



AN OBSERVATIONAL STUDY OF BODY SURFACE AREA (BSA) IN PARTICIPANTS ATTENDING PREOPERATIVE PREPROCEDURAL ASSESSMENT CLINIC (PPAC) IN CHENGALPATTU GOVERNMENT MEDICAL COLLEGE.

General Surgery

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ABSTRACT

In anaesthesiology and surgery, the body surface area (BSA) is the measured or calculated surface area of a human body. For many clinical purposes BSA is a better indicator of metabolic mass than body weight because it is less affected by abnormal adipose mass. Nevertheless, there have been several important critiques of the use of BSA in determining the dosage of medications with a narrow therapeutic index, such as chemotherapy.

METHODS AND MATERIALS :

Design: A hospital based prospective observational study.

An observational study of BSA status in 109 participants attending Preoperative Preprocedural Assessment Clinic (PPAC) was done in Government chengalpattu medical college, chengalpattu.

The aim of the study is to assess the BSA in participants attending PPAC in government chengalpattu medical college, chengalpattu. The participants had come for undergoing various elective surgeries.

RESULTS: The data collected were analysed and following results were observed:

Male participants had a mean BSA of 1.3909.

Female participants had mean BSA of 1.4737.

The mean BSA of all participants was 1.4387.

CONCLUSION: There was no significant statistical difference in the Body Surface Area (BSA) between the male and female participants. (p value=0.846), even though Female participants had a statistically significant better BMI than Male participants because the participants included more number of term pregnant mothers. (p value=0.008). This being a simple observational study of BSA status, more detailed studies with appropriate sample size must be carried out to validate the findings of this study.

KEYWORDS

Body Surface Area BSA PPAC

INTRODUCTION

In anaesthesiology and surgery, the body surface area (BSA) is the measured or calculated surface area of a human body. For many clinical purposes BSA is a better indicator of metabolic mass than body weight because it is less affected by abnormal adipose mass. Nevertheless, there have been several important critiques of the use of BSA in determining the dosage of medications with a narrow therapeutic index, such as chemotherapy. Examples of uses of the BSA:

- Renal clearance usually divided by the BSA i.e. per 1.73 m² to gain an appreciation of the true glomerular filtration rate (GFR);
- The Quetelet index uses a somewhat modified form of the BSA;
- The cardiac index is a measure of cardiac output divided by the BSA, giving a better approximation of the effective cardiac output;
- Chemotherapy is often dosed according to the patient's BSA.
- Glucocorticoid dosing is also expressed in terms of BSA for calculating maintenance doses or to compare high dose use with maintenance requirement.

There is some evidence that BSA values are less accurate at extremes of height and weight, where Body Mass Index may be a better estimate (for hemodynamic parameters).

Various calculations have been published to arrive at the BSA without direct measurement. In the following formulae, BSA is in m², W is mass in kg, and H is height in cm.

The most widely used is the Du Bois, Du Bois formula,^{[4][5]} which has been shown to be equally as effective in estimating body fat in obese and non-obese patients, something the Body mass index fails to do.^[6]

$$BSA = 0.007184 \times W^{0.425} \times H^{0.725}$$

A commonly used and simple one is the Mosteller formula:^[7]

Aim of the Study

The aim of the study is to assess the Body Surface Area (BSA) in participants attending PPAC in government chengalpattu medical college, chengalpattu. The participants had come for undergoing various elective surgeries. The list of elective surgeries included urology, gynaecology, obstetrics, general surgery pediatrics etc.

Design: A hospital based prospective observational study.

MATERIALS AND METHODS

109 participants attending the Preoperative Preprocedural Assessment Clinic (PPAC) were selected according to the convenience and various parameters like height, weight, age etc were measured and other relevant information collected^[8]. The collected data were documented and subjected to statistical analysis.

Inclusion Criteria

All willing ambulant participants attending PPAC were included in the study.

Exclusion Criteria

Patients not willing for study, patients undergoing emergency surgeries, infants were excluded from the study.

Statistical Analysis

For continuous data, the descriptive statistics n, Mean, SD, Median, IQR, Minimum and Maximum was presented. For categorical data, the number of patients and percentage was presented. Based on the normality of data, the parametric t test was applied to the data. All tests were two-sided at $\alpha=0.05$ level of significance. All analyses were done using Statistical Package for Social Services (SPSS) software Version 21.0 (Armonk, NY: IBM Corp).

RESULTS

Table-1

AGE CATEGORY	FREQUENCY	PERCENTAGE
0-15	17	15.6
15-30	37	33.9
30-45	30	27.5
45-60	15	13.8
60-75	9	8.3
75-90	1	0.9

Table-2

Sex	Frequency	Percentage
Male	46	42.2
Female	63	57.8
Total	109	100.0

Table-3

BSA Category (m ²)	Frequency	Percentage
0.51-1.33	31	28.4
1.34- 1.6	47	43.1
1.6-1.9	29	26.6
>1.9	2	1.8

Table-4

COMPARISION OF BSA MALE Vs FEMALE			
Sex	Mean(m ²)	N	Std. Deviation
Male	1.3909	46	.30352
Female	1.4737	63	.24032
Total	1.4387	109	.27061

Table-5

SEX* BSACAT

Crosstab							
			BSACAT				Total
			0.51-1.33	1.34-1.6	1.6-1.9	>1.9	
sex	MALE	Count	15	19	11	1	46
		% within sex	32.6%	41.3%	23.9%	2.2%	100.0%
	FEMALE	Count	16	28	18	1	63
		% within sex	25.4%	44.4%	28.6%	1.6%	100.0%
Total		Count	31	47	29	2	109
		% within sex	28.4%	43.1%	26.6%	1.8%	100.0%

Table-6

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.814 ^a	3	.846

DISCUSSION

The data collected were analysed and following results were observed: Male participants had a mean BSA of 1.3909. Female participants had mean BSA of 1.4737. The mean BSA of all participants was 1.4387.

Though there is a significant difference between the mean BMI among male and female participants(partly explained by more number of term pregnant mothers among female participants) it is not reflected in their respective BSA status.

CONCLUSIONS

There was no significant statistical difference in the Body Surface Area (BSA) between the male and female participants.(p value =0.846),even though Female participants had a statistically significant better BMI than Male participants because the participants included more number of term pregnant mothers. (p value=0.008) .This being a simple observational study of BSA status, more detailed studies with appropriate sample size must be carried out to validate the findings of this study.

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