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Original Article

Adherence to paediatric clinical guidelines in hospitals in the Southern Province of Sri Lanka

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Key words: paediatric, clinical guidelines, adherence/compliance, bronchial asthma, simple febrile convulsion, acute gastro enteritis

Abstract

Introduction

Clinical guidelines facilitate translation of the most recent evidence into clinical practice and help standardize, improve, and maintain consistency in patient care. This study focuses on compliance to paediatric national guidelines (PNGs) for bronchial asthma (BA), simple febrile convulsions (SFC) and acute gastroenteritis (AGE) which are common clinical conditions presenting to paediatric wards in Sri Lanka.

Methodology

This hospital-based, cross-sectional study extracted data from 216 bed head tickets (BHT) of children diagnosed with SFC, AGE and BA in 08 selected base hospitals with consultant paediatricians in the Southern Province of Sri Lanka. Data extraction sheets were developed in collaboration with a panel of experts, following a comprehensive review of the current PNGs for SFC, AGE and BA.

Results

Five base hospitals, four base hospitals and three base hospitals did not achieve the mean adherence score for AGE management (7.5), SFC management (7.75) and BA management (8.5), respectively. The study demonstrated higher compliance to standard treatment in hospitals with 24-hour laboratory services.

Conclusion

The study demonstrates ~~a~~ scope for improvement of management practices compliant with clinical guidelines. Further studies to identify contributory factors are needed to address the shortcomings effectively.

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Introduction

It is nearly impossible to keep track of new developments in clinical knowledge and incorporate them to clinical practice. Clinical guidelines, defined as "statements that include recommendations intended to optimize patient care, which are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options", were developed and implemented to facilitate translation of the most recent evidence into practice [1]. Clinical guidelines help standardize, maintain the consistency of and even improve patient care [2]. Despite evidence of improved clinical outcomes and minimal clinical errors following implementation of guidelines, poor compliance with practice guidelines has also been noted [3]. While lack of awareness and unfamiliarity and disagreement with the contents have been identified as the main barriers to compliance with clinical guidelines, resistance to change and external factors such as poor resources, inadequate educational materials, time-constraints and shortage of staff are globally recognized contributing factors to poor compliance [2]. According to studies conducted in the Sri Lankan (SL) context, unavailability of guidelines, lack of awareness and underutilization of clinical guidelines are recognized factors [4,5].

Paediatric national guidelines (PNGs), developed by the College of Paediatricians, were introduced in 2007 in Sri Lanka [5,6]. The Ministry of Health (MoH) distributed the PNGs to all government health care institutions with Consultant Paediatricians, to improve the quality of care and minimize variation in patient care provided across the country [4]. However, studies have revealed that actual clinical practice deviates widely from the guidelines. A study conducted at the paediatric units of government institutions in the Polonnaruwa District showed that only 34% of medical officers utilized the PNGs in their clinical practice. Unavailability of recommended drugs, laboratory facilities and medical equipment and a heavy work-load due to shortage of staff were identified as problems interfering with the implementation of clinical guidelines [5].

Hospitals in the public curative sector in Sri Lanka are organized into three tiers depending on size and the facilities offered by the institution. Base hospitals are secondary care institutions that possess general surgical and medical units, at least one obstetric or gynaecology unit and a paediatric unit, in addition to providing outpatient care [7]. This study assessed adherence to paediatric guidelines for acute gastroenteritis (AGE), bronchial asthma (BA) and simple febrile convulsion (SFC), common presentations in the paediatric healthcare setting in Sri Lanka, in eight selected base hospitals in the Southern Province of Sri Lanka.

Methodology

A hospital-based, retrospective, descriptive cross-sectional study was conducted over a period of three months from April to July 2017 in eight base hospitals (BH) with consultant paediatricians in the Southern Province of Sri Lanka. Seventy-two (72) bed head tickets

(BHTs) each, bearing the diagnosis of AGE, BA and SFC were randomly selected to obtain the minimum sample size of 216. The Lwanga and Lemshow formula (with an assumption of 50% compliance with the guidelines in the absence prior evidence on PNG practices in SL, at a confidence level of 95%, precision of 7% and a predicted non-response rate of 10%) was used to arrive at the sample size. As there were eight study settings, nine BHTs for each disease were randomly selected from each study setting for equal representation of each condition and base hospital.

Data extraction sheets (DES) consisting of checklists of important components of the PNGs assessing adherence to multiple aspects of management guidelines including diagnosis, treatment and monitoring were developed in collaboration with a panel of experts following a comprehensive review of current PNGs for SFC, AGE and BA. One mark was allocated for adherence to each component. The DESs were pre-tested in a similar setting and required amendments were made. The availability of 24-hour laboratory and radiology services were recorded as secondary data.

Ethics clearance was obtained from the Ethics Review Committee of the Postgraduate Institute of Medicine, University of Colombo and administrative approval was obtained from the Provincial Director of Health Services, Southern Province. SPSS version 21 was used for all analyses.

A mean adherence score was calculated for each of the three diseases. Association between the mean adherence score and selected institutional factors were assessed using Fisher's exact test as some variables had less than five elements.

Results

DESs related to each disease consisted of 10 components assessing the adherence to multiple aspects of management guidelines including diagnosis, treatment and monitoring. Identification codes (A-H) are used for the 08 base hospitals (BH) included in this study. Among 72 patients with a discharge diagnosis of BA, 93.1% (n=67) were precisely identified, categorized according to their severity and managed accordingly.

Overall, more than 80% of the BHTs showed compliance with most components and all BHTs stated that patients were nebulized with bronchodilators and treated with steroids. However, only 76.4% (n=55) of BHTs accurately recorded the final diagnosis according to the diagnostic criteria and only 72.2% (n=52) recorded the past medical and family history and only 54.2% (n=39) had risk factors mentioned in detail (Table 01).

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Table 1: Adherence to bronchial asthma management guidelines in all the base hospitals

Component assessed	BHTs adhering to BA management Guidelines n (%)	BHTs not adhering to BA management Guidelines n (%)
1. Identified and categorized according to severity	67 (93.1%)	05 (6.9%)
2. Detailed past medical history and family history included	52 (72.2%)	20 (27.8%)
3. Precipitating and risk factors identified	39 (54.2%)	33 (45.8%)
4. Diagnosis confirmed according to the diagnostic criteria	55 (76.4%)	17 (23.6%)
5. Treated with nebulised bronchodilators	72 (100.0%)	00 (0.0%)
6. Used correct dose of bronchodilators	68 (94.4%)	04 (5.6%)
7. Nebulisation done with oxygen therapy (face mask/ nasal cannula)	58 (80.6%)	14 (19.4%)
8. Treated with steroids	72 (100.0%)	00 (0.0%)
9. Used correct dose of steroids	65 (90.3%)	07 (9.7%)
10. Monitoring and reassessment of the patients done and managed accordingly	64 (88.9%)	08 (11.1%)

(BA= bronchial asthma, BHT= bed head ticket)

All patients with SFC as the discharge diagnosis had airway, breathing and circulation assessment during acute management and were given antipyretics in the correct dose for managing fever.

However, provision of high flow oxygen and measurement of random and capillary blood sugar (RBS/CBS) was performed in only 84.7% (n=61) and 66.7% (n=54), respectively (Table 02). A comprehensive past medical and family history, including risk factor identification, were documented in all BHTs in three base hospitals (Table 02).

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Table 2: Adherence to simple febrile convulsion management guidelines

Component assessed	BHTs adhered to SFC management Guidelines N(%)	BHTs not adhered to SFC management Guidelines N(%)
1. Correctly categorized the patient by the history: (simple/ complex)	65 (90.3%)	07 (9.7%)
2. Detailed past medical history included	52 (72.2%)	20 (27.8%)
3. Detailed family history included	51 (70.8%)	21 (29.2%)
4. Associated factors/ risk factors identified	55 (76.4%)	17 (23.6%)
5. Airway, breathing and circulation assessed in acute management	72 (100.0%)	00 (0.0%)
6. High flow oxygen given in acute management	61 (84.7%)	11 (15.3%)
7. RBS/CBS Measured	54 (66.7%)	18 (33.3%)
8. Antipyretics used for managing fever	72 (100.0%)	00 (0.0%)
9. Antipyretics used in correct dose	72 (100.0%)	00 (0.0%)

(SFC=simple febrile convulsion, BHT=bed head ticket, RBS=random blood sugar, CBS=capillary blood sugar)

The clinical type of diarrhoeal disease was accurately identified and confirmed by laboratory reports in all patients bearing AGE as the discharge diagnosis. More than 80% of BHTs showed adherence to all components assessed except for provision of Zn supplementation in the correct dose and duration (Table 03).

Table 3: Adherence to acute gastroenteritis management guidelines

Component assessed	BHTs adhered to AGE management guidelines N(%)	BHTs not adhered to AGE management guidelines N(%)
1. Severity of dehydration assessed	62 (86.1%)	10 (13.9%)
2. Clinical type of diarrhoeal disease correctly identified	72 (100.0%)	00 (0.0%)
3. BF/FF/feeding continued	64 (88.8%)	08 (11.2%)
4. Correction of the early water and electrolyte deficit done per guidelines	63 (87.5%)	09 (12.5%)
5. Replacement of ongoing losses done per guidelines	61 (84.7%)	11 (15.3%)
6. Hydration reassessed and fluid balance managed accordingly	63 (87.5%)	09 (12.5%)
7. Zn supplementation given	61 (84.7%)	11(15.3%)
8. Zn supplementation given in correct dose	51 (70.8%)	21 (29.2%)
9. Zn supplementation given for 14 days	44 (61.1%)	28 (38.9%)

(AGE=acute gastroenteritis, BHT=bed head ticket, BF=breast feeding, FF=formula feeding, Zn=zinc)

The mean adherence score for each disease was calculated. 54.2% (n=39) of patients with BA, 58.3% (n= 42) of patients with SFC and 52.8% (n=38) of patients with AGE were managed with an adherence score equal or above the mean adherence score (Table 04).

Table 4: Adherence to BA, SFC and AGE management guidelines

Statistics	BA	SFC	AGE
Mean Score	8.5	7.75	7.5
Number & % of BHTs with < mean score	33(45.8%)	30(41.7%)	34(47.2%)
Number & % of BHTs with ≥ mean score	39(54.2%)	42(58.3%)	38(52.8%)

(BA=bronchial asthma, SFC=simple febrile convulsion, AGE=acute gastroenteritis)

Three of the base hospitals (BH D, BH G and BH H) were below the mean adherence score for management of BA whereas four base hospitals (BH D, BH F, BH G and BH H) and five base hospitals (BH B, BH D, BH F, BH G and BH H) were below the mean adherence score (7.5) for utilization of SFC and AGE management guidelines, respectively. All of them did not possess 24-hour laboratory services (Table 05).

Table 5: Mean adherence scores of Base Hospitals

Base Hospital	24 hr. laboratory facilities	24 hr. radiology facilities	Mean adherence score of the hospital		
			BA	SFC	AGE
BH A	Yes	Yes	8.89	7.77	7.66
BH B	No	No	9.00	8.44	7.44
BH C	No	No	9.22	8.11	8.22
BH D	No	No	6.78	7.44	6.89
BH E	Yes	Yes	9.44	8.33	8.33
BH F	No	No	8.89	7.66	7.33
BH G	No	No	7.44	7.33	6.89
BH H	No	No	8.33	6.88	7.33

(BA=bronchial asthma, SFC=simple febrile convulsion, AGE=acute gastroenteritis, PNG=paediatric national guideline, BH=base hospital)

Discussion

It is challenging for clinicians to constantly keep up with the overwhelming number of advances in a complex and evolving field such as medicine. Evidence-based medicine is the key to improving the quality of patient care and various international bodies such as the Cochrane Collaboration, point of care support tools and electronic bibliographic databases are committed towards comprehensively synthesizing and providing access to up-to-date research evidence [8]. Clinical guidelines based on the latest high quality research evidence

and on expert opinion aim to standardize, maintain the consistency of and improve quality of care while minimizing clinical errors.

Overall, the study demonstrates a higher compliance to standard treatment at hospitals with 24-hour laboratory services. First contact medical officers at base hospitals with 24-hour laboratory facilities (type A BHs) are intern medical officers, whereas the rest of the base hospitals in this study did not employ intern medical officers. As interns are fresh out of medical school, they tend to be more familiar with current guidelines when compared to senior medical officers in base hospitals without 24-hour laboratory services (type B BHs). However, further studies need to be conducted to identify contributory factors. Among the three conditions assessed in the study, the highest adherence to clinical guidelines was displayed in the management of BA. This contrasts with a similar study conducted in Bangladesh where only 25% of cases diagnosed with BA were managed according to clinical guidelines [9]. Precipitating and risk factor identification plays a key role in BA management, and it is the component of the clinical guidelines with which doctors are least compliant. Although BA management was the most compliant with the guidelines among the childhood illnesses assessed in this study, there is scope for improvement of management practices.

Administering the correct dose of antipyretics to all patients diagnosed with SFC and the correct dose of zinc for more than 70% of patients diagnosed with AGE should be highlighted, in view of similar studies in the Asian region which identified incorrect dose calculation as the main reason for non-adherence to clinical guidelines in the paediatric setting [9]. Fifty percent of patients with SFC did not have any evidence of assessment of RBS or a documented thorough history of risk factors. SFC, requires a thorough history of risk factors as a positive association between early onset febrile convulsions and family history has been evident in studies [10]. Studies assessing compliance with clinical guidelines have identified poor documentation among healthcare professionals in the Asian setting, citing time constraints among clinicians practicing in limited resource settings, which may have been a reason for the above findings [9].

The lowest adherence to clinical guidelines was seen in the management of AGE, one of the most prevalent infections in childhood, where 62.5% of BHTs were inconsistent with standard clinical guidelines [11]. Studies conducted in India and Italy demonstrate similar findings, where only 20.6% of children were managed in full compliance with clinical guidelines [12,13]. The low use of zinc for patients with AGE, is consistent with findings in India, raising public health concerns [13]. The importance of appropriate zinc supplementation in AGE cannot be over emphasized, as several studies have not only shown it to reduce the probability of diarrhoea but diarrhoea related mortality as well [14,15].

A future study to explore factors associated with non-compliance with clinical guidelines would bring to light challenges clinicians face in settings with limited resources which could be followed by remedial action to improve quality of care.

Limitations

This study assessed compliance to clinical guidelines based entirely on data documented on the BHT. Therefore, poor documentation practices of clinicians may have influenced the results.

Conclusion

The highest adherence to clinical guidelines was displayed in the management of BA and the least in the management of AGE. Overall, the study demonstrated higher compliance to standard treatment at hospitals with 24-hour laboratory services. The study demonstrates the scope for improvement of management practices compliant with clinical guidelines. Further studies to identify contributory factors will be important to address these shortcomings effectively.

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