Weighing scales in hospitals: how accurate are they? An observational study

Madam, body weight is an important anthropometric character which is routinely used in drug dosing, anaesthetics, radiation dosage and clinical monitoring. Any inaccurate measurement of the body weight due to faulty weighing scales could mitigate patient safety risks due to inexact estimation of patients weights.[1] Recently an incorrect weighing scale in a hospital could have killed a child due to calculation of a radiation dose.[2] Kaushal et al[3] in a prospective study found that 3.7% of MEs were related to incorrect and missing weights. We conducted this study to see the accuracy of the weighing scales at King Fahd Hospital, of the University, AlKhobar, Saudi Arabia. The hospital is a 470-bed facility with annual admissions of 11,779 and 1,23,852 out patients visits. Five members of the study group went around the hospital and weighed themselves at 29 different stations using Seca Eye-Level balance Beam Scales MD, USA, Detetco 2391S, Webb City, MO, US and Health O Meter 400KL Shelton, CT, USA. On each machine three weights were taken and the mean was taken as correct weight for the machine and weight was recorded to the nearest kilogram.

Table gives the correct weight, average and the weight as measured on the three scales. The weight drifted between 2-12 kilograms above and below their correct weight. All the three machines varied statistically significantly from the average weight P= 0.001, 0.01 to 0.001 and CI < 3.10, <2.40, <-1.118 for Seca, Detetco and Health O meter scales.

This study demonstrates that weighing scales at the hospital were faulty and markedly differed from correct weight. In our study we found the weight to be only correct in less than 7% of the measurement which is quite dangerous. In United Kingdom National Health Service (NHS) issued an alert in 2008 to check faulty scales in hospitals after a defective weighing scale nearly killed a four-year-old cancer patient.[2] In a nationwide study to test the accuracy of weighing scales, it was found that 34% of the scales were inaccurate which could have affected patients safety.[4] Freitag et al[5] found in intensive care patients the inaccuracy of the weight was between 0.8-25 kgs from the correct weight.We believe not

Table: Average weight of physicians three scales.

	Physicians Correct Weight In Kilograms	Average for three Machines in Kilograms	Seca	Deteto	Health O Meter
1.	89	89.3±2.63	87.2	87.9	90.2
2.	46	47.22±3.68	48.85	43.9	50.8
3.	73	74.3±4.68	71.5	72.1	75.3
4.	62	62.9±4.7	61.5	60.9	67.1
5.	51	54.9±5.1	56.7	50.5	57.3

only reliable weighing scales are required in hospitals but also we need to follow the manufacturers recommendations. This will strengthen accurate weights and patient safety in correct dosage of life saving medications.

In conclusion, our study highlights that inaccuracies of the weighing scales which provide incorrect weights of patients which end up in the wrong drug dosage calculations. It is important that hospitals should regularly calibrate the weighing scales.

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