

Healthcare Providers' Knowledge and Challenges They Face Regarding Growth Charts' Utilization in Primary Healthcare Practice

Sahar Hassan, Hassan Alwan Baiee¹, Mostafa Shaban², Mohammed El Sayed Zaky³, Mushtaq Talib Mahdi⁴

Department of Community Medicine, Hammurabi College of Medicine, University of Babylon, Babylon, Iraq, ¹Department of Nursing, Hilla University College, University of Babylon, Babylon, Iraq, ²Department of Geriatric Nursing, Faculty of Nursing, Cairo University, Egypt, ³Department of Medical Surgical Nursing, Faculty of Nursing, Cairo University, Cairo, Egypt, ⁴Department of Physiology, Hammurabi College of Medicine, University of Babylon, Babylon, Iraq

Abstract

Background: Growth charts have been used worldwide for about 40 years, but their use has always been fraught with problems. **Objectives:** Assessment the knowledge and challenges among healthcare providers regarding the utilization of growth charts in primary healthcare practice. **Materials and Methods:** A cross-sectional study was aimed to assess healthcare providers' knowledge toward growth chart in Al-Hilla city—Babylon Governorate—Iraq, during the period from the beginning of first January till April/2022. Data were collected using a self-administered questionnaire filled by physicians and nurses enrolled in this study after obtaining their verbal consents. **Results:** Seventy percent health workers were studied to determine their knowledge toward growth chart utilization, 51.4 were physicians, male-to-female ratio was 1:7. Results of this study revealed that 41.4% of participants had poor knowledge. Only 54.3% of the participants were exposed to previous training courses. There were significant associations between good knowledge and age group 30–39 years and exposure to combined training (theoretical and practical). **Conclusions:** More than half of the studied healthcare workers had good knowledge; the levels of knowledge are significantly associated with age, number, and duration of previous training.

Keywords: Challenges, growth charts, healthcare providers, knowledge

INTRODUCTION

Growth assessment is a key screening tool for assessing child health and nutritional wellbeing. Growth monitoring can suggest an entry point to preventive and curative health care and serves as a constituent of programs in line with significant reductions in malnutrition and mortality.^[1,2] Several studies have suggested that health practitioners' skills in plotting, application, and interpretation of growth patterns are ineffective. A survey of experienced primary-care nurses found that they had poor knowledge of growth monitoring.^[3] Recent estimates indicate that 165 million of all children under 5 years worldwide are stunted and a further 52 million are wasted with Asia and Africa recording the highest burden, whereas 14% of the global population is estimated to be undernourished.^[4,5]

Growth charts are pivotal for holistic assessment of children. Besides identifying those needing further

work-up for growth disorders, they provide a framework for public intervention.^[6] Growth monitoring is a series of activities consisting of assessing the growth of toddlers regularly through weighing every month, filling out and assessing the weighing results based on the growth chart, follow-up for each case of growth disorders in the form of counseling and referrals, follow-up in the form of policies and programs at the community level, as well as increasing motivation to empower families.^[7]

Address for correspondence: Dr. Mostafa Shaban, Department of Geriatric Nursing, Faculty of Nursing, Cairo University, V8X2+9JQ, El-Gendy, Monshaat Naser, Helwan, Cairo 11731, Egypt. E-mail: mostafashaban42@gmail.com

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In spite of growth chart being in existence for over 40 years, the use of the growth charts has always been fraught with problems. Different factors contribute to its ineffective use. Some factors relate to a lack of knowledge; previous studies have shown, for example, that health workers often do not have the ability to plot weight correctly, do not understand the charts, and fail to identify children with abnormal growth patterns. Lack of knowledge is compounded further by health workers often feeling too overwhelmed by their workload to complete the charts, not asking to view the charts and not filling them in completely.^[8-11] This study was carried out to assess healthcare providers' knowledge working in primary healthcare services about growth chart use and to identify the challenges affected its utilization.

The World Health Organization (WHO) has developed growth charts that are widely used in the United States and many other countries. These charts provide a way to assess whether a child is growing at a normal rate and can help identify potential growth problems.^[12] Growth charts can also be used to track a child's progress over time, and to detect potential health problems, such as malnutrition or hormonal imbalances. They can also be used to monitor the effectiveness of treatment for certain conditions, such as growth-hormone deficiency.^[13]

It is important to note that growth charts should be used in conjunction with other assessments, such as a physical examination, and should not be used as the sole method for evaluating a child's growth and development. There are different growth charts for boys and girls and for different age groups.^[14] The growth charts for infants and young children are divided into percentiles, which indicate how a child's measurement compares to other children of the same age and sex. For example, if a child's weight is in the 50th percentile, it means that 50% of children of the same age and sex weigh the same or less than the child.^[15]

Growth charts are typically updated every few years to reflect changes in the population's growth patterns. It is important to use the most recent growth charts available. Growth charts are also used to track a child's growth over time.^[16] By plotting a child's measurements on the chart at regular intervals, healthcare providers can see whether the child is growing at a steady rate or if there are any sudden changes. This can help identify any potential growth problems or health issues early on. It is important to note that growth charts are not a diagnostic tool and cannot be used to determine the cause of a child's growth problem. They can only provide an indication that a problem may exist and further evaluation is needed.^[17]

MATERIALS AND METHODS

A cross-sectional study was used to collect and interpret data about the state of knowledge of healthcare providers working in Hilla city—Babylon governorate primary

health centers (PHCCs), which were selected using a convenient sampling technique (11 PHCCs from 2 healthcare sectors both primary and secondary centers); study period start from the first of January till April 2022.

The study protocol was permitted by ethical research committee in Hammurabi College of Medicine, University of Babylon, Iraq. The initial agreement was acquired from the training and development center in Babylon health directorate. An official agreement was acquired from Al-Hilla first primary healthcare sector and Al-Hilla second primary healthcare sector.

Data collection method

Through an extensive review of literatures, previously published articles related to the same topic of this study, the questionnaire is adopted as a tool for data collection^[9,18,19] (Appendix 1).

Ethical Approval

Professional ethics for nurses will stated the ideal path in which they should behave in all relationships including patients, patient's family, co-workers. The ethical rules followed by the researcher when carrying out nursing researches directed to secure individuals right and welfare. Formal agreement obtained for all nurses who participate in the study after a brief introduction of the study objectives and importance. The study protocol and patient informed consent were approved by Babil Health Directorate, Iraq, reference number 89 (dated January 11, 2023).

RESULTS

A purposive nonprobability sample of 70 healthcare providers working at Al-Hilla city primary healthcare centers were investigated to determine their knowledge about growth-monitoring chart and to identify the main challenges they face during the utilization and interpretation of this important children-growth-monitoring tool during daily practice.

Physicians constitute 36 (51.4%), the vast majority of them are females 61 (87.1%); most of participants were in the age group less than 28 years (40.0%).

The average number of training courses per participant is 1.37, with a standard deviation of 2.1 courses. The average duration of each training course is 2.16 days, with a standard deviation of 2.12 days. The detailed sociodemographic details are summarized in Table 1.

The mean and standard deviation were calculated for each scale item and for total scale score and the result in Table 2 shows that the "using growth curve creates problems and the frequency of taking the growth measurements had a lower mean score" (0.49 and 0.61), while the item "the growth curve is a method of detecting malnutrition and

Table 1: Distribution of the study sample according to sociodemographic (N = 70)

Variables	Frequency	Percentage
Occupation		
Physicians	36	51.4
Nurses	34	48.6
Gender		
Male	9	12.9
Female	61	87.1
Age groups		
<28 years	28	40.0
28–40 years	26	37.1
>40 years	16	22.9
Training courses		
No	32	45.7
Yes	38	54.3
Course types		
Theoretical	24	34.3
Practical	14	20.0
Both	32	45.7
Number of courses (mean $\pm$ SD)		1.37 $\pm$ 2.1
Course duration (days) (mean $\pm$ SD)		2.16 $\pm$ 2.12
The level of health care worker knowledge regarding growth chart utilization		

is the growth curve carried out for each child” had a highest mean score (1.84 and 1.81), then the total mean scale score was calculated and found to be 1.27 ± 0.32 , and then categorized and the results revealed that 29 (41.4%) healthcare workers have a poor knowledge level, while 41 (58.6%) of them have a good knowledge level regarding growth curve.

Regarding the associated factors that correlated with growth chart knowledge among healthcare providers in primary healthcare center, a multiple linear regression was used and seven predictors were entered (gender, age, occupation, training courses, course number, course type, and course duration) after converting variables have more than two levels into dummy variables and set as age <28 years old and combined training course reference category. The results presented in Table 3 show that the regression model was significant ($F = 71.730$, $P \leq 0.001$) and that 39.5% of the variation in the knowledge score could be explained by the factors considered together. The participants’ age group was found to be a significant predictor, with those in the age group of 30–39 years having a growth chart knowledge score that was 0.176 units higher than those under 28 years old ($t = 2.055$, $P = 0.044$). Additionally, attending training courses was also found to

Table 2: Growth chart knowledge items’ descriptive statistics

S. No.	Items	Mean	SD
1	What is the definition of a child’s growth curve?	0.79	0.85
2	Causes of delayed growth?	1.04	0.69
3	What is the frequency of taking the growth measurements?	0.61	0.89
4	Is the growth curve carried out for each child?	1.81	0.46
5	The growth curve is a method of detecting malnutrition	1.84	0.50
6	The growth curve is a diagnostic method	1.67	0.58
7	Growth curves can be used for comparison between countries and some of them	1.29	0.85
8	Using growth curves makes the referral system easier	1.60	0.73
9	The growth curve is a tool for decision-making	1.59	0.65
10	Using the growth curve creates problems	0.49	0.76
	Total scale mean score	1.27	0.32
	Poor knowledge	29 (41.4%)	
	Good knowledge	41 (58.6%)	

Table 3: Associated factors associated with growth chart knowledge

Predictors	B	Std. error	T value	Sig.
Gender	0.071	0.115	0.617	0.539
Occupation	−0.039	0.038	1.029	0.307
Age group				
30–39 years	0.176	0.086	2.055	0.044
≥40 years	0.063	0.099	0.642	0.523
Training course (yes)	0.168	0.082	2.046	0.045
Course types				
Theoretical	−0.287	0.080	3.568	<0.001
Practical	−0.236	0.075	3.159	0.003
Course duration	0.280	0.124	2.252	0.028
Number of courses	0.630	0.059	10.614	<0.001

Table 4: Challenges that health care workers face regarding utilization of growth chart

Challenges	Frequency	Percentage
There are problems with the scale in the PHCC	27	38.6
The mother may forget the follow-up sheet for the child	20	28.6
There is no ruler to take the child's high	13	18.6
Others	10	14.3

be a significant predictor of knowledge regarding growth curves, with those who attended training courses having a knowledge score that was 0.168 units higher than those who did not attend ($t = 2.046$, $P = 0.045$).

Moreover, the course types showed a statistically significant predictor as well; for those attended, theoretical course and practical course only would lower knowledge score by ($B = -0.287$, $t = 3.568$, $P < 0.001$ and $B = -0.236$, $t = 3.159$, $P = 0.003$) unit regarding growth chart than who attended a combined course (theoretical and practical). Furthermore, if the course duration increases by 1 day and the number of course increases by one course, the knowledge score regarding growth curve knowledge would expect to increase by ($B = 0.280$, $t = 2.252$, $P = 0.028$) and ($B = 0.630$, $t = 10.614$, $P < 0.001$), respectively.

The gender, occupation, and age group ≥ 40 years demonstrated nonsignificant association with growth chart knowledge score among healthcare workers in Al-Hilla primary healthcare services $P < 0.05$ for all.

The challenges that healthcare workers face regarding growth chart measurement in primary healthcare centers. Challenges that health care workers face regarding growth chart measurement are explained, and the results yielded in Table 4 show that “there are problems with the scale in the ward” and “the mother may forget the follow-up sheet for the child” had the highest proportion 27 (38.6%) and 20 (28.6%), respectively.

DISCUSSION

Growth-monitoring reference data help physicians and other healthcare providers to diagnose malnutrition, overweight, obesity, and other growth-related health problems.^[20] Healthcare providers must have good knowledge about how to utilize, plot, and interpret road to health chart^[21] and follow WHO recommendations to assess infant and child feedings and identify growth abnormalities early to council caregiver and intervene by prompt treatment.^[22] The current study reveals that 58.6% of the healthcare providers enrolled in this investigation had good knowledge about the utilization of growth chart, and the good knowledge level of this study is much better than the results reported by other researchers in Iraq/Baghdad, who studied 200 healthcare providers; only 9% of them exhibit good knowledge.^[13] This difference

may be related to the difference of sample size and the methodology of data collection or may be related to the workload. Although workload is common problem in Iraq, but some PHCCs suffer more from it because of shortage and misdistribution of physicians.^[23]

Better result was found in a study, done by Majeed A., in Iraq, who investigated 127 primary healthcare providers, and reported that 63.8% of participants had good knowledge of growth chart use.^[24]

About half of the study sample in this study was exposed to previous training courses about growth chart use. These findings are better than the rate of PHC workers training rate reported by Babiker *et al.*^[25] and in another study also done in Iraq by Yasin *et al.*^[26], who studied the knowledge of 84 health workers from 24 different PHCCs in Salahuddin Governorate, reported that 50% of them had previous training, but lower than the training rate of health workers of PHCCs in Baquba who showed that 78.4% of the study group had previously been trained.

The using growth curve creates problems and the frequency of taking the growth measurements had a lower mean score, while the item “The growth curve is a method of detecting malnutrition and the growth curve carried out for each child” had the highest mean score; these findings are comparable to the results from a study conducted in Ethiopia^[27] and in a study conducted in Iraq—Baghdad.^[28]

The present study depicts that there is significant association between increasing knowledge toward using growth chart among primary healthcare workers and occupation, age (30–39 years), and exposure to training courses especially combined type; this goes in line but disagrees with the findings of other studies.^[29]

The main challenges in utilization of growth chart in the present study are the problems with scale in the PHCC followed by forgetting of mothers to follow-up sheet for the child.

CONCLUSION

More than half of the studied healthcare workers had good knowledge about growth chart. The levels of knowledge are significantly associated with age, number, and duration of previous training courses. The main challenges in using growth charts are the problems with the scale in the primary healthcare center followed by the forgetting of mothers to follow-up sheet for the child.

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Conflicts of interest

There are no conflicts of interest.

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APPENDIX 1: QUESTIONNAIRE FORM

Part 1: Demographic characteristics

1. Occupation: (Please select one) a. Physician b. Nurse
2. Gender: (Please select one) a. Male b. Female
3. Age Group: (Please select one) a. Less than 28 years
b. 28–40 years c. 40 and above

Part 2: Assessment of Healthcare Providers' Knowledge towards Growth Charts

4. How would you define growth charts?
5. What is the purpose of growth charts?
6. How often do you take measurements and schedule child visits when using growth charts?

7. How important do you feel it is to use growth charts in your practice? (Please rate on a scale of 1–5, with 1 being not important and 5 being very important)

Part 3: Challenges Facing Healthcare Workers Regarding Growth Charts

8. How often do you encounter difficulty in obtaining accurate measurements when using growth charts? (Please rate on a scale of 1–5, with 1 being never and 5 being always)
9. How often do you encounter difficulty in obtaining growth charts? (Please rate on a scale of 1–5, with 1 being never and 5 being always)