of pediatric malnutrition (undernutrition). *J Acad Nutr Diet*. 2014;114:1988–2000.
- Johnson W, Cameron N, Dickson P, et al. The reliability of routine anthropometric data collected by health workers: a cross-sectional study. *Int J Nurs Stud*. 2009;46:310–6.
- World Health Organization. World Health Organization (WHO) Multicentre Growth Reference Study Group. WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. 2006
- de Onis M, Onyango AW, Van den Broeck J, Chumlea WC, Martorell R. Measurement and standardization protocols for anthropometry used in the construction of a new international growth reference. *Food Nutr Bull*. 2004;25:S27–36
- O'Connor J, Youde LS, Allen JR, Hanson RM, Baur LA. Outcomes of a nutrition audit in a tertiary paediatric hospital: implications for service improvement. *J Paediatr Child Health*. 2004;40:295–8.
- Wood AJ, Raynes-Greenow CH, Carberry AE, Jeffery HE. Neonatal length inaccuracies in clinical practice and related percentile discrepancies detected by a simple length-board. *J Paediatr Child Health*. 2013;49:199–203.
- Hill DA. SCORPIO: a system of medical teaching. *Med Teach*. 1992;14:37–41.