

Knowledge, Attitude and Practice of Health Care Providers at Primary Health Care Setting Regarding Stunting Among Egyptian Under Five Years

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Abstract

Background: Children malnutrition constitutes one of the major public health problems in Egypt. Healthcare personnel lack adequate nutrition knowledge and they also lack the competence and skills to provide basic nutrition advice to their clients.

Aim: To assess the knowledge, attitude and practice (KAP) of health care providers about chronic malnutrition (stunting) in children under-five in primary health care (PHC) centers and to identify the main items in which health care providers are trained including Integrated Management of Childhood Illness (IMCI) supporting the problem of stunting.

Subjects and Methods: This is a cross-sectional descriptive study including all healthcare providers (N=51 doctors and 31 nurses), who were involved in the nutrition care of children under-five at PHC centers in Giza Governorate, at the time of the study. Data were collected using a structured questionnaire for KAP of healthcare providers regarding chronic malnutrition (stunting) and training of healthcare providers, and using a checklist to record performance of healthcare providers providing nutrition related services to children under-five.

Results: Overall, the mean percent knowledge score of healthcare providers about 'main health problems', 'main nutritional problems' and 'nutritional assessment methods' in children under five was below 50. Healthcare providers had overall positive attitude towards characteristics and management of stunting in children under-five. The mean percent score for 'Reported Practice related to breast feeding' was higher in nurses, where as reported practice related to complementary feeding was higher in doctors. More than 64.5% of healthcare providers reported correct practice regarding recommendation of micronutrient supplementation to children and mothers. Overall healthcare providers' performance regarding communication and nutrition related services to children under five was suboptimal, but the nurses performing better than doctors. More than 70% of healthcare providers were trained in IMCI but there was a deficiency in nutritional training.

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Conclusion: The healthcare providers had optimal knowledge regarding some aspects of stunting. There was no significant difference between doctors' and nurses' KAP in most of the items. Although they had overall positive attitude towards stunting and the majority were trained in IMCI, they showed suboptimal performance during care of children under five at PHC. The results of the study directed us to some of the recommendations as, preservice, on job and continuous practical training of the health care providers on comprehensive management of malnutrition, improving the quality of health care services in PHCs and prioritizing key 1000 days window concepts in nutrition counseling for future trainings.

Key Words: Knowledge Attitude and Practice (KAP) – Training, healthcare providers (HCP) – Primary health-care (PHC) – Chronic malnutrition – Stunting.

Introduction

MORE than one billion children are severely deprived of at least one of the essential goods and services they require to survive, grow and develop [1]. As a result almost 5.9 million children under age five died in 2015, 16000 every day [2].

In Egypt, the major causes of under 5 mortality were preterm birth related complications (20%) followed by pneumonia (11%) and congenital abnormalities (10%). Infection such as pneumonia and diarrhea, accounted for about 18% of under 5 mortality [3].

Malnutrition continues to be a significant public health and development concern around the world with about one-third of the world's children is malnourished. Malnutrition is the underlying cause of more than 2.6 million child deaths each year [4].

Stunting is the most prominent physical manifestation of chronic malnutrition [5]. It is largely an irreversible outcome of inadequate nutrition and repeated bouts of infection during the first

1000 days of a child's life. Stunting in a child is not only about being too short for his or her age. It can also mean suffering from stunted development of the brain and cognitive capacity [6]. According to the latest United Nations estimates, about 165 million children under 5 years of age, or 26%, were stunted in 2011 [7].

Although Egypt has achieved remarkable progress in child health in the past decade; the country achieved an under 5 mortality rate below the MDG 4 [8], yet, malnutrition remains a public health problem in Egypt, especially in rural Upper Egypt [9]. The Trends in nutrition status during the period between 2000 and 2014 Egypt Demographic and Health Survey (EDHS) surveys among children, show a reduction in the percentage stunted (21%) compared to levels (29%) observed in the earlier EDHS surveys, particularly the 2008 Egypt DHS. The percentage of children with wasting had increased from 3% in 2000 to be 8% in 2014. The percentage of children with underweight had increased from 4% in 2000 to be 6% in year 2014 [10].

Child malnutrition is multifactorial, that need articulated efforts between policy, health system and health manpower [11,12]. WHO, in collaboration with UNICEF and other agencies, developed the Integrated Management of Childhood Illness (IMCI) strategy in the 1990s [13]. These guidelines should support the rationale, effective and affordable use of drugs and diagnostic tools at the PHC level especially if the diagnostic tools are limited [14].

In Egypt, the Health Sector Reform Program (HSRP) is promoting the Family Health Model (FHM) as the new system of family-based Primary Health Care (PHC). The FHM offers families a basic package of integrated services i.e. the Basic Benefit Package (BBP) including interventions to address maternal, child and adult mortality and morbidity in the PHC facilities [15]. Health workers have a vital role to play in promoting good nutrition in the first 1,000 days [16]. Capitalizing on health care providers to provide correct and adequate nutrition advice/counseling to caregivers is one of the best strategies to improve children's nutritional status [17].

Despite all that is known about chronic malnutrition from the literature, very few investigators have attempted to evaluate if or how frontline healthcare providers translate their knowledge into quality nutrition consultations with mothers during 1000 days window [18].

The population of Egypt estimated to be about 93million people, with percentage of population under 15, 32.7% [19] and under 5, 11.2% [20] is in great need for conducting research in this aspect. Therefore to address the lack of evidence about providers' existing knowledge and practice, the current study, conducted in six PHC centers in Giza Governate, focused specifically on the role that healthcare providers' KAP and trainings play towards the management of poor nutritional status in children under five years of age, in their everyday practice at PHCs.

Aim of work:

The goal of the current study is to improve the nutritional care of Egyptian children under -five in primary health care centers in Giza Governorate. The specific objectives are to 'assess the knowledge, attitude and practice (KAP) of health care providers about chronic malnutrition (stunting) in children under-five in primary health care (PHC) centers' and 'to identify the main items in which health care provides are trained including Integrated Management of Childhood Illness (IMCI) supporting the problem of stunting'.

Subjects and Methods

The current study is a cross-sectional descriptive study conducted from March 2015 to May 2016, in six Primary Health Care (PHC) centers in Giza Governate.

Sample Size and Technique:

All health care providers (N=51 doctors and 31 nurses), working in the selected six primary health care (PHC) centers, who were involved in the nutrition care of children under-five, at the time of the study were included. A convenient sample of six PHC centers were chosen because of:

- Geographical accessibility
- Previous collaboration of faculty of Public Health and Community Medicine Department, Cairo University with these primary health care centers.

Data collection:

A Self-administered structured questionnaire in English language for physicians and in Arabic language for nurses was used. Close ended questions with pre coding was the pattern followed for most of the questions, so that the information can easily be computed. However there were some open ended questions which were coded after data collection. Direct observation of clinic operations was done, using checklist to record the performance

of each doctor and nurse while providing nutritional services and counseling to caregivers of children under five.

The questionnaire and the checklist were developed based on WHO Guidelines to evaluate the care of children under five years adapted to the context of the current study. The tools of current study were revised by the Supervisors and validated according to pilot study on two Physicians and two Nurses to assess the ease of comprehension and relevance to the intended topic. The questionnaire included three sections: Section one included questions about Sociodemographic characteristics (age, sex and occupation of the respondents, professional rank/qualifications, duties and duration of work in health facility) and Training characteristics of healthcare providers. Section two contained the KAP domain; items for measuring knowledge of healthcare providers (Data about the Main health problems and the Main nutritional problems in children under five, Nutritional Assessment Methods), items for healthcare providers' attitude (towards characteristics of stunting and their perception towards IMCI including; Almost all stunting takes place in first 1000 days of child life; Three indices of physical growth-height-for-age, weight-for-height, and weight-for-age to assess the nutritional status of children; Animal protein gap in Egypt important factor in malnutrition; Poor maternal nutrition contribute to stunting; Exclusively breastfed infants suffer less from diarrhea and acute respiratory infections; Growth monitoring the most cost-effective tool for monitoring the nutritional status; Intervention strategies to prevent stunting should target the first 1000 days of child life; IMCI ensures complete check up of the child, proper follow up of cases, proper health education to mother, were assessed using Likert scale (1-5) scaled in a positive direction, with a score range scaled. 1-Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly Agree) and items intended to describe their reported practice in terms of (health education of caregivers, micronutrient supplementation, breast feeding, complementary feeding).

Section Three was designed to observe the healthcare providers' performance regarding 'Communication' and 'Nutrition related services including Growth Monitoring and IMCI case management' to children under five at health facilities.

The researcher was accompanied by one of the student, studying Masters in Philosophy from Ain Shams University, Cairo, to overcome the language barrier of researcher, during these sessions to

comprehend the counseling activities between the healthcare providers and caregivers.

Ethical considerations:

The study was approved by the Medical Research Committee in the Public Health and Community Medicine Department, Cairo University and Ethical Committee in Cairo University. The data collection tools (Structured Questionnaire and Observation Checklist) were approved by the study Supervisors in the Public Health and Community Medicine Department.

All the included health care providers were treated according to the Helsinki Declaration of biomedical ethics [21]. It was clearly stated that the study is a thesis conducted as a step in the Researcher's Master's Degree.

Statistical analysis:

Data were entered and analyzed using Statistical Package of Social Science Software program, version 15 (SPSS). The data were summarized using descriptive statistics: mean percent and standard deviation for some quantitative variables. Number and percentage were used for qualitative values. Statistical differences between groups (doctors and nurses) were tested using Chi Square test for qualitative variables and independent sample *t*-test for quantitative normally distributed variables. *p*-values equal to or less than 0.05 were considered statistically significant [22].

The mean percent score was calculated, for some of the variables, by adding all the sub items and dividing by the maximum score of item itself, multiplied by 100, where required. The higher the scoring value, the better the level of healthcare providers' KAP and performance. The cutoff point of 60 was used by the researcher to differentiate between optimal (60) and suboptimal (<60) for healthcare providers' KAP and performance, and also it was used to differentiate between positive attitude (60) and negative attitude (<60).

Results

Among the 81 study participants, there were 62.1% doctors and 37.8% nurses, in the selected PHC centers. About 64.6% of the studied sample were 35 years old or less. More than half of the studied sample had a working experience of years. Majority of the healthcare providers (91.5%) were engaged in 'Direct patient care' (Table 1).

Majority of the studied sample (86.6%) had some sort of the training. More than 70% of health

care providers were trained in 'IMCI', but there was deficient nutritional training as follows: About (31% and 45%) of doctors and nurses respectively were trained in 'Breastfeeding and Complementary feeding', (33% and 23%) in 'Diarrhea Management' and (21.6% and 19.4%) in 'Nutritional Assessment' of children'. About one third of nurses and only about 9.8% of doctors had other trainings like MCH, CSA, Growth Monitoring, First Aid (Table 2).

The mean percent knowledge score of health-care providers about 'main health problems', 'main nutritional problems' and 'nutritional assessment methods' in children under five was below 50 (Table 3). However, significantly higher proportion of nurses had correct knowledge about 'anthropometric measurements' than doctors (p -value ≤ 0.001) (Table 4).

Table (1): Sociodemographic characteristics of health care providers (doctors and nurses) in the study sample (N=82).

Sociodemographic characteristics	N=82	%
<i>Age in years:</i>		
≤35	53	64.6
>35	29	35.9
<i>Sex:</i>		
Male	11	13.4
Female	71	86.6
<i>Occupation:</i>		
Doctors	51	62.1
Nurses	31	37.8
<i>Duties in health facility:</i>		
Direct patient care	75	91.5
Others*	7	8.5
<i>Duration of work (years):</i>		
≤5 years	42	51.2
>5 years	40	48.8

Others*: Administration/Supervision, Teaching and Research.

Table (2): Training courses of health care providers by occupation.

Training courses*	Doctors=51		Nurses=31		p-value
	N	%	N	%	
IMCI	37	72.5	23	74.2	0.49
Breastfeeding & Complementary feeding	16	31.4	14	45.2	0.20
Family Planning	13	25.4	7	22.6	0.88
Malnutrition Management	5	9.8	2	6.5	0.45
Diarrhea Management	17	33.3	7	22.6	0.22
Nutritional assessment of children	11	21.6	6	19.4	0.42
No training	7	13.7	4	12.9	0.96
Others**	5	9.8	10	32.2	0.47

* More than one answer

**Maternal and Child Health Care, Certified Nursing Assistant (CSA), First aid, Growth monitoring

Table (3): Mean Percent for knowledge of healthcare providers about main health problems, main nutritional problems and nutritional assessment in children under-five.

	Doctors=51		Nurses=31		p-value
	Mean Percent ±SD***	Mean Percent ±SD	Mean Percent ±SD	Mean Percent ±SD	
Main health problems in children underfive*	49.5±22.0	47.5±21.7			0.70
Main nutritional problems**	35.6±19.7	28.3±16.1			0.07
Nutritional assessment methods	41.9±23.0	23.2±12.7			≤0.001

* Diarrhea, ARI, Nutritional problems

**PEM, Iron Deficiency Anemias, Iodine Deficiency Disorders and ricketts.

SD*** Standard Deviation.

Note: p-value is significant at <0.05; p-value highly significant =≤0.001

Table (4): Percent of healthcare providers regarding their knowledge about nutritional assessment methods.

Knowledge about Nutritional Assessment Methods	Doctors=51		Nurses=31		p-value
	N	%	N	%	
Anthropometric measurements	11	23.4	21	75	≤0.001
Biochemical tests	20	42.6	6	21.4	0.63
Clinical assessments	8	17	1	3.6	0.08
Dietary methods	8	17	0	0	

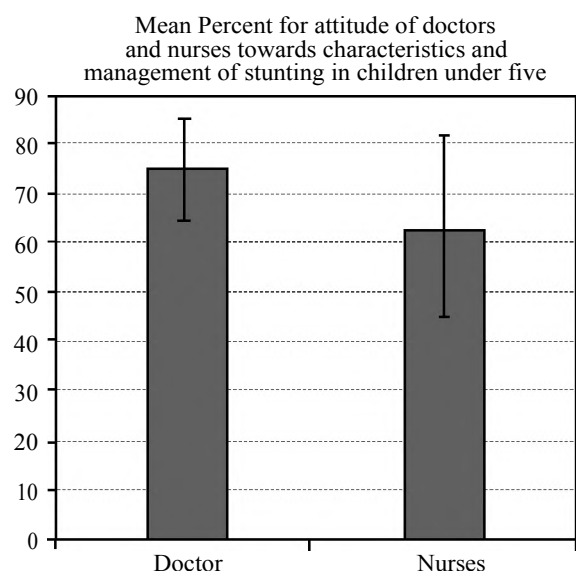


Fig. (1): Mean Percent for attitude of doctors and nurses towards characteristics and management of stunting in children under five.

Table (5): Mean Percent of healthcare providers regarding their reported practice.

Reported Practice	Doctors=51		Nurses=31		p-value
	Mean Percent	±SD	Mean Percent	±SD	
Health education of mothers*	48.8±16.0		40.3±18.6		0.03
Breast feeding*	59.4±25.2		64.5±20.9		0.32
Weaning**	48.5±22.7		42.7±31.2		0.37

* Total Mean Percent Score.

**1 item only, 'Recommendations on way to introduce solid foods for an infant over 6 months' in order to compare the results with the other two components in the table.

Table (6): Percent of healthcare providers' reported practice regarding micronutrient supplementation to children and mothers.

Reported practice	Doctors=51		Nurses=31		p-value
	N	%	N	%	
Micronutrients supplementation for women during pregnancy (iron and folic acid)	38	74.5	20	64.5	0.33
Vitamin A supplementation for children under five	33	64.7	22	71.0	0.81
Zinc recommendation in children with diarrhea	51	100	31	100	

Table (7): Healthcare providers' total mean percent performance score regarding Communication, Growth monitoring and IMCI case management to children under five, at health facilities.

Performance regarding	Doctors=31		Nurses=18		p-value
	Mean	±SD	Mean	±SD	
Communication, Growth monitoring and IMCI case management					
Communication skills	40.6±26.7		30.9±19.7		0.14
Growth Monitoring	26.4±17.8		65.1±21.8		≤0.000
<i>Case management of sick child (IMCI):</i>					
1- Assessment and classification of sick child	58.6±23.9		52.7±31.9		0.11
2- Treatment of the sick child	47.0±19.9		32.4±15.6		≤0.001
3- Advice and counseling given to caregiver of sick child	40.15±20.67		43.05±18.79		0.61
Total Mean Percent Performance Score	44.3±11.01		49.1±13.05		0.14

Although healthcare providers had positive attitude towards characteristics and management of stunting in children under five; the total mean percent score for doctors' attitude was significantly higher versus nurses (p -value <0.05) (Fig. 1).

The total mean percent score for doctors' and nurses' reported practice related to health education of mothers was suboptimal; 48 and 40 respectively with (p -value <0.05). The total mean percent score for 'Reported Practice related to breast feeding' was higher in nurses (64.5) than doctors (59.4) without significant difference. While, the mean percent score for doctors' and nurses' recommendation 'on way to introduce solid foods for an infant over 6 months' was higher in doctors than in nurses (Table 5). More than 64.5% of healthcare providers' reported correct practice regarding 'micronutrient supplementation to children under five and pregnant mothers' (Table 6).

Overall healthcare providers' performance regarding communication and nutrition related services was suboptimal; however the nurses performed better than doctors as shown by the total mean percent performance score for the observed doctors (44.3) and nurses (49.1). The total mean percent performance score of doctors and nurses for 'Assessment and classification of sick child' was (58.6) and (52.7) without any significant difference; 'Treatment of the sick child' was (47.0) and (32.4) (p -value ≤0.001) and 'Advice and counseling given to caregiver of sick child' was (40.15) and (43.05) without significant difference, respectively (Table 7).

Discussion

Majority of the doctors (61.8%) were 'General Practitioners' supported by the fact that most of the doctors (57%), had work experience less than 2 years (recent graduates) and about three quarters were less than 35 years old (Table 1). This is consistent with Egyptian Nutrition Landscape Analysis Report, 2012, in which sample largely consisted of nurses and doctors and 31% of the health workers who were recent graduates, were largely general practitioners [23]. However, in current study majority of nurses (87%) had experience of more than 2 years and more than half of the nurses were 35 years old or above (Table 1).

The majority of studied sample had some sort of the training except 13.4% who had no training at all. There was deficient nutritional training. Strangely 'Maternal and child health care (MCH)' and 'Growth monitoring' were not the priority, less than 13% of healthcare providers were trained in it (Table 2).

These findings can be compared to Egyptian Nutrition Landscape Analysis Report, 2012, where in-service training of health workers on infant

feeding, child growth and cognitive development, new growth charts, micronutrient supplementation was suboptimal and should be prioritized [23]. However 'IMCI' was the only area where physicians and nurses had almost similar exposure to training; more than 70% of healthcare providers (74.2% and 72.5% of nurses and doctors respectively) were trained in IMCI. This could be due to the fact that when IMCI guidelines were introduced in 1997 in the primary health care units in Egypt, to help workers to identify and refer severely ill children after administration of appropriate pre-referral treatment [24], with the training provided in 7 days and 4 days courses for physicians and nurses respectively [25], this led to negligence in the other two important courses 'MCH' and 'Growth Monitoring'.

The current study revealed that the mean percent knowledge score of healthcare providers about 'main health problems' and about 'main nutritional problems' in children under five was about 50 and 30 respectively (Table 3). This could be due to 'limited nutrition education in medical school and in postgraduate studies (namely master degree), which is in agreement with the findings in a study done by Mowe et al., [26], and also due to the deficit in implementation of practical part of it. However, now a days there is a sub specialty of Nutrition in Public health and Community Medicine which will increase the KAP of undergraduate and post graduate students in this critical level of subject.

However in contrast to current study, majority of the healthcare providers were aware of the most common health problems in children, including malnutrition, ARI and diarrhea in a study by Kalule et al., [27]. Regarding 'Nutritional Assessment Methods', doctors had significantly higher mean percent knowledge score than nurses ($p < 0.001$) (Table 3). However, on identifying the individual items of 'Nutritional Assessment Methods', significantly higher proportion of nurses had correct knowledge about 'anthropometric measurements' versus doctors (p -value < 0.001) (Table 4). This could be due to the reason that the majority of nurses (87%) had work experience of more than 2 years and they were engaged in anthropometric measurements of clients practicing on daily basis. This is in contrast to the findings of Yalcin et al., [28], who in their study on 'Nutrition knowledge level of nurses in Zonguldaki in Turkey' indicated that long-term clinical experience without any special education on nutrition does not increase the nutrition 'knowledge'.

In current study, the overall mean percent score for doctors' and nurses' reported practice related to health education of mothers was suboptimal; 48 and 40 respectively with (p -value < 0.03) (Table 5).

It could be attributed to the 'barriers identified by healthcare providers in the health education of caregivers of children under five' in the current study, the most common barriers reported were; 'Mother's cultural/traditional issues', 'lack of time to speak with the patient', 'lack of trainings', 'lack of health care providers' knowledge' and 'lack of women's knowledge'.

The total mean percent score for 'Reported Practice related to breast feeding' was higher in nurses (64.5) than doctors (59.4) without significant difference. This could be attributed to more nurses trained in 'Breastfeeding and Complementary feeding' and 'Maternal and Child Health Care' than doctors for same domains (Table 2). In current study, the mean percent score for doctors' and nurses' reported recommendation 'on way to introduce solid foods for an infant over 6 months' was higher in doctors than nurses (Table 5); it could be due to undergraduate knowledge of doctors as majority were fresh graduates.

In current study, observation of health care providers while providing nutrition related services and observing their communication skills revealed achievement of suboptimal total mean percent performance score for the observed doctors (44.3) and nurses (49.1) (Table 7). However, an overall higher performance of nurses as compared to doctors can be explained by fact that majority of nurses (87%) had experience of more than 2 years and more than half of the nurses were 35 years old or above (Table 1), and overall nurses participated in more training courses than doctors in child health and nutrition (Table 2).

In the current study, healthcare providers did not provide the seven components of communication, to each caregiver; the mean percent performance score in communication skill was suboptimal, (40.6) and (30.9) for doctors and nurses respectively. However nurses revealed significantly higher total mean percent performance score of growth monitoring than doctors (p -value < 0.000) (Table 7). This could be due to different job description/work organization for nurses and doctors and lack of availability of growth charts with doctors (as suggested by the managers and doctors of health facilities after probing them) and there seemed to be ambiguity of role as they also reported it's the duty of nurses. This is similar to findings in a

Qualitative Study in Ethiopia' by Bilal et al., [29], where surveyor mentioned that physicians who were working in the hospital and treating malnourished children were not involved in Growth monitoring and promotion.

Given that the goal of current study was to improve nutritional care of children under five and IMCI strategy combines improved management of childhood illnesses with aspects of nutrition, immunization, and several other important influences on child health including maternal health [30], in the current study, the four components of IMCI case management: Child status assessment, classification, treatment, advice/counseling to the mother were included in the checklist to observe performance of healthcare providers while providing nutrition related services to children under five in the health facilities. Moreover, only the quantity of tasks was observed as researcher was not an IMCI trained.

Although more than 70 % of healthcare providers were trained in IMCI (Table 2), and healthcare providers had positive attitude about IMCI (Fig. 1), they showed suboptimal performance in IMCI case management; none of the four components exceeded the mean percent performance score of 58.6 showing a deficit of performance (Tables 7). The lack of implementation could be due to healthcare providers' perceived needs of more 'human resources, training and financial resources' in current study. It could also be explained by what was suggested according to 'The strategy on IMCI, Egypt, 1997' that despite attention has recently been paid to supervision and a supervisory skills training package, one issue has been the turnover of trained staff, and despite being applied for years, IMCI guidelines still show certain areas of poor adherence, an issue that need further investigation in order to maximize physicians' adherence and achieve the best of their performance [31]. The results of the study directed us to some of the recommendations as follows: Preservice, on job and continuous practical training of the health care providers on comprehensive management of malnutrition including the fundamental aspects of stunting; Improving the quality of health care services in PHCs; Prioritizing key 1000 days window concepts in nutrition counseling for future trainings and Introduction of the low cost tested intervention in primary health care facilities.

Conclusion:

The healthcare providers had optimal knowledge regarding some aspects of stunting. There was no significant difference between doctors' and

nurses' KAP in most of the items. Although they had overall positive attitude towards stunting and the majority were trained in IMCI, they showed suboptimal performance during care of children under five at PHC.

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تكون سوء التغذية بإحدى المشا كل الهامة فى الصحة العامة فى مصر ويلعب مقدمى الصحة ونقص معرفة التغذية والمهارات دور فى قلة التثقيف الغذائى

الغرض من البحث: لتقييم المعرفة والاتجاهات والممارسات لدى مقدمى الخدمة فى المراكز الصحية بالنسبة لنقص الغذاء المزمن (قصر القامة) فى الأطفال أقل من ٥ سنوات كذلك البرنامج المتكامل لدمج خدمات الأطفال المرضى (IMCI) فى التغلب على هذه المشكلة.

طريقة البحث: هى دراسة مقطعية وصفية شملت كل مقدمى الخدمات (٥١ طبيب و ٣١ ممرضة) ولهم علاقة برعاية التغذية فى الأطفال أقل من ٥ سنوات فى المركز الصحية بالجيزة - تم عمل استبيان للتعرف على المعلومات والاتجاهات والممارسات (KAP) بالنسبة لسوء التغذية كذلك مدى التدريب باستخدام طريقة للتعرف على طريقة الأداء أثناء تقديم هذه الخدمة.

النتائج: كانت نسبة معرفة مقدمى الخدمة فى أهمية المشاكل الصحية وطريقة تقييم الحالة الغذائية فى الأطفال أقل من ٥ سنوات - وكانت الإتجاهات إيجابية عن أسباب سوء التغذية المزمن ومميزات الأطفال - كانت نسبة الممرضات فى ممارسة الرضاعة الطبيعية أعلى ولكن بالنسبة للأغذية التى يجب إضافتها كانت أعلى بالنسبة للأطفال وكانت مقدمى الخدمة فى إعطاء الفيتامينات والحديد حوالى ٦٤.٥٪ بالنسبة للأطفال والأمهات كانت نسبة مقدمى الخدمة بالنسبة لطرق الإتصال وخدمات التغذية أقل من المتوقع وبالنسبة للتمريض أعلى من الأطباء أكثر من ٧٠٪ من مقدمى الخدمة تلقوا تدريب فى الخدمات المتخصصة للطفل المريض (IMCI) ولكنها كانت ناقصة فى التغذية ويمكن استنتاج وكانت النتائج تشير ان هناك مجموعة من الممارسة والمعرفة جيدة ولم يكن هناك فرق بين الأطباء والتمريض فى أغلب النتائج كذلك كانت الإتجاهات إيجابية نحو نقص التغذية المزمن والمعرفة فى الخدمات الموجهة للطفل المريض.

كلمات هامة: المعرفة - الإتجاهات - الممارسة - (KAP) تدريب مقدمى الخدمة - نقص التغذية المزمن - خدمات الرعاية الأولية.