



Assessment of physiological parameters of farm women of Deesa, Gujarat

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ABSTRACT

Rural women are engaged in various strenuous activities related farm, livestock and house hold throughout the day. Rural women play a key role in Indian agriculture and allied sectors. However, they are least concerned about their health. Assessment of their body composition parameters of rural women can be an appropriate base for planning and implementing interventional programmes for improving their health status at grass root level. The present study reports health status of rural women of Deesa taluka in Gujarat by assessing their body composition parameters. It is apparent from results that only one-fourth rural women fell under normal range of BMI and PBF. Looking into the type of body, 30 per cent rural women were standard type, rest were either underweight low fat or over weight. Their mineral and protein components were also below normal range. This is an urgent need to make them aware about altering their diet to get proper nutrition. Interventional programmes must be implemented to improve the situation.

INTRODUCTION

Body weight is a relatively poor indicator of health and nutritional status. Body composition is a more important indicator which comprised various components. These components build up a human body and can be divided into two parts- body fat and lean body. Lean body consists of protein, mineral and body water. Body fat includes essential body fat and storage body fat.

As far as rural women are concerned, it is very much evident from past researches that they are engaged in strenuous activities related farm, livestock and house hold

throughout the day. Rural women play a key role in Indian agriculture and allied sectors. However, they are least concerned about their health. Assessment of their body composition parameters of rural women can be an appropriate base for planning and implementing interventional programmes for improving their health status at grass root level. The present study reports health status of rural women of Deesa taluka in Gujarat by assessing their body composition parameters.

Objectives of study :

– To measure body composition parameters of rural women

- To analyze health status of rural women

MATERIAL AND METHODS

Location of study:

The present study was conducted in randomly selected ten villages of Deesa Taluka.

Selection of respondents:

From each selected village, fifteen farm women were selected by random sampling. The selected women were non-pregnant, bereft of serious ailments and chronic health problems. Total sample size was 150 women.

Data collection tools:

Health status of rural women was assessed by measuring BMI, LBM, BMR and other body composition parameters of farm women. Body fat analyzer was used to analyze body components, which works on bioelectrical impedance method. At the time of measurements, the respondents were directed to wear light clothing without any metal accessory.

OBSERVATIONS AND ANALYSIS

Majority of the farm women belonged to young adult age group, while a few adolescents and old age farm women were also performing livestock activities. It can be stated that all the age group of farm women were performing livestock activities, a 15 years old adolescent girl as well as 70 years old farm women.

Results presented in Table 2 shows a descriptive analysis of different body composition parameters of rural women. Minimum and maximum values of parameters illustrate wide variation. The mean value of Body Mass Index and Per cent body fat were in the normal range while the maximum and minimum values were found far from standard values. Likewise LBM, SLM and MBF also varied.

Total body water is also an indication of health. Women should have 50-60 per cent water of their weight.

A person found to have less than 90% of the desired protein level is considered to suffer from protein deficiency, a common occurrence among underweight people. It is also indicative of a lack of muscle mass or poor nutrition. Arm circumference is the circumference

Age	N	%
Adolescents (12-18 yrs)	6	4.0
Young adult (18-40 yrs)	105	70.0
Adult (40-65 yrs)	34	22.7
Old age (> 65 yrs)	5	3.3
Total	150	100.0

Body composition parameters	Minimum	Maximum	Mean	Std. deviation	Kurtosis	
					Statistic	Std. Error
Weight	31	82	49.60	11.219	.696	.394
Stature in CM	132	165	152.29	5.101	1.072	.394
L.B.M in kg	26	51	35.62	5.170	.432	.394
M.B.F in kg	4.4	33	14.88	12.844	75.634	.394
S.L.M in kg	23	47	32.82	4.677	.401	.394
Mineral in kg	2	5	2.84	.612	.716	.394
Protein in kg	5	11	7.12	.914	1.124	.394
T.B.W in kg	19	37	25.65	3.721	.434	.394
P.B.F. in %	9	40	26.76	7.575	-.985	.394
B.M.I in kg/m ²	7	33	21.27	4.523	.316	.394
Fatness in %	-36	48	-2.77	19.945	-.079	.394
V.F.A. (cm ²)	20	196	55.60	36.879	.829	.394
A.C. cm	25	95	72.14	9.172	4.387	.394
B.M.R Kcal	897	1692	1113.52	86.626	12.639	.394

of the upper part of the left arm. It is used for determining protein nutrition status. A lack of minerals increases the risk of arthritis, bone fractures or osteoporosis.

Visceral fat area is defined here as the cross-sectional area of visceral fat found in the abdomen. When the area of visceral fat spans more than 100cm², this is known as abdominal obesity. The maximum value for visceral fat area was found very high, which shows prevalence of obesity among rural women.

5th and 95th percentile of the body composition parameters reflected wide variation and 5th percentile values of PBF, BMI and MBF fell under the category of underweight, on the contrary, 95th percentile values of these parameters were under overweight category. Likewise, mineral and protein in rural women were also found less than the normal range for 5th percentile, while in normal range for 95th percentile. Women having low weight were found having less protein and mineral in their body (Table 3).

Table 4 revealed that less than half of the farmwomen were low weight whereas almost one-fourth of the respondents were overweight and obese. Only 27 per cent farmwomen were falling under the normal category according to their BMI. Further, the graph shows that only 30 per cent respondents were having standard

body type.

If per cent body fat is calculated as being beyond the standard range, she is regarded as being obese. When the per cent body fat falls below the standard range, she is regarded as having a low level of body fat. Analyses of data showed that majority of rural women were having above normal range body fat percentage. Almost 23 per cent rural women fell under acceptable range. A person is prone to diseases in both the cases, having low body fat percentage or high body fat percentage, which is evident from various researches. The poor nutrition might be one reason for which a person's body is deemed to be in an unhealthy state because of a lack or increase of mass body fat. Field *et al.* (2001) affirmed that adults should try to maintain a BMI of between 18.5 and 21.9 to minimize their risk of disease. Kannel *et al.* (1996), in their comprehensive analysis of the literature, concluded that the optimal weight for avoidance of CVD and prolonging life corresponds to a BMI of 21.1 for women.

Kim *et al.* (2016) reported that underweight patients had a higher pulmonary complication rate. He further stated that people with very low body weights may have insufficient stamina and weak immunity, along-with increased susceptibility to infections. Wilson *et al.* (2002) showed that CVD risk (including angina, myocardial

Percentile	Mineral in kg	Protein in kg	T.B.W in kg	P.B.F. in %	B.M.I in kg/m ²	Weight	Stature in CM	L.B.M in kg	M.B.F in kg	S.L.M in kg
5	2.00	5.80	20.12	15.58	15.26	34.96	143.81	28.14	5.51	25.52
95	4.04	9.04	33.04	39.80	30.28	72.80	160.00	45.88	30.01	41.85
100	4.60	10.70	36.70	40.30	32.60	82.10	164.50	51.00	147.10	47.40

BMI (kg/m ²) of farm women	N	%
Low weight (< 20.0)	64	42.7
Normal (20.0-23.0)	41	27.3
Overweight (23.0-30.0)	36	24.0
Obesity (30.0-35.0)	9	6.0
Total	150	100.0

Body fat percentage	N	%
Low (8-15)	26	17.33
Good (16-23)	1	0.67
Acceptable (24-30)	34	22.67
Overweight (31-36)	18	12.00
Obese (>37)	71	47.33

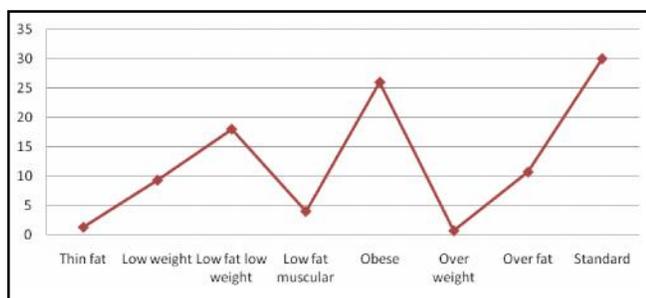


Fig. 1 : Body type of farm women

infarction, CHD or stroke) was higher among obese women.

It is apparent from the graph that majority of rural women were having malnutrition, they were either overweight or underweight. Only 30 per cent fell under the category of standard.

In the nutshell, it can be assumed that a major portion of farm women of these villages was not physically fit and healthy as per their body composition. It can be an alarming note, as they need to have a healthy body to perform strenuous agricultural and allied activities.

It is pointed by researchers (Miyawaki *et al.*, 2005 and Wang *et al.*, 2013) that the abdominal obesity has more effective value on risk for cardiovascular diseases and metabolic syndrome.

It may be concluded here that nearly 70 per cent of the farm women were either underweight or overweight. This figure illustrates that malnutrition occurs in rural areas and this might be due to the fact that women are not having balanced and healthy diet due to unawareness or ignorance.

Conclusion :

The health status of rural women was not found satisfactory. They were either underweight or overweight. Many body composition components showed dispersal from normal range. Mean values of mineral and protein

were found below the normal range; which depicted poor nutrition among rural women. Due to lack of mineral they might have faced the problem of arthritis in future.

There is a need to make rural women aware about balanced diet to improve their nutritional status. Formulation of policies is in dispensable for improving their awareness regarding their health and nutritional status.

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