



SHORT REPORT

Paediatric weight estimation practices of advanced life support providers in Johannesburg, South Africa

Mike Wells*, Laurice Barnes, Craig Vincent-Lambert

Department of Emergency Medical Care, University of Johannesburg, South Africa

A B S T R A C T

Introduction: The choice of weight estimation method to use during prehospital paediatric emergency care is important because it needs to be both accurate and easy to use. Accuracy is important to ensure optimum drug dosing while ease-of-use is important to minimise user errors and the cognitive load experienced by healthcare providers. Little is known about which weight estimation systems are used in the prehospital environment anywhere in the world. This knowledge is important because if the use of inappropriate weight estimation practices is identified, it could be remedied through education and institutional policies.

Methods: This was a prospective questionnaire study conducted in Johannesburg, South Africa, which obtained information on the knowledge, attitude and practice of weight estimation amongst advanced life support (ALS) paramedics.

Results: Forty participants were enrolled, from both the public and private sectors. The participants' preferred method of weight estimation was visual estimation (7/40; 18%), age-based formulas (16/40; 40%), parental estimation (3/40; 8%), the Broselow tape (2/40; 5%) and the PAWPER tape (11/40; 28%). No participant was familiar with or used the Mercy method. All participants were very confident in the accuracy of their selected system.

Discussion: The knowledge and understanding of weight estimation systems by many advanced life support paramedics was poor and the use of inappropriate weight estimation systems was common. Further education and intervention is needed in order to change the sub-optimal weight estimation practices of ALS paramedics in Johannesburg.

African relevance

- Weight estimation is as important in Africa as elsewhere in the world.
- Prehospital systems in Africa should follow resource-appropriate, evidence-based guidelines.
- The absence of reliable parental weights in resource-limited environments is problematic.
- The best weight estimation systems are not expensive, but need to be disseminated.

Introduction

The nature of the prehospital emergency care environment and the presentation of acute emergency cases is such that healthcare providers have to rely on a method of estimating children's weight in order to calculate emergency drug doses. Accurate weight estimate is important

for calculating drug dosages, as inaccurate doses can be harmful [1].

The weight estimation systems most commonly researched and taught (particularly in paediatric advanced life support short courses) are the age-based formulas and the Broselow tape [2]. Age-based formulas, together with healthcare provider guesses of weight have been found to be amongst the least accurate of all the weight estimation systems, however, while the Broselow tape has also been shown to lack sufficient accuracy both in high-income and low- and middle-income countries [3]. The most accurate systems currently described are the two-dimensional length- and habitus-based systems (such as the Mercy method and the PAWPER tape) and parental estimates of weight [3].

While it has been reasonably well established which weight estimation systems are the most accurate, there is very limited evidence on which weight estimation systems are actually being used in the prehospital environment. This information is important, as the failure to use the most appropriate weight estimation methodology could potentially affect patient outcomes adversely. This information would also

Peer review under responsibility of African Federation for Emergency Medicine.

* Corresponding author at: Postnet Suite 429, Private Bag X1510, Glenvista 2058, South Africa.

E-mail address: profmikewells@gmail.com (M. Wells).

<https://doi.org/10.1016/j.afjem.2018.01.003>

Received 30 August 2017; Received in revised form 23 December 2017; Accepted 21 January 2018

2211-419X/ 2018 African Federation for Emergency Medicine. Publishing services provided by Elsevier. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. What weight estimation tools **do you currently have at your disposal** in your work environment?

<input type="checkbox"/> Broselow Tape	<input type="checkbox"/> Age based Formula	<input type="checkbox"/> Other method
<input type="checkbox"/> PAWPER Tape	<input type="checkbox"/> Parental Estimation	<input type="checkbox"/> None of the above
<input type="checkbox"/> Mercy method	<input type="checkbox"/> Visual Estimation	
2. Which of the following methods are you **familiar with**?

<input type="checkbox"/> Broselow Tape	<input type="checkbox"/> Age based Formula	<input type="checkbox"/> Other Method
<input type="checkbox"/> PAWPER Tape	<input type="checkbox"/> Parental Estimation	
<input type="checkbox"/> Mercy method	<input type="checkbox"/> Visual Estimation	
3. Which tool do you **use** most often? (Select one)

<input type="checkbox"/> Broselow Tape	<input type="checkbox"/> Age based Formula	<input type="checkbox"/> Other method
<input type="checkbox"/> PAWPER Tape	<input type="checkbox"/> Parental Estimation	
<input type="checkbox"/> Mercy method	<input type="checkbox"/> Visual Estimation	
4. Please provide a short motivation as to why you prefer this method?
5. Which of the age based formulae do you use?

<input type="checkbox"/> Weight = (age x 3) + 7
<input type="checkbox"/> Weight = (age x 2) + 8
<input type="checkbox"/> Infants < 12 months: Weight (kg) = (age in months + 9)/2
Children aged 1-5 years: Weight (kg) = 2 x (age in years + 5)
Children aged 5-14 years: Weight (kg) = 4 x (age in years)
<input type="checkbox"/> Other Formula
6. Do you find your most used technique to be accurate and reliable in most cases? (Please provide a short reason for you answer)
7. How confident are you in your weight estimation technique of paediatric patients? (Provide a number out of 10)
8. Do you feel more pressurised or stressed when treating paediatric patients? (Yes or No)
9. On average, how many patients younger than the age of 12 do you treat per month?
10. How many years of experience do you have as a practising Advanced Life Support Paramedic?
11. Do you currently work in the private or public sector?

Fig. 1. The questionnaire used in this study.

allow decision-makers to create appropriate policies for weight estimation practices and education and allow intervention into current practices, if required.

The aim of our study was to investigate and describe the current paediatric weight estimation practices of ALS paramedics in the emergency medical care setting within Johannesburg, South Africa.

Methods

This was a qualitative questionnaire study. The questionnaire (Fig. 1) was designed to obtain basic information about the participants' knowledge, attitude and practice with regards to emergency paediatric weight estimation. Full-time advanced life support (ALS) paramedics practising in Johannesburg, from either the private or the public sector, were invited to participate.

At the time of the survey there were an estimated 80–100 practising ALS paramedics in the Johannesburg metropolitan area. A sample size of 40 participants was therefore selected for the pilot study to provide a $\pm 10\%$ margin of error with a 95% confidence level for the survey results. Ethical approval was granted from the University of Johannesburg Research Ethics Committee (REC 01-53-2016). Written informed consent was obtained from all participants.

The study took place during the second quarter of 2016. One of the researchers (LB) visited bases across Johannesburg and invited ALS paramedics to participate. Those that volunteered completed anonymous hard copies of the questionnaire. Responses were analysed and presented using basic descriptive statistics.

Results

Forty ALS paramedics participated in the survey. The details of the participants in terms of their sector of employment, their experience, the number of children they see per month and their self-perceived stress levels during paediatric emergencies is shown in Table 1. Nearly three-quarters of the participants (29/40; 72.5%) had more than two years' postgraduate experience, so could be regarded as moderately experienced.

A description of the weight estimation systems that the participants were familiar with, the systems they had available to them and the systems they used in practice are shown in Table 2. There was no significant difference in these outcomes between the private- and public-sector services. The reasons provided by the participants for their choice of system are also shown.

Table 1
Demographic information from participants.

Question	Outcome
Private sector, n (%)	25/40 (62.5)
Experience as practising ALS paramedic in years, median (IQR)	3.0 (1.9–5.3)
Number of children treated per month, median (IQR)	4.0 (2.8–6.3)
Stress level high when treating children, n (%)	27/40 (67.5)

ALS, advanced life support; IQR, interquartile range.

Download English Version:

<https://daneshyari.com/en/article/8716917>

Download Persian Version:

<https://daneshyari.com/article/8716917>

[Daneshyari.com](https://daneshyari.com)