A NOMOGRAM PREDICTION MODEL FOR STUDYING HEALTH RISK IN YOUNG ADULTS.

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Abstract: Nomogram are interesting scientific and mathematical model popular even in medical field to predict and assess the complexity of disease. In this particular study conducted at Institution to learn and assess diabetes and cardiovascular, inflammation, hormonal imbalance like health risks with the Body surface area (BSA) Nomogram. The study included all adult participated in the study meticulously documented and assessed by Nomogram and the results related with health status and predicted health risk. A total of 112 both male and female participants aged between 18-57. Data collected from BSA Nomogram health risk in participants estimated to be 25% with male young adults found to be unhealthy compared to women in our study. With this study we conclude that one's health can be monitored by following Nomogram, knowing with two factors weight and height comfortably requiring no calculations by everyone as a health measure tracking one's health and heeding medical advice timely can avoid progression and prevention of many diseases.

Keywords: *Body*   *surface*   *area,*   *Nomogram,*   *Health*   *risk.*

I. INTRODUCTION

Cardiovascular diseases and diabetes are rising up than expected. Comparing worldwide India and especially Hyderabad city emerged as diabetes capital[1,2]. with common cardiovascular cases reported are acute coronary syndrome, arrythmia, cardiac failure, hypertension, myocardial infarction, ischemic disease and dietary issues, endothelial dysfunction especially in young adults. With an urgent care for dealing with the rising health concern where diagnosing with invasive techniques may not be feasible for everyone regularly a simple technique requiring no algebraic calculation for predicting the health risk with an easy interpretation is sought out and Nomogram study are best for starting with to catch up early for health monitoring[3].

Nomogram are popular for its simple, accurate scientific and mathematical model applied in various fields. In medicine it is applied to assess chronic diseases designed unique to it given in table no.1.Its application is simple with drawing an isopleth connecting known values on the scale connecting with the unknown factor scale. The point scale of intersecting is noted and interpreted with the measures of complexity. In this study we used BSA (body surface area) Nomogram containing weight and height and BSA as unknown scale presentin between the two known factors[4-6]. BSA applications in medical usage include dose calculations prescribed based on the BSA value with severity of disease condition and predicting adverse effects[7-10].

The healthy adult BSA values range is as follows.

For men it is $1.9m^2$ and women it is $1.7m^2$. a schematic diagram represented for the importance of body weight balance, its risk and management options. Given in figure 1.
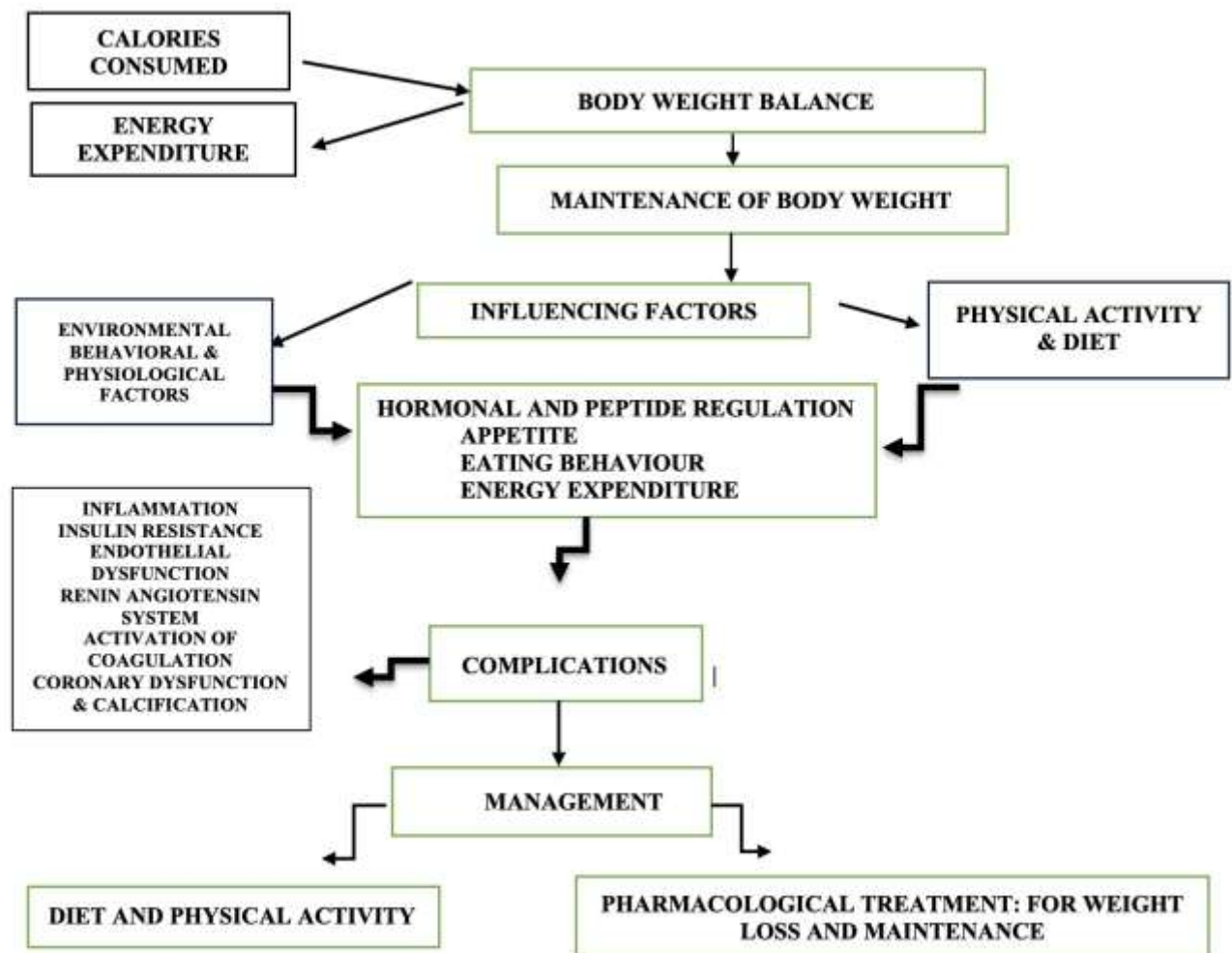
Figure .1 schematic diagram about body weight balance and its related management options.

Methodology: In the present study participants from Institution were meticulously documented their data for height using stadiometer where each participant was asked to stand fast against the stadiometer pasted on wall standing bare foot and measured their height with scale units in feet and inches as unit and weight measured on digital weighing machine with kg as units. Each participant data height and weight were scaled o the nomogram and noted the BSA value and interpreted for health risk from the standard values.

Results and discussion: All the participants data were plotted on Nomogram with 10 in each Nomogram sheet given in figure 1 (a-k), the data obtained documented and results are tabulated for easy interpretation with the healthy value given in table 1.
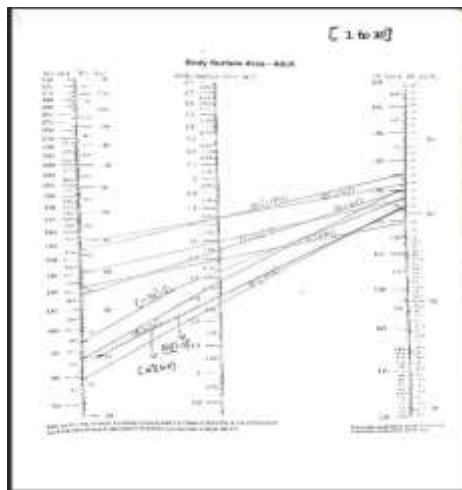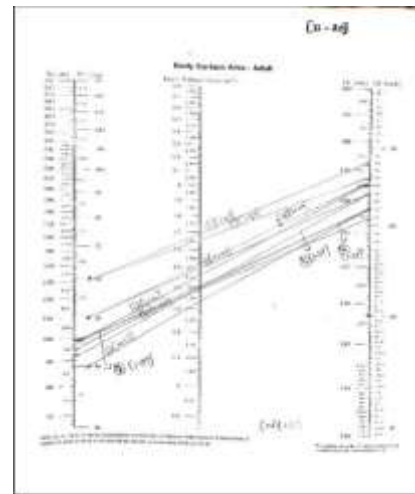
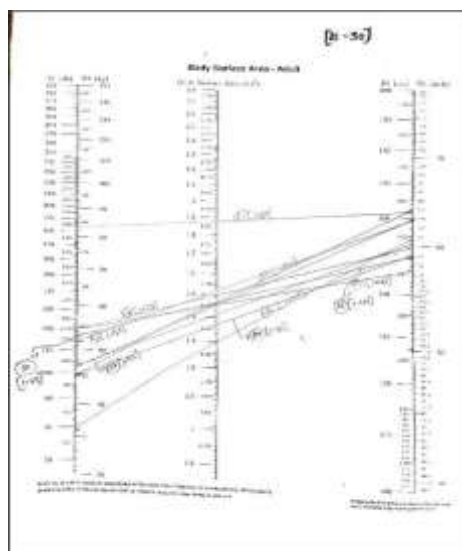**Figure 2 a participants (1-10)**

Figure 2 b participants (11-20)

Figure 2 c participants (21-30)
Figure 2 e participants (41-50)
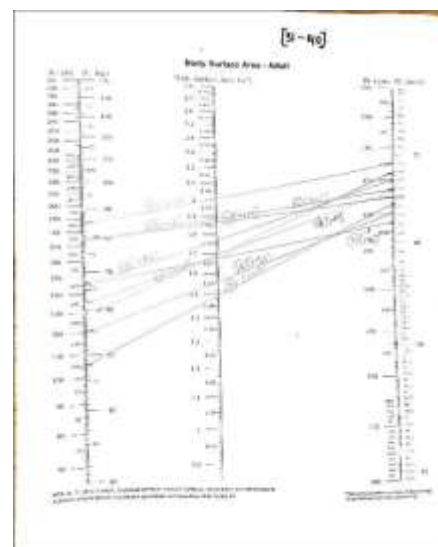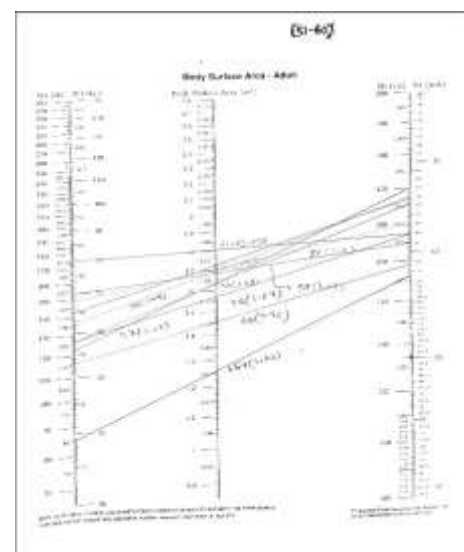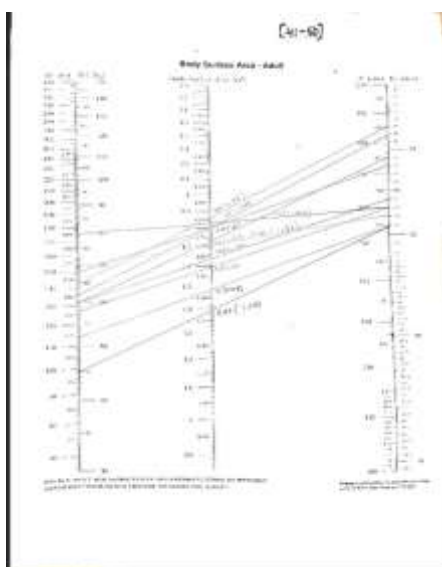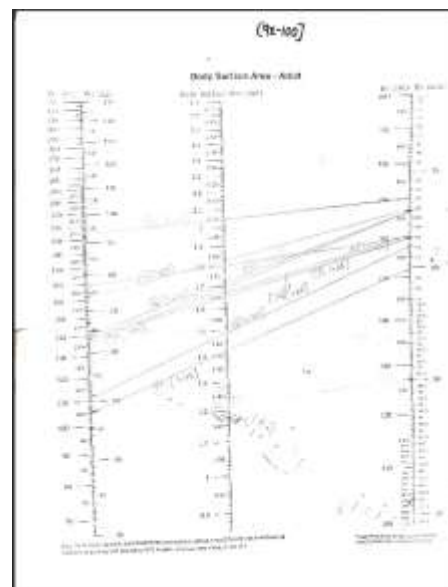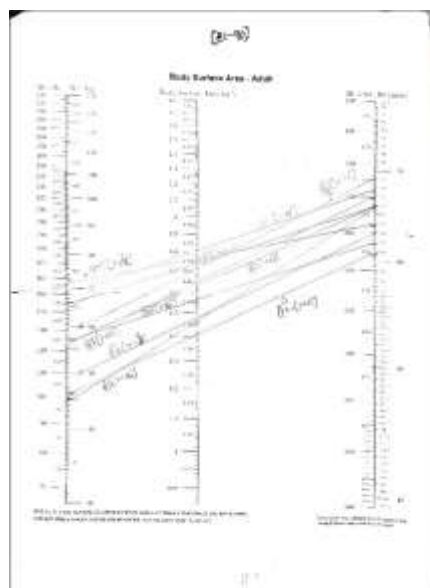

Figure 2 d participants (31-40)
Figure 2 f participants (51-60)

Figure 2 g participants (61-70)

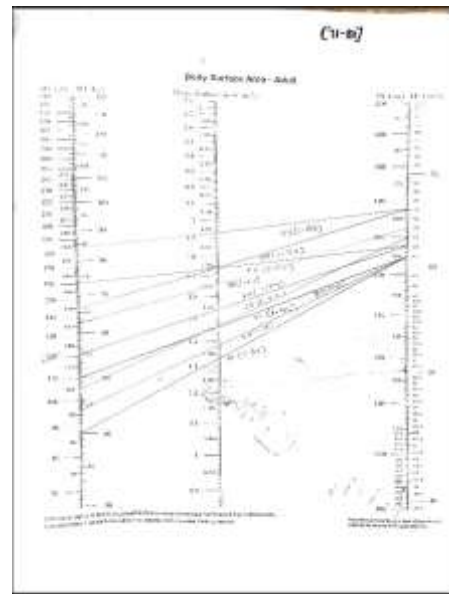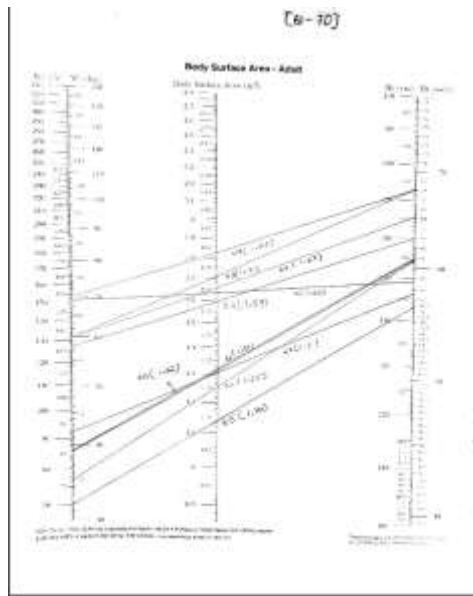**Figure 2 h participants (71-80)**

Figure 2 i participants (81-90)

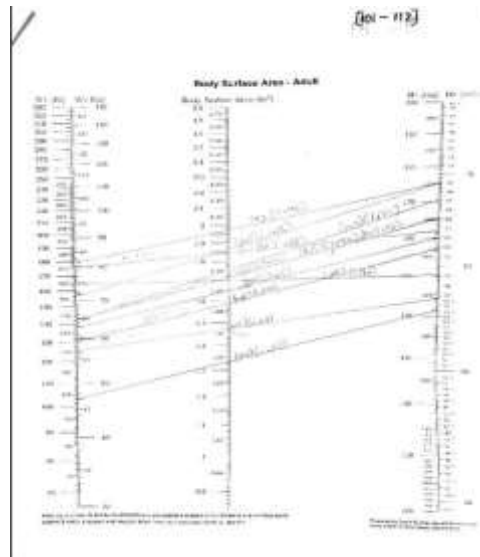
Figure 2 j participants (91-100)

Figure 2 k participants (101-112)

Table no.1 BSA Nomogram participants health risk results

S.NO	Participant	Sex	BSA value	Health risk
1.	CBCP0101	F	1.54	H
2.	CBCP0102	F	1.54	H
3.	CBCP0103	M	1.69	H
4.	CBCP0104	F	1.38	H
5.	CBCP0105	F	1.28	H
6.	CBCP0106	F	1.38	H
7.	CBCP0107	M	1.74	H
8.	CBCP0108	M	1.74	H
9.	CBCP0109	F	1.31	H
10.	CBCP0110	F	1.31	H
11.	CBCP0111	F	1.33	H
12.	CBCP0112	M	1.46	H
13.	CBCP0113	M	1.49	H
14.	CBCP0114	M	1.39	H
15.	CBCP0115	F	1.39	H
16.	CBCP0116	F	1.39	H
17.	CBCP0117	F	1.39	H
18.	CBCP0118	M	1.49	H
19.	CBCP0119	F	1.65	NH
20.	CBCP0120	F	1.69	NH
21.	CBCP0121	F	1.46	H
22.	CBCP0122	F	1.29	H
23.	CBCP0123	M	1.87	H
24.	CBCP0201	M	1.50	H
25.	CBCP0202	F	1.45	H
26.	CBCP0203	F	1.52	H
27.	CBCP0204	F	1.45	H
28.	CBCP0205	M	1.46	H
29.	CBCP0206	F	1.36	H
30.	CBCP0207	F	1.45	H
31.	CBCP0208	M	1.85	H
32.	CBCP0209	M	1.86	H
33.	CBCP0210	M	1.86	H

34.	CBCP0211	F	1.76	NH
35.	CBCP0212	M	2.00	NH
36.	CBCP0301	M	1.69	H
37.	CBCP0302	M	1.49	H
38.	CBCP0303	M	1.55	H
39.	CBCP0304	M	1.69	H
40.	CBCP0305	M	1.66	H
41.	CBCP0306	M	1.49	H
42.	CBCP0307	M	1.6	H
43.	CBCP0308	M	1.8	H
44.	CBCP0309	M	1.73	H
45.	CBCP0310	M	1.8	H
46.	CBCP0311	M	1.86	H
47.	CBCP0312	M	1.39	H
48.	CBCP0313	M	1.71	H
49.	CBCP0314	M	1.83	H
50.	CBCP0315	M	1.64	H
51.	CBCP0316	M	1.73	H
52.	CBCP0317	M	1.63	H
53.	CBCP0318	M	1.69	H
54.	CBCP0319	M	1.7	H
55.	CBCP0320	M	1.8	H
56.	CBCP0321	M	1.57	H
57.	CBCP0322	M	1.64	H
58.	CBCP0401	F	1.69	NH
59.	CBCP0402	F	1.26	H
60.	CBCP0403	F	1.46	H
61.	CBCP0404	F	1.63	NH
62.	CBCP0405	F	1.25	H
63.	CBCP0406	M	1.71	H
64.	CBCP0407	F	1.59	H
65.	CBCP0408	F	1.14	H
66.	CBCP0409	F	1.31	H
67.	CBCP0410	F	1.3	H
68.	CBCP0411	F	1.67	NH
69.	CBCP0412	F	1.82	NH
70.	CBCP0413	F	1.32	H
71.	CBCP0414	F	1.46	H
72.	CBCP0501	M	1.74	H
73.	CBCP0502	M	1.93	NH
74.	CBCP0503	F	1.34	H
75.	CBCP0504	F	1.47	H
76.	CBCP0505	F	1.34	H
77.	CBCP0506	F	1.38	H
78.	CBCP0507	F	1.51	H
79.	CBCP0508	M	1.46	H
80.	CBCP0509	M	1.74	H
81.	CBCP0510	F	1.74	NH
82.	CBCP0511	F	1.81	NH
83.	CBCP0512	F	1.48	H
84.	CBCP0513	M	1.56	H
85.	CBCP0514	M	1.46	H
86.	CBCP0515	M	1.63	H
87.	CBCP0516	M	1.65	H
88.	CBCP0517	F	1.72	NH
89.	CBCP0518	F	1.81	NH
90.	CBCP0519	F	1.41	H
91.	CBCP0520	F	1.49	H
92.	CBCP0521	F	1.72	NH
93.	CBCP0522	M	1.72	H
94.	CBCP0601	F	1.71	NH
95.	CBCP0602	M	1.83	H

96.	CBCP0603	M	2.05	NH
97.	CBCP0604	F	1.80	NH
98.	CBCP0605	F	1.65	NH
99.	CBCP0606	F	1.42	H
100.	CBCP0607	F	1.66	NH
101.	CBCP0608	F	1.85	NH
102.	CBCP0609	F	1.68	NH
103.	CBCP0610	F	1.59	H
104.	CBCP0611	F	1.33	H
105.	CBCP0612	M	1.86	H
106.	CBCP0613	F	1.70	NH
107.	CBCP0614	F	1.72	NH
108.	CBCP0701	F	1.59	H
109.	CBCP0702	M	1.75	H
110.	CBCP0703	M	1.72	H
111.	CBCP0704	M	1.85	H
112.	CBCP0705	M	1.96	NH

M-male; F-female; H-healthy; NH-not healthy; BSA- body surface area.

Overall BSA results using nomogram were diagrammatically represented in bar diagram comparing healthy and un-healthy of both male and female separately given in figure no.3.
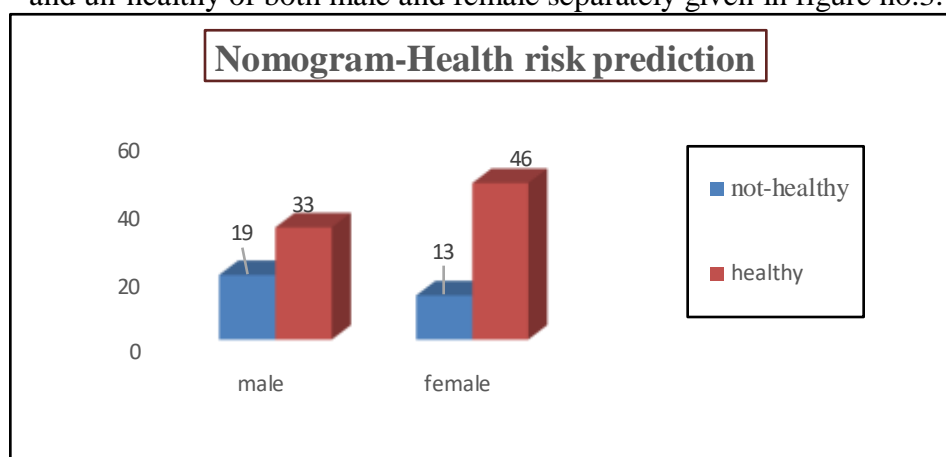

Figure no.3 Nomogram health risk prediction

Conclusion: we hereby conclude our study with the key findings of health risk of commonly diagnosed diabetes and cardiovascular diseases prediction. with BSA Nomogram as a simple yet scientific mathematical model that can be done by checked by anyone which is cost effective in keeping track of one's health a step leading towards a healthy life.

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