



To Assess the Effect of Moderization on Health Status of the Agricultural Labours

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ABSTRACT: Agricultural works are associated with a variety of unique occupational health hazards in the form of physical factors like extreme weather conditions, chemical and toxicological hazards including different forms of biological and mechanical improvements. Considering the above significance the present study was conceptualized to assess the effect of moderization on health status of the agricultural labours in West Bengal. A total number of 200 male agricultural labours data has been collected from Birbhum district of West Bengal, India and then stratified into two different groups i.e. 35 - 45 years and 46 - 55 years. The Body Mass Index (BMI) and Waist-Hip Ratio (WHR) data were compared with the World Health Organization's standard norms. The Overweight characteristics has been established in both the age group and they falls in the category of increased risk of co morbidities in respect of average BMI and moderate level of health risk in respect of average WHR. The Overweight and the moderate level of health risk characteristics of the agricultural labours could be prevalent due to the modernization in the agricultural field where the physical labour has been decreased and may be first time noticed in this study.

Key Words: Assessment, Health, Agricultural Labour.

Introduction:

Agricultural and plantation works are associated with a variety of unique occupational health hazards in the form of physical factors like extreme weather conditions, sunrays, etc; chemical and toxicological hazards in the form of pesticides/fertilisers, etc, including different forms of biological and mechanical hazards. As most of our rural people are engaged in varied types of agricultural activities, they are highly susceptible for suffering from numerous work related health disorders. There are very few data regarding the epidemiology of occupational health disorders among agricultural and plantation workers. Clinically well recognised group of occupationally acquired health problems may be respiratory, dermatological, traumatic, poisoning and neoplastic in nature. Prevalence of some specific zoonotic diseases and behavioural health problems are also found to be more among them. There is lack of attention for prevention and control of these occupational health problems. An adequately developed comprehensive occupational health care programme having all the components of preventive, curative

and rehabilitative aspects can only promote and maintain the highest degree of physical, mental and social well-being in all types of agricultural and plantation workers of rural India.

BMI (Body Mass Index) ranges from underweight to obese and is commonly employed among children and adults to predict health outcomes. The BMI trait is influenced by both genetic and non genetic factors, and it provides a paradigm to understand and estimate the risk factors for health problems.

The WHR (Waist-Hip Ratio) has been used as an indicator or measure of health, and the risk of developing serious health conditions. Research shows that people with "apple shaped" bodies (with more weight around the waist) face more health risks than those with "pear shaped" bodies who carry more weight around the hips.

The study was delimited to 100 subjects each from two age groups 35 - 45 years and 46 - 55 years male agricultural labour of Birbhum district of West Bengal. Timing of testing subjects, climatic conditions, Topography, life style and geographical conditions etc. have considered as the limitations of the study.

Aim and objective:

The present study was conceptualized to assess the effect of moderization on health status of the agricultural labours in West Bengal on the basis of few anthropometric parameters.

Material and methods:

Subject: A total number of 200 male agricultural labours BMI and WHR data has been collected from Birbhum district of West Bengal, India and then stratified into two different groups i.e. 35 - 45 years and 46 - 55 years.

Procedure: Body weight, height, waist and hip circumference and waist-hip ratio were measured by the following procedures:

- Weight was measured after removal of shoes while wearing light clothing.
- Height was measured without shoes in the standing position with the shoulders in relaxed position and arms hanging freely.
- BMI was calculated as weight (kg)/height in meter². The classification of BMI was as follows:

TABLE -1

Classification of adults according to BMI^a

Classification	BMI	Risk of comorbidities
Underweight	<18.50	Low (but risk of other clinical problems increased)
Normal range	18.50–24.99	Average
Overweight:	≥25.00	
Preobese	25.00–29.99	Increased
Obese class I	30.00–34.99	Moderate
Obese class II	35.00–39.99	Severe
Obese class III	≥40.00	Very severe

Source: WHO Technical report Series 894

- Waist circumference was measured using a measuring tape over the unclothed abdomen, with measurements made halfway between the lower border of the ribs and the highest point of iliac crest (at the umbilicus level) in the standing position⁵.

- Hip circumference was measured over light clothing at the widest point over the buttocks when viewed from the side⁵.
- Waist hip ratio was obtained by dividing the waist circumference by hip circumference. The participants with
 - WHR 0.80-0.84 were classified as overweight⁶ and
 - with WHR > 0.85 were classified as obese⁶.
 - Further Table - 2 is related with health risk rates⁷

TABLE - 2
HEALTH RISK RATES

MALE	FEMALE	HEALTH RISK
1+	0.95 +	High
0.91-0.99	0.86-0.94	Moderate
0.90 & below	0.85 & below	Low

Source: Waist-hip ratio Wikipedia, the free encyclopaedia

Health statuses of the agricultural labours were assessed by analyzing Table 1 and Table 2 with the mean BMI and WHR value.

Result:

The statistical analysis of data collected on 200 male agricultural labours of two different age groups i.e. 35 to 45 years and 46 to 55 years on various health related parameters namely Body Mass Index (BMI), Waist Circumference (WC) and Waist Hip ratio have been presented in table - 3 to table - 6.

TABLE - 3
BMI (Body Mass Index) IN AGRICULTURAL LABOUR

Classification	BMI (Reference Value Kg/m ²)	Results	
		35 - 45 Years (N = 100)	46 - 55 Years (N = 100)
Underweight	< 18.5	---	---
Normal weight	18.5 - 24	09 (09%)	26 (26 %)
Overweight	24.1 - 29.9	49 (49 %)	45 (45 %)
Obesity (Class I)	30 - 34.9	39 (39 %)	23 (23 %)
Obesity (Class II)	35 - 39.9	01 (01 %)	04 (04 %)
Extreme Obesity	> 40	---	---

Reference Values according to revised criteria of Asian Population.

Table - 3 & FIG - 1 shows the classification of BMI (Body Mass Index) in agricultural labour.

FIG - 1
BMI (Body Mass Index) IN AGRICULTURAL LABOUR

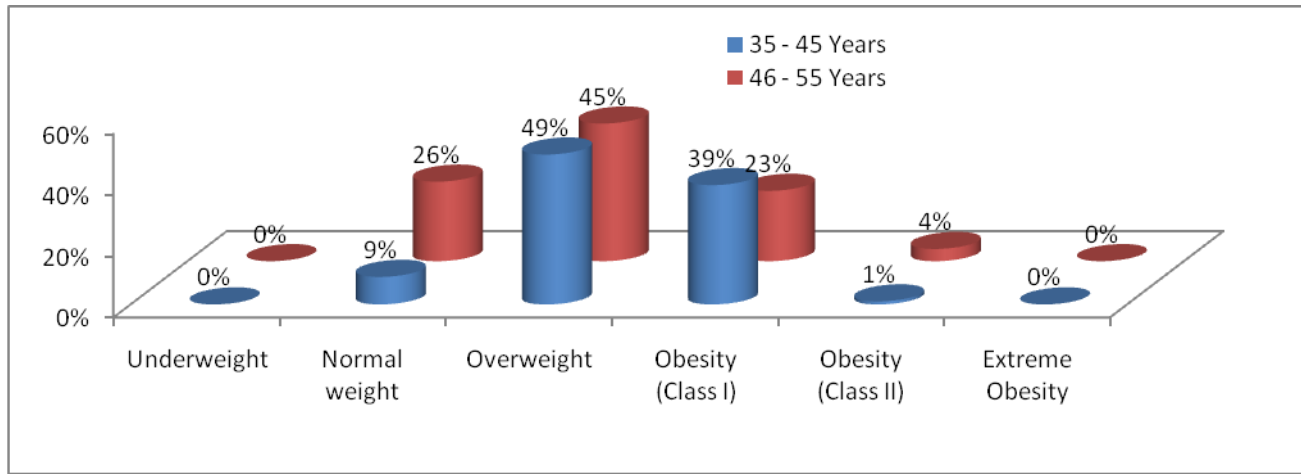


TABLE - 4
WHR (Waist Hip Ratio) IN AGRICULTURAL LABOUR

Health Risk	WHR	Results	
		35 - 45 Years (N = 100)	46 - 55 Years (N = 100)
High	1+	05 (05%)	27 (27 %)
Moderate	0.91-0.99	80 (80 %)	57 (57 %)
Low	0.90 & below	15 (15 %)	16 (16 %)

Source: Waist-hip ratio Wikipedia, the free encyclopedia

Table - 4 & FIG - 2 shows the health risk classification according to WHR (Waist Hip Ratio) in agricultural labour.

FIG - 2
WHR (Waist Hip Ratio) IN AGRICULTURAL LABOUR

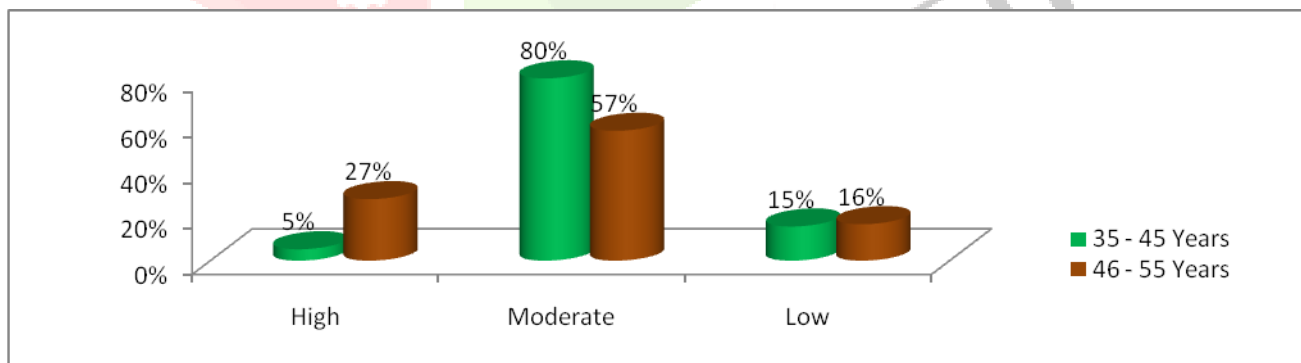


TABLE - 5
CHARACTERISTICS RELATED TO BMI OF AGRICULTURAL LABOUR

PARAMETERS	35 - 45 YEARS		46 - 55 YEARS	
	HEALTH RISK	OBESITY	HEALTH RISK	OBESITY
Body Mass Index (BMI)	27.88		26.88	
	Increased Risk of Co morbidities	Over Weight	Increased Risk of Co morbidities	Over Weight

Table - 5 indicating the result obtained from the study related to BMI. In both the age group the Increased Risk of Co morbidities and Overweight characteristics has been established as per as Body mass Index is concerned when compared with the World Health Organization's BMI norms.

TABLE - 6
CHARACTERISTICS RELATED TO WHR OF AGRICULTURAL LABOUR

PARAMETERS	35 - 45 YEARS		46 - 55 YEARS	
	HEALTH RISK	OBESITY	HEALTH RISK	OBESITY
Waist-Hip Ratio (WHR)	0.92		0.96	
	Moderate Level of Health Risk	Over Weight	Moderate Level of Health Risk	Over Weight

Table - 6 indicating the result obtained from the study related to WHR.

Discussion:

Present study was an assessment of health status of agricultural labour on the basis of Body Mass Index (BMI) and Waist-Hip ratio (WHR). Two male groups aged 35 to 45 Years with mean age of 39.6 ± 3.03 Years 46 - 55 years with mean age of 50.42 ± 2.74 Years were selected. Body Mass Index (BMI) and Waist-Hip ratio (WHR) has been conventionally used to classify 'Thinness or Thickness' and Health Risk.

Distribution of the respondents showed that in 35 - 45 years age group 9 % of the respondent had normal BMI, 49 % had Overweight, 39 % had Obesity (Class I) and 01 % had Obesity (Class II). In 46 - 55 Years age group 26 % had normal, 45 % had Overweight, 23 % had Obesity (Class I) and 04 % had Obesity (Class II) BMI.

Further as per as the score of WHR related to health risk is concern 05 % of the respondent had high, 80 % had Moderate and 15% had low level of health risk in 35 - 45 years of age group. In 46 - 55 years 27 % had high, 57 % had moderate and 16 % had low level of health risk.

In both the age group the Increased Risk of Co morbidities and Overweight characteristics has been established as per as Body mass Index is concerned when compared with the World Health Organization's BMI norms with mean BMI 27.88 and mean BMI 26.88 in 46 - 55 years.

Further in both the age group the Moderate Level of Health Risk and Overweight characteristics has been established as per as Waist Hip Ratio is concerned with mean WHR 0.92 in 35 - 45 years and 0.96 in 46 - 55 years when compared with the World Health Organization's WHR norms.

Health status of any population are direct depiction of genetical endowment as well as lifestyle, the common livelihood patterns, cultural ethos, believes, Diatec pattern etc. Body Mass Index (BMI) provides the most useful albeit crude, population-level measure of obesity and the risk associated with it. Waist-Hip Ratio (WHR) is used as a measurement of Obesity which in turn is possible indicator of other more serious health conditions.

Conclusion:

The result of the present study shows that maximum percentage of the population in both the age group are falls in Overweight category according to Body Mass Index (BMI) and Moderate level of health risk according to Waist-

Hip Ratio. It could be due modernization in the agricultural field where the uses of modern and improved tools and techniques has reduced the physical labour of the agricultural labour.

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