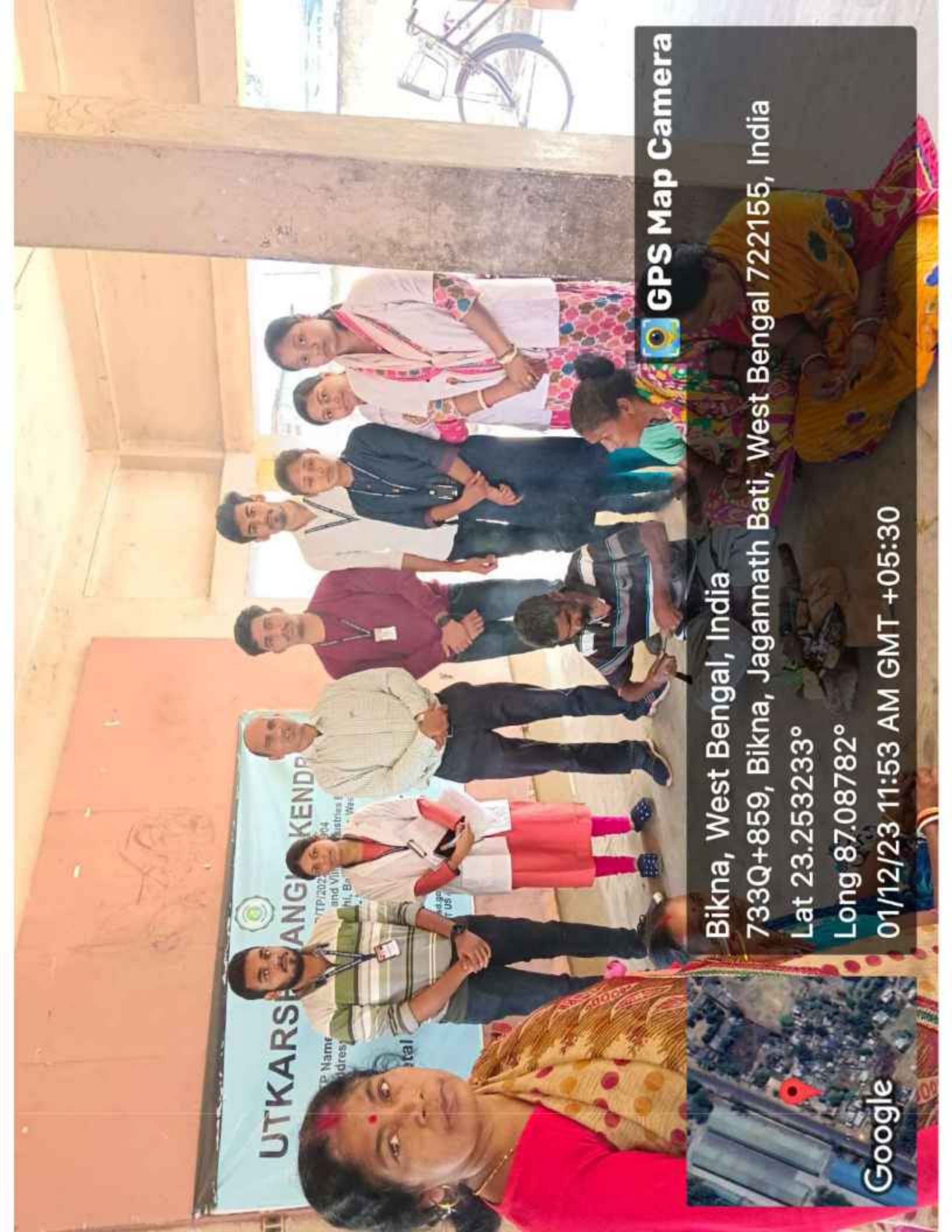




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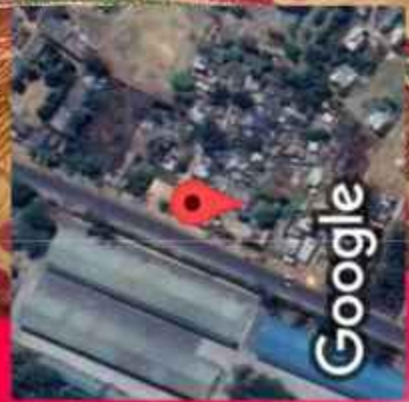
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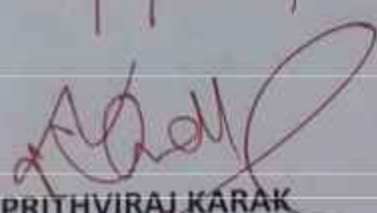
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This is to certify that Sri / Miss / Smt. Nibedita Bauri
UID No. 21013125011 Regn. No. 00518 of session
..... (Honours/Programme) has completed his / her project
entitled "Assessment of Nutritional Status of
school children in rural areas
of Bankura, west Bengal." as partial
fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 2/3/2024


DR PRITHVIRAJ KARAK
Assistant Professor,
Department of Physiology,
Bankura Christian College,
Bankura-722101



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This is to certify that Sri / Miss / Smt. Subhna Raj
UID No. 20011125011 Regn. No. of session
2020-21 (Honours/Programme) has completed his / her project
entitled "Cardiorespiratory status and Physical efficiency
of Doker craft workers in Bikra, Bankura."
..... as partial
fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 21/3/2024

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Assistant Professor,
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School children in rural areas
of Bankura, West Bengal" as partial
fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 2/3/2024

DR PRITHVIRAJ KARAK
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Bankura Christian College
Bishnupur, Bankura



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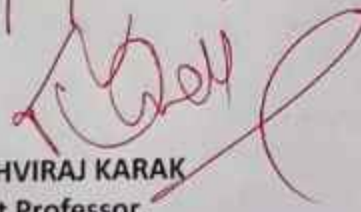
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UID No. 21013125014 Regn. No. 00521 of session
21-22 (Honours/Programme) has completed his / her project
entitled "Cardiorespiratory status and
Physical efficiency of Dokra craft
workers in Birna, Bankura" as partial
fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 2/2/2024


DR PRITHVIRAJ KARAK
Assistant Professor,
Department of Physiology,
Bankura Christian College,
Bankura-722101



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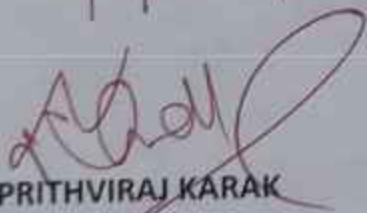
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UID No. 21013125011 Regn. No. 00518 of session
(Honours/Programme) has completed his / her project
entitled "Assessment of Nutritional Status of
School children in rural areas
of Bankura, West Bengal." as partial
fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 2/3/2024


DR PRITHVIRAJ KARAK
Assistant Professor,
Department of Physiology,
Bankura Christian College,
Bankura-722101

Date: 6th October 2023

To

The Principal,

Bankura Christian College,

Bankura -722 101.

Through HOD, Physiology Department.

Sub: Request for permission to conduct field survey

Respected Sir,

This is to inform you that our Departmental 5th Semester Honours students are going for filed survey program as per Bankura University curriculum. They will visit at Dokra craft village, Bikna in Bankura for one project and another project they will visit two Schools for their field survey during 7th October 2023 to 16th December 2023 as per their filed survey class schedule in routine.

Therefore, I request you kindly give permission to conduct filed survey program.

Thanking you,

Yours faithfully,

(DR. PRITHVIRAJ KARAK)

Arpita Pan
21/10/23
Principal
Bankura Christian College

Name of the 5th Semester students participating

Topics

Signature

1. Arpita Pan
2. Subhra Raj

[Cardio-respiratory status and physical efficiency of Dokra Craft workers in Bikna, Bankura.]

Arpita Pan
Subhra Raj

3. Nibedita Bauri
4. Ananya Mondal

[Assessment of Nutritional status of School Children in rural areas of Bankura, West Bengal.]

Nibedita Bauri
Ananya Mondal

Name of the Filed Survey Guide:

Dr. Prithviraj Karak

Dr. Prithviraj Karak
27/10/2023



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Bankura - 722 101, West Bengal, India
Phone : 03242-250924 Fax : 03242-250924

CERTIFICATE

This is to certify that Srf / Miss / Smt. Subhpa Rao
UID No. 2001125012 Regn. No. of session
2020-21 (Honours/Programme) has completed his / her project
entitled "Cardiorespiratory status and physical efficiency
of Dahanu craft workers in Bikna, Bankura"
..... as partial
fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 24/3/2024

DR PRITHVIRAJ KARAK
Assistant Professor,
Department of Physiology,
Bankura Christian College,
Bankura-722101

To

Date: 6th October 2023

The Principal,

Bankura Christian College,

Bankura - 722 101.

Through HOD, Physiology Department.

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Thanking you,

Yours faithfully,

(DR. PRITHVIRAJ KARAK)

Alina Sam
21/10/23
Principal
Bankura Christian College

Name of the 5th Semester students participating

Topics

Signature

1. Arpita Pan

2. Subhra Raj

{ Cardio-respiratory status and physical efficiency of Dokra Craft workers in Bikna, Bankura }

Arpita Pan

Subhra Raj

3. Nibedita Bauri

4. Ananya Mondal

{ Assessment of Nutritional status of School Children in rural areas of Bankura, West Bengal }

Nibedita Bauri

Ananya Mondal

Name of the Filed Survey Guide:

Dr. Prithviraj Karak

07/10/2023

**ASSESSMENT OF NUTRITIONAL STATUS
OF SCHOOL CHILDREN RURAL AREAS
OF BANKURA, WEST BENGAL**

**FIELD SURVEY SUBMITTED FOR THE
FULFILLMENT AGAINST CURRICULUM OF THE
UNIVERSITY OF BANKURA**

BY

ANANYA MONDAL

DEPARTMENT OF PHYSIOLOGY

UID: 21013125005

REG. NO - 00512 OF 2021-22

SESSION - 2023-24



DEPARTMENT OF PHYSIOLOGY BANKURA CHRISTIAN COLLEGE

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CERTIFICATE

This is to certify that Sri / Miss / Smt. Ananya Mondal
UID No. 21013125005 Regn. No. 00512 of session
2021-2022 (Honours/Programme) has completed his / her project
entitled "Assessment of Nutritional Status of
School children in rural areas
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fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 2/3/2024


DR PRITHVIRAJ KARAK
Assistant Professor,
Department of Physiology,
Bankura Christian College,
Bankura-722101

Examined
Dept. of Physiology
Bankura Christian College
Bishnupur, Bankura

To

Date: 6th October 2023

The Principal,

Bankura Christian College,

Bankura -722 101.

Through HOD, Physiology Department.

Sub: Request for permission to conduct field survey

Respected Sir,

This is to inform you that our Departmental 5th Semester Honours students are going for filed survey program as per Bankura University curriculum. They will visit at Dokra craft village, Bikna in Bankura for one project and another project they will visit two Schools for their field survey during 7th October 2023 to 16th December 2023 as per their filed survey class schedule in routine.

Therefore, I request you kindly give permission to conduct filed survey program.

Thanking you,

Yours faithfully,

(DR. PRITHVIRAJ KARAK)

Name of the 5th Semester students participating

1. Arpita Pan
2. Subhra Raj

[Cardio-respiratory status and physical efficiency of Dokra Craft workers in Bikna, Bankura.]

3. Nibedita Bauri
4. Ananya Mondal

[Assessment of Nutritional status of School Children in rural areas of Bankura, West Bengal.]

Signature

Arpita Pan
Subhra Raj

Nibedita Bauri
Ananya Mondal

Name of the Filed Survey Guide:

Dr. Prithviraj Karak

07/10/2023



Fig: 7 Different schools where field study has done

ACKNOWLEDGMENT

I am expressing a humble note of acknowledgement to all those who come along with me and helping me to reach my goal.

At the outset, I express my sincere gratitude to Dr. prithwraj Karale, Assistant professor and of the Department of physiology, Bankura christian college, for providing me the necessary help. I consider myself truly blessed to have been under his guidance and supervision.

I am immensely obliged to Dr. Rajkumar Maity (HOD) Assistant professor of Department of physiology whose continuous help and active encouragement has guided me throughout the course of the work.

Special thanks to Dr. Fatih Baran Mandal, principal of Bankura christian college for providing me the necessary help.

I offer my special gratitude to all staffs and guest faculty members of Dept. of physiology, Bankura christian college for their constant help.

Last but not least I also want to thank to the teachers and students of Bankura Zila School, Bankura; Kenduadi girls high school, Kenduadi, Bankura.

I am thankful to my friends and family members for their support and cooperation during the study.

DECLARATION

I hereby declare that field work done on the topic "ASSESSMENT OF NUTRITIONAL STATUS OF SCHOOL CHILDREN IN RURAL AREAS OF BANKURA, WEST BENGAL" is original piece of field work done by me.

I have specified by means of reference from the information has been taken.

Date: 2/3/24

Ananya Mondal
Roll No - 812
Department of physiology
Bankura christian
college.

LIST OF ABBREVIATIONS USED

a) wt = weight.

b) Ht = Height

c) BMI = Body mass Index.

d) BSA = Body surface Area.

e) WC = waist circumference.

f) HC = Hip circumference.

g) MUAC = mid. upper arm circumference.

h) BP = Blood pressure.

i) PEF = Peak expiratory flow rate.

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INTRODUCTION

Adolescents are tomorrow's adult population, and their health and well-being are crucial. Yet, interest in the health of adolescents is relatively recent, and a focus on their nutrition even more so (1). The term "adolescents", as defined by the World Health Organization (WHO), includes persons aged 10-19 years. Being in transition, adolescents may no longer benefit from the attention and care usually given to children, and may not obtain the protection associated with adult hood either. Adolescents make up roughly 20% of the total world population. Adolescents have an even higher demographic weight in developing countries, i.e. approximately 26% in Salvador, compared to 14% in USA. In 1995, there were 314 million adolescents living in the developing world, contributing 85% to their total numbers. Their number is expected to reach 1.12 billion by the year 2025. Nutrition influences growth and development throughout infancy, childhood and adolescence. However, (2). Many adolescents are in school, which provides an effective and efficient opportunity for large portions of the population beyond the students themselves to be reached, including school personnel, families and community members. Overall, nutritional status is better assessed with anthropometry in adolescence as well as at other stages of the life cycle. Anthropometry is the single most inexpensive, noninvasive and

universally applicable method of assessing body composition, size and proportion (3).

However, because of important changes in body composition during adolescence and particularly during the puberty-related growth spurt which varies in its timing, conducting an assessment of obesity or undernutrition is more complex in adolescents than it is in adults or younger children. Much less is known and carried out with respect to adolescent anthropometry than in it is for the younger age groups. It is possible that rapid changes in somatic growth in adolescence, problems of dealing with variations in the maturation rate and difficulties involved in separating normal variations from those associated with health risks, have been determinants to the development of a corpus of scientific knowledge linking adolescent anthropometry with determinants and outcomes. Adolescence may represent a window of opportunity in which to prepare nutritionally for a healthy adult life (4). Nutritional deficiencies have far reaching consequences, especially for adolescent girls. If their nutritional needs are not met, they are likely to give birth to undernourished children, thus transmitting under nutrition to future generations. In developing countries, many children with mild to moderate malnutrition survive to reach adolescence, when

Malnutrition tends to remain mild but chronic, being detectable only by anthropometric measurement. On the other hand, relatively well nourished children may develop malnutrition in adolescence as a result of acquired dietary habits, influenced by obsession with thinness (5). Many developing countries face an increasing dual burden of under and overnutrition (6). It has been thought that adolescents have the lowest mortality among the different age groups. Therefore, they have been a low priority in terms of status assessment (7). Body mass index (BMI) has been recommended for use as a screening tool for overweight, obesity and thinness in adults and adolescents (8).

According to UNICEF data, 90% of developing world's undernourished children live in Asia and Africa while 40% of the world's malnourished live in India (9). The 2013 Global Hunger Index Report ranked India 164th, which represents the serious hunger situation. The national Family Health Survey (NFHS) data indicates that 43% of children below 5 years of age are overweight.

Approximately 20% of the population in every country constitutes school age children 5-15 years. About 200 million children belong in this group and majority of them reside in under privileged areas in

the rural India (10).

This study set out to assess the nutritional status of tribal students in Bankura, West Bengal, India, with a view to determine the prevalence of malnutrition and to observe gender differences, if any, in the nutritional status of the respondents.

AIMS & OBJECTIVES

During the adolescent growth spurt body requires lots of nutrients which should be stored in the body during childhood and if body stores are deficient it can result in adverse health consequences like growth retardation, scholastic backwardness and reduced work capacity.

There is a relative scarcity of available literature on the information regarding nutritional status of tribal and general cast school going children particularly from rural areas. Keeping this in view, the objective of present study was to assess the nutritional status of rural tribal and general cast school-going children of Bankura district, west Bengal.

- a) To determine the nutritional status of tribal and general cast children based on their BMI and weight migration and its relation to various factors like gender, area of residence and socio economic status.
- b) To estimate the prevalence of acute under nutrition among the adolescent tribal and general cast subjects of Bankura, west Bengal.
- c) To find out the anthropometric indicators as predictors of nutritional status among the adolescent tribal and general cast subjects of Bankura, west Bengal.

4) To find out the variation in adiposity levels, regional distribution of fat and its impact on cardio-respiratory health among adolescent tribal and rural cast. subjects of Bankura, west Bengal.

5) To screen adolescents for severe under-nutrition to determine the need for admission to therapeutic feeding.

REVIEW OF LITERATURE

In 2012 Samiran Bisai et al. has worked on "Prevalence under nutrition among Santal tribal preschool children of Paschim Medinipur District, West Bengal, India". They found that the health and nutritional standards studies children were found to be unsatisfactory. Girls were more prone to have under nutrition than boys. According to WHO criteria for assessing severity of malnutrition, the rate of underweight, stunting and wasting were very high, indicating a critical situation, therefore respective authority should be undertaken as an effective public health strategy to combat child malnutrition among socioeconomically vulnerable communities in India and adjoining developing countries where the rate of malnutrition is very high.

In 2015 Kerala Rekha Rachel Philip et al. has worked on prevalence of under nutrition among tribal preschool children in Wayanad district of Kerala. The prevalence of under nutrition among the tribal children is higher than non-tribal children of Kerala. But their nutritional status is better in comparison to tribal children in other states of the country suggesting the impact of better public health policies of the

State. However, the current situation calls for an urgent need to improve health care services to the tribal population and tribal children. The study thus has policy implications. The evidence from this article is a pointer for all those high performers in health to look into the hidden morbidities existing among its marginalized communities.

In 2016 Dave P.H. et. al. has worked on Assessment of nutritional status of tribal school going children of Sabarkantha district, Gujarat. Tribal school going children were coming from lower socio-economic condition. Mean height and weight of the tribal school going children were lower as compared to ICMR standards. As per water low's classification, more than half of the tribal school going children were suffering from varying degree of malnutrition especially marginal and moderate malnutrition. Very low weight for height was found in the tribal school going children which indicated high level of thinness (wasting) amongst the children.

In 2017 Prithvirajkarale et. al. has worked on Assessment of nutritional status of school children in rural and urban areas of Bankura, West Bengal. This study highlights that children from rural areas and belonging to lower socio-economic classes are more nutritionally deprived than their counterparts. This difference highlights the necessity of a differential approach in combating malnutrition. The present study also shows reveals that the rural school going children of Bankura district are suffering from different grades of malnutrition. The clinical sign (General appearance) observations also supported the result of anthropometric status of children. It was revealed that a majority of rural school children suffer from under-nutrition. Compared to the urban school children according to their BMI score, weight circumference and waist-hip ratio.

MATERIALS AND METHODS

A school based observational cross sectional study was carried out in the Dept. of physiology, Bankura christian college.

Method of collection Data:

After obtaining authorized consent from the principal, Bankura christian college, we have visited the school and the data was collected by using ready-made preform. All children between 12-16 years of age as determined using school records were included in the study. The data was collected by interviewing and examining the children with the help of class teacher.

Sample size:

A total of 80 children were included in the study. Belonging to the age groups 12-16 years were selected for the study. The study was conducted from the month of October 7th to December 16th, 2023.

Inclusion criteria:

Children of 12-16 year were included in this study.

exclusion criteria:

children who were seriously ill, too agitated and unwilling from anthropometric measurements were excluded from the study.

The methodology comprised of interview and physical examination. Socio-economic status (SES) is determined by using Modified prasad's Scale (11). The information was collected on predesigned and pretested proform.

• Assessment of important signs:-

The important signs looked for during clinical examination are pallor, Hair changes (sparse hair / depigmentation of hair), eye changes (conjunctival xerosis, bitot's spots, Corneal xerosis) cheilosis / angular stomatitis, teeth changes (enamel mottling, caries, delayed eruption), skeletal changes, cretism, skin changes (dry skin, flaky paint dermatosis, crazy pavement dermatosis) and Koitonychia.

• Assessment of Malnutrition:-

Nutritional status of the children was assessed by anthropometric measurements. WHO anthropometric classification was used for the assessment of malnutrition based on the age, body weight and height, a number of indices such as weight for -age, and BMI - for -age have been suggested (12). Under nutrition that is wasting and stunting were defined according to waterlow's classification (11).



Fig:- Measurement of Height



Fig:- Measurement of weight

Data on children's growth status was obtained by measuring weight and height. Information on age of the child, socio-demographic characteristics, birth interval, history of infectious diseases and diet history were collected from the mother of the selected students using a structured questionnaire. The children are classified using three categories: 'Underweight' (low weight-for-age), 'stunting' (low height-for-age) or 'thinness' (low BMI-for-age).

Low anthropometric values are those more than 2SD away from the CDC 2000 (Centres for Disease Control and Prevention) standards (11-14).

i) Questionnaire includes demographic information (gender & age), food habits, medical history (hypertension, diabetes, coronary heart disease, chronic renal disease, chronic respiratory diseases, etc.), behaviour and personal habits (e.g.; smoking) and family history.

ii) Anthropological parameters :-

Each subject will be measured for height, weight, circumferences at waist and hip, and skinfold thickness at biceps, triceps, suprailiac and subscapular. Anthropometric measurements

will be taken by using standard protocols given by weiner and Lowrie (15-16). Stature will be taken with the help of anthropometry in the standard arm hanging position; body weight will be measured by using spring balance with minimum clothing.

Table - 1: Category of malnutrition according to BMI value as per WHO cut-offs

(Source: WHO, 1999. Management of Severe Malnutrition: A Manual for Physicians and other Senior Health Workers. Geneva: WHO).

BMI	Nutritional Status
< 16.0	Severe Malnutrition
≥ 16.0 to < 17.0	Moderate malnutrition
≥ 17.0 to < 18.5	Mild Malnutrition
≥ 18.5 to < 25.0	Normal nutritional status

iii) Middle upper arm circumference (MUAC) will be measured in centimetre with a non-stretched measuring tape with the right arm hanging relaxed. The measurement will be taken midway between the tip of the acromion and olecranon process. bicep circumference (BC), Mid upper arm circumference and chest circumference (CC) will be determined.

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Bishnupur, Bankura



Fig:- Measurement
of Mid-upper
arm circumfe-
rence



Fig: Measurement of Hip
Circumference

Table 2:- MUAC cut-offs to classify nutritional status in children 14 years to 18 years of age (Source: Nutrition Assessment, Counselling and Support (NACS); December 2013).

	Severe acute malnutrition (SAM)	Moderate malnutrition	Normal
10-14 years	$< 110 \text{ mm}$	$\geq 110 \text{ to } < 125 \text{ mm}$	$\geq 125 \text{ mm}$
14 years Adults	$< 100 \text{ mm}$	$\geq 100 \text{ to } < 220 \text{ mm}$	$\geq 220 \text{ mm}$

Waist Circumference (WC) will be measured with a non stretchable anthropometric tape (Mabell) at the mid point between the last rib and the iliac crest and use the average of both measures. The waist-to-height ratio (WHER) will be determined by dividing waist circumference (cm) by height (cm) and the body mass index (BMI) will be determined by measuring weight, height and waist circumference by using the mathematical equation.



Fig:- Measurement of
Blood Pressure.



Fig:- Determination of Peak-Expiratory
flow rate by mini Peak flow meter

	DOESP		WHO		NIDDK	
	woman	man	woman	man	woman	man
under weight	?	?	?	?	?	?
Normal weight	<0.80	<0.90	?	?	?	?
Over weight	0.80 - 0.84	0.90 - 0.99	?	?	?	?
obesity	>0.85	>1.00	>0.85	>0.90	>0.80	>1.00

- Measurement of Blood pressure :- Blood pressure will be checked by auscultation, using a mercury sphygmomanometer (Mukherjee) with appropriate cuff or the arm circumference, after the student remained five minutes at rest and sitting. Reading will be taken in sitting posture and on the right hand of the participants. Three readings of the BP of each subject will be taken, maintaining an interval of 2 min between each reading. The mean of three readings will be reported in accordance with the JNC 7 recommended standard.

- Measurement of peak expiratory Flow Rate :- peak expiratory flow rate works by measuring how fast air comes out of the lungs when you



Fig 1: Measurement of Handgrip
(Right) Muscle strength by
Handgrip dynamometer

exhale forcefully after inhaling fully. The measure is called a "peak expiratory flow", or "PEF". Keeping track of your PEF is one way you can know if your symptoms of asthma are in control or worsening.

• Assessment of Hand grip Strength:-

The most common method of assessment the grip strength is the use of a hand held dynamometer. Hand-held grip strength dynamometer is used to measure the muscular force generated by flexor mechanism of the hand and forearm. Grip strength has long been thought of as a possible predictor of overall body strength and also grip strength may also play a role in injury prevention and rehabilitation. The participant was in a standing position, arms at their side, not touching their body, keeping elbow bent slightly. Administer the test on the non-dominant hand. Ask by asking the participant to squeeze the dynamometer with as much force as possible, being careful to squeeze only once for each measurement. Three trials were made with a pause of about 10-20 seconds between each trial to avoid the

effects of muscle fatigue.

• Statistical Analysis:-

The data was analysed statistically by using appropriate statistical tools such as mean, standard deviation and percentage. Coefficient of correlation and was also performed and the level of significance was also tested.

RESULTS

Table 3, Shows the percentage distribution of the nutritional deficiency signs amongst rural male and female students. The description of the rural male children is as follows - General Appearance: A majority of the rural male student respondents (55%) were classified as good and fair, (5%) were poor level where as the rural female students (92%) were classified as fair, (6%) poor.

Hair: 71% of rural male children had normal hair. However, had dull hair or hair with out lustre. where as 92% of rural female student has normal hair and remaining were with out lustre. So there is a significant difference in hair condition, it may assume that it is due to the deficiency of nutritional.

Eyes: There is no significant differences are observed.

Lips: In rural male students only 3% of the students were observed to suffer mild to marked angular stomatitis where as, in rural 2% female students only suffer from mild angular stomatitis.

Gums: were observed in normal in 100% of the rural male school children respondents, among rural female school children respondents 100%, while 0% of rural male school children had bleeding gums.

Teeth: 10% of the rural male school children had chalky teeth confirming the deficiency of calcium. 5% had discoloured teeth which could be a result of poor dental care.

Skin appearance: was normal in 82%, dull in lustre in 8% and dry and rough was 10% in rural male school children where as 80% were normal and only 15% were dry and rough in rural female school children.

Bones: were found normal in both rural male & female school children. None of the children had Rickets or any other visible orthopedic problem.

Table 3: Comparative Study of Assessment of important physical Sign at different portion of the body of Rural male school children (Group-1; n=40) and Rural female school children (Group-2; n=40)

Sl. No	Clinical Sign (General Appearance)	Category	Group-1	Group-2
1.	General Appearance	Good	80%	76%
		Fair	15%	16%
		Poor	5%	6%
		Very poor	—	2%
2.	Hair	Normal	71%	82%
		Loss of lustre	20%	5%
		Discoloured & dry	9%	2%
		Sparsely & Brittle	—	1%
3.	Eye Discharge	absent	98%	99%
		Watery	2%	1%
		Mucopurulent	—	—
4.	Lips	Normal	95%	98%
		Angular Stomatitis mild	3%	2%
5.	Gums	Normal	100%	100%
		Bleeding	—	—
		Pyorrhoea	—	—
		Retracted	—	—
6.	Teeth	Absent	88%	84%
		Chalky Teeth	10%	9%
		Pitting of teeth	2%	—
		Discoloured	5%	7%
7.	Skin	Normal	82%	80%
		Loss of lustre	8%	5%
		Dry & Rough	10%	15%
		Hyperkeratosis	—	—
8.	Bones	Normal	100%	100%
		Rickets	—	—

The study group consisted of 80 children's out of which equal number of male and female students from rural area with a mean age of 13.02 ± 1.10 years for male school children of rural area and for female school children of rural area also 13.02 ± 1.8 years were included in this study. Table and fig. 1 summarized the comparison of participant's general anthropometric information in terms of age, height and weight, body mass index and body surface area and also determine the numbers of subjects according to the WHO guideline.

Table 4: Comparative studies of height, weight and BMI.

Subject	Age $\pm$ SD	Height $\pm$ SD	Weight $\pm$ SD	BMI $\pm$ SD	BSA $\pm$ SD
Group-1	13.02 ± 1.10	151.82 ± 7.82	47.77 ± 7.05	20.07 ± 1.06	1.38 ± 0.10
Group-2	13.02 ± 1.8	144.44 ± 4.01	38.32 ± 4.26	18.17 ± 0.26	1.22 ± 0.05

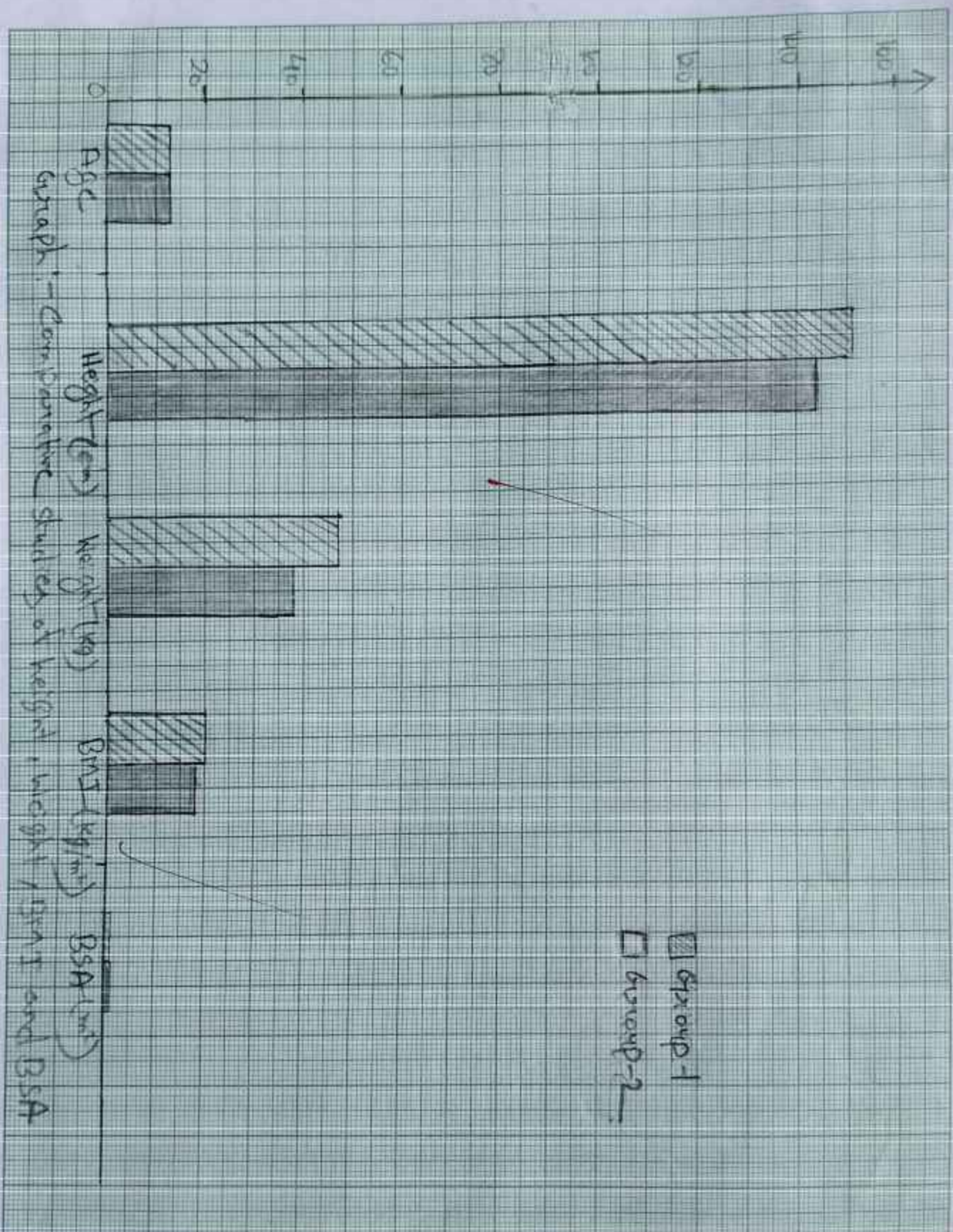


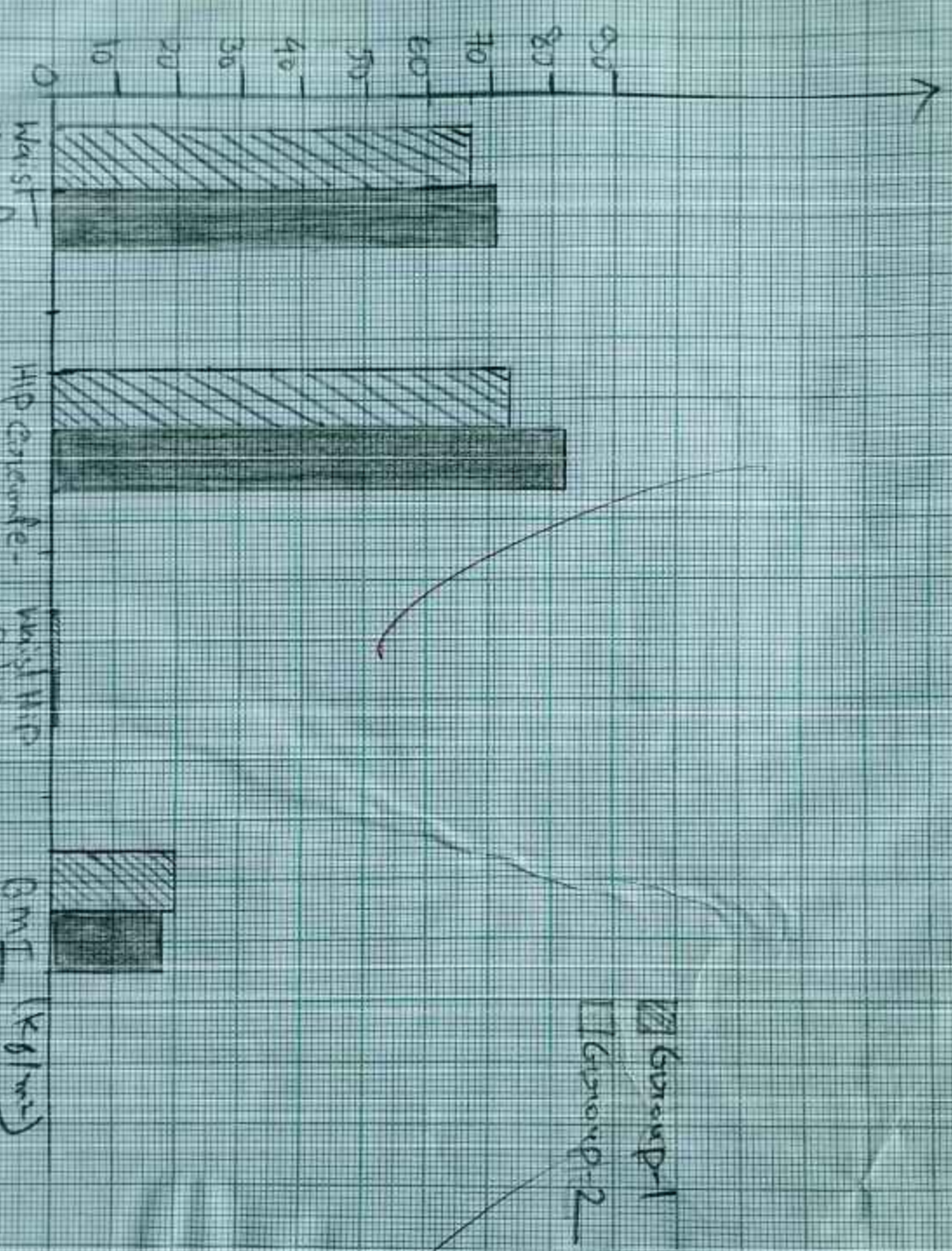
Table-5: Shows the comparison between WHR and BMI among both rural male and female school children.

In Group-1, WHR was 0.91 ± 0.09 with BMI 20.07 ± 1.06 . Group-2 had WHR 0.86 ± 0.02 & BMI 18.17 ± 0.26 . Comparison also revealed a linear positive correlation graphically in all groups between WHR and BMI. (fig:2)

Table-6: Comparative Studies of waist Hip ratio and BMI among rural male and female school children.

Sl.No	Parameter	Group-1	Group-2
1.	Waist circumference (cm)	67.2 ± 6.01	71.5 ± 6.25
2.	Hip circumference (cm)	73.65 ± 6.78	82.8 ± 6.40
3.	Waist Hip ratio (WHR)	0.91 ± 0.09	0.86 ± 0.02
4.	BMI	20.07 ± 1.06	18.17 ± 0.26

Graph 1- Comparative studies of waist-hip ratio and BMI among rural male and female school children



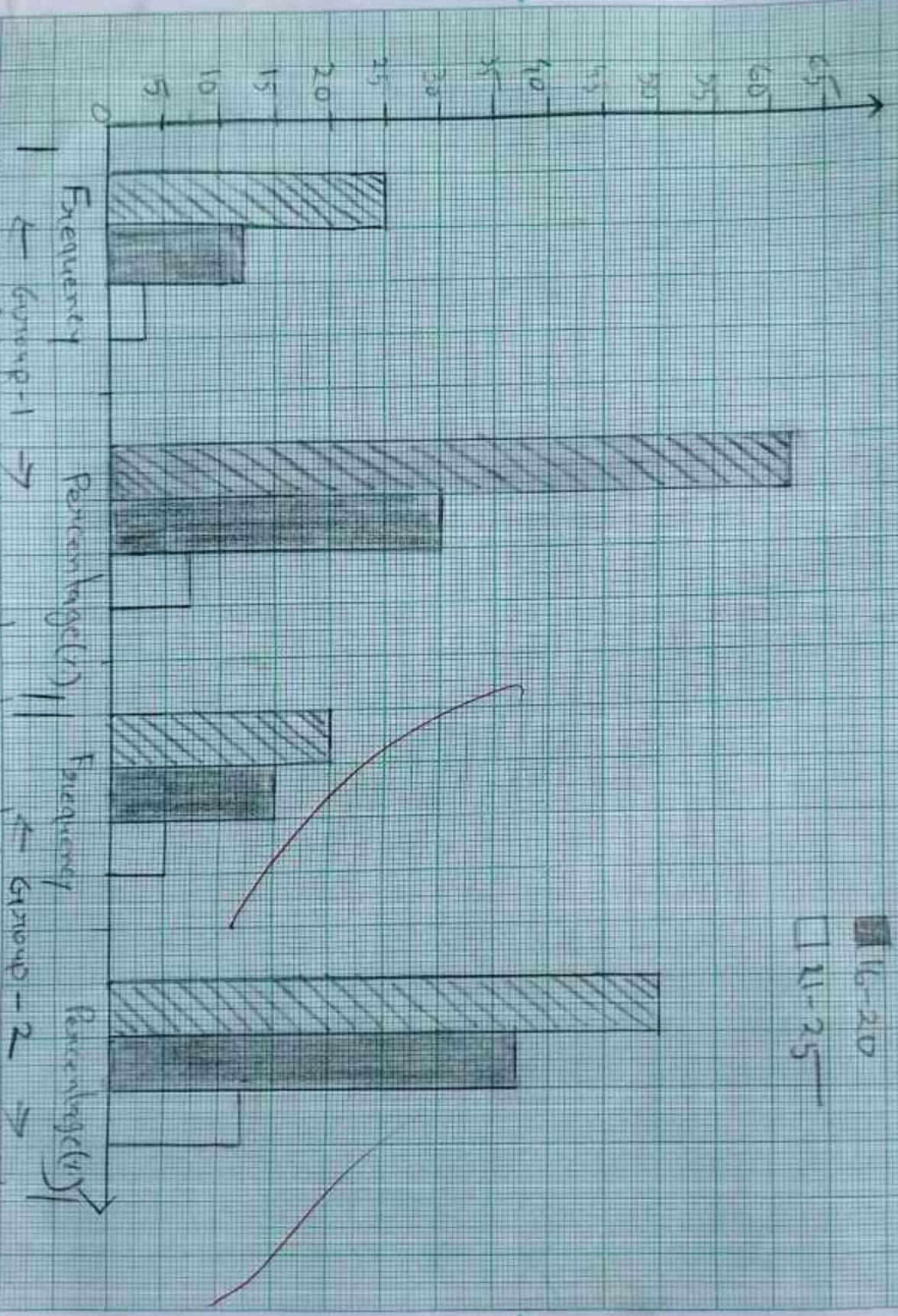
■ Group-1
 ■ Group-2

MUAC is an appropriate indicator for the assessment of acute adult under nutrition. The indicator is useful for both screening acute adult under nutrition and for estimating prevalence of under nutrition at a population level. Table shows the result of mid-upper arm circumference (MUAC) for the rural male school children (Group-1) those MUAC values were above 10 to 15, their percentage was 62.5% and they were normal. Those rural male school children MUAC values ranges between 16-20 and their percentage was 30%, they were moderate malnutrition, and MUAC values above 21-25 were 7.5% they were severe acute malnutrition. On the other hand the rural female school children (Group-2) those MUAC values ranges between 10-15 and their percentage was 50%, they were moderate malnutrition and MUAC values above 16-20 were 37.5% they were normal and those MUAC values ranges between 21-25 their percentage were 12.5% they are severe acute malnutrition.

Table: MUAC for both rural male and female school children.

Sl. No	Variable (cm)	Group-1		Group-2	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	10-15	25	62.5%	20	50
2	16-20	12	30	15	37.5
3	21-25	3	7.5	5	12.5

▨ 10-15
 ▤ 16-20
 □ 21-25



Graph: MUPC for both sexual male and female school children

Table 7, Shows the percentage of different grades of nutritional status according to their BMI, we and WHR. According to this three anthropometric variables majority of rural male school children suffer from under weight whereas less rural female school children suffer from under weight (fig:4)

Table:7, Comparison of percentage of nutritional status according to their BMI, we and WHO.

Nutritional Category	Group-1			Group-2		
	BMI n(%)	WE n(%)	WHR n(%)	BMI n(%)	WE n(%)	WHR n(%)
under weight	30 (75%)	35 (87.5%)	25 (62.5%)	28 (70%)	3 (7.5%)	5 (12.5%)
Normal	7 (17.5%)	5 (12.5%)	5 (12.5%)	10 (25%)	35 (87.5%)	20 (50%)
over weight	3 (7.5%)	6	10 (25%)	2 (5%)	2 (5%)	15 (37.5%)

DISCUSSION

Improved child health and survival are considered universal humanitarian goals. In this respect, understanding the nutritional status of children has far-reaching implications for the better development of future generations. However, reports have stated that child malnutrition has risen in recent years in India.

The Socio economic characteristics of the rural children revealed that the majority (60.2%) of the head of the household were farmers and civil servants and remaining of them earn less than RS 1,20,000 per year. Such a relatively low income will most likely affect the nutritional status of subjects in such homes. Considering the cost of living in the Bantars. The income of the household head therefore, appears to be a major factor in determining the nutritional status of mothers and children in the household. The high levels of malnutrition in the present study underline the great need for nutritional intervention.

A healthy child becomes a healthy adult of the various factors which determine the health of the child, nutrition plays the most vital role. Low body weight is unhealthy and harmful in the way it has dire consequences on both physical and physiological well-being of a child. Decreased level of thinking, impaired concentration, irritable mood and heightened obsessiveness, while contributing to the psychological effects of malnutrition, undermines the academic performance of a child and leads to the development of a socially withdrawn child.

On the other hand, malnutrition has a profound impact on immune system by weakening the defences and aggravating the effect of infections. Infections contribute to malnutrition by a variety of mechanisms including anorexia and impaired absorption of

nutrients. This shows that enteric infection begets malnutrition and malnutrition begets more infections.

The mean height of rural group-1 children in the 14-16 years age group was 151.82 cm which was differing from the mean height of rural group-2 children in same age group. The mean weight of rural group-1 school children was 47.77 kg which was higher than the mean weight of rural group-2 school children. The mean BMI among the rural group-2 school children were 18.17 kg/m² which were less than the mean BMI of rural group-1 school children.

The mean waist circumference and hip circumference among rural group-1 school children were 67.2 cm and 73.65 cm which was lower than the mean waist and hip of rural group-2 school children were 71.05 and 82.8 cm respectively. So, the mean waist hip ratio (WHR) of rural group-1 school children was higher than the mean WHR of rural group-2 school children. The frequency (%) of MUAE among rural group-1 school children which was differ from the frequency (%) of MUAE of rural group-2 school children. The percentage of obesity as per BMI, WHR and WHR among rural group-1 school children was differing from the percentage of obesity as per BMI, WHR and WHR of rural group-2 school children.

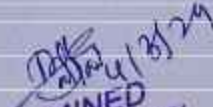
CONCLUSION

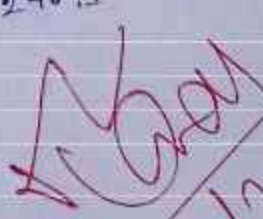
This study highlighted that children from rural areas and belonging to lower socio-economic classes are more nutritionally deprived than their counterparts. This difference highlights the necessity of a differential approach in combating malnutrition. The present study also shows reveals that rural school going children of Bankura district are suffering from different grades of malnutrition. The clinical sign (general appearance) observations also supported the result of anthropometric status of children. It was revealed that the majority of rural male school children suffer from under nutrition compared to the rural female school children according to their BMI score, waist circumference and waist-hip ratio.

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 EXAMINED
 Dept. of Physiology
 Ramananda College
 Bannur, Bankura


 2/3/2014


 4/3/2014



শ্রীমন্তে
জিউট্টবালিকা বিদ্যালয়
কেলুয়াডিহি বাঁকুড়া
স্থাপিত - ১৯৬৯



GPS Map Camera

Bankura, West Bengal, India

62MW+VG2, Sahanapally, Bankura, West Bengal 722101, India

Lat 23.234712°

Long 87.0464°

23/11/23 02:39 PM GMT +05:30



Google

**CARDIORESPIRATORY
STATUS AND PHYSICAL
EFFICIENCY OF DOKRA
CRAFT WORKERS IN
BIKNA BANKURA**

**FIELD SURVEY SUBMITTED
FOR THE FULFILLMENT
AGAINST CURRICUM OF THE
UNIVERSITY OF BANKURA
BY**

Arpita Pan

**DEPARTMENT OF
PHYSIOLOGY**

UID - 21013125014

SEMESTER - V

SESSION - 2023 - 24



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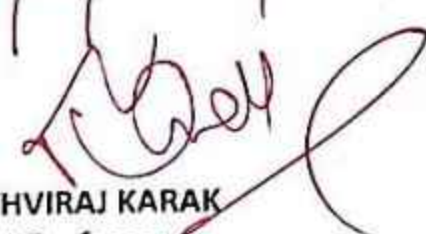
Phone : 03242-250924 Fax : 03242-250924

CERTIFICATE

This is to certify that Sri / Miss / Smt. Arpita Pan
UID No. 21013125014 Regn. No. 00521 of session
21-22 (Honours/Programme) has completed his / her project
entitled "Cardiorespiratory status and
Physical efficiency of Dokra craft
workers in Birna, Bankura" as partial
fulfillment of the requirement for the degree of Bachelor of Science of the
University of Bankura.

He / She has completed the survey work satisfactorily under my direct
supervision and it may be placed before the examiners for their consideration.

Date: 21/2/2024


DR PRITHVIRAJ KARAK
Assistant Professor,
Department of Physiology,
Bankura Christian College,
Bankura-722101

Date: 6th October 2023

To

The Principal,

Bankura Christian College,

Bankura -722 101.

Through HOD, Physiology Department.

Sub: Request for permission to conduct field survey

Respected Sir,

This is to inform you that our Departmental 5th Semester Honours students are going for filed survey program as per Bankura University curriculum. They will visit at Dokra craft village, Bikna in Bankura for one project and another project they will visit two Schools for their field survey during 7th October 2023 to 16th December 2023 as per their filed survey class schedule in routine.

Therefore, I request you kindly give permission to conduct filed survey program.

Thanking you,

Yours faithfully,

(DR. PRITHVIRAJ KARAK)

Name of the 5th Semester students participating

- | | |
|-------------------|---|
| 1. Arpita Pan | [Cardio-respiratory status and physical efficiency of Dokra Craft workers in Bikna, Bankura.] |
| 2. Subhra Raj | |
| 3. Nibedita Bauri | [Assessment of Nutritional status of School Children in rural areas of Bankura, West Bengal.] |
| 4. Ananya Mondal | |

Signature

Arpita Pan
Subhra Raj

Nibedita Bauri
Ananya Mondal

Name of the Filed Survey Guide:

Dr. Prithviraj Karak

RECEIVED
Dept. of Physiology
Bankura Christian College
Bankura

6/10/2023

ACKNOWLEDGEMENT

I am expressing a humble note of acknowledgement to all those who come along with me and helping me to reach my goal.

At the outset, I express my feeling of gratitude to Dr. Prithviraj Karak, Assistant professor of Department of physiology, Bankura Christian college, whose continuous help, active support and encouragement guided me throughout the project for this field survey. I consider myself truly blessed to have been under his guidance and supervision. Thanks to him.

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I also thanks Dr. Anurag Paramanik and Shilpa Satpati for their necessary support.

Special thanks to Dr. Fatik Baran Mondal, Principal of Bankura Christian college for providing me the necessary support.

I must thank other non-teaching staff, specially Monoranjan Pal whose continuous help and my fellow-friends and family members for their support and co-operation during this field work.

DECLARATION

I hereby declared that field work is completed on the topic "cardiorespiratory Status and physical efficiency of Dokra Crab workers in Bikna, Bankura".

I have specified by means of reference from the information has been taken.

Date - 2.3.2024

Arpita Pan
Roll No - 854
Department of physiology
Bankura Christian College

LIST OF ABBREVIATIONS USED

1. BMI - Body Mass Index
2. HT - Height
3. WT - weight
4. HR - Heart Rate
5. BP - Blood Pressure
6. SBP - Systolic Blood Pressure
7. DBP - Diastolic Blood Pressure
8. RR - Respiratory Rate
9. PEF - Peak Expiratory flow rate
10. BSA - Body Surface area
11. Blood sugar level
12. MSD - Musculoskeletal Disorders
13. CVS - Cardiovascular system
14. CVD - Cardiovascular Disease

CONTENTS

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INTRODUCTION

In the evolution of aesthetic development in the cultural history of mankind, art and artistic objects and their influence have always played a very significant role. Dokra is such an artistic object in the cultural evolution of human beings through many civilization ①. It is a metallurgical brassware handicraft and is the oldest art form in India. and its roots can be traced back 4500 years ago, to the ancient city of Mohenjodaro, of the Indus valley civilization. Dokra is an ancient folk art tradition of India. Dokra objects are made through non-ferrous metal casting, using lost-wax casting technique, which is one of the earliest and most advanced methods of metal casting. At present this art form is found in pockets of West Bengal, Odisha, Jharkhand, Chhattisgarh and Telangana. [2]. The name 'Dokra' comes from the Dokra Damar tribes, who are the traditional metal smiths of West Bengal. Their technique of lost wax casting is named after their tribe, hence Dokra metal casting. [3]. The Dokra artifacts are made in brass and unique in that the pieces do not have any joints. The method is combining metallurgical skills with wax techniques employing the lost wax technique, a unique form where mould is used only once and broken, making this art the only one-of-kind in the world [4].

The artisans are scattered in different parts of Bankura, Bardhaman, Medinipur district is of West Bengal. Dokra is identified by its unique shaped mythical abstract form of art which is actually a metal based craft. Their route of migrating has always followed rich tribal belt regions in India. [5]

Bikna, a village close to Bankura town, is a hub of Dokra art in West Bengal. According to a local Dokra maker of Bikna village, there are some people like the farmers of Kadamdiha village, Bharagora block, East Singhbhum are engaged in crafting Dokra items for their extra earnings at the lean season of agriculture [6]. There are more than 200 craftsmen engaged in making these art objects. Their ancestors settled in this region around 150 years ago and since then these families have been carrying out the rich legacy of their ancestors. Their skills and aesthetic sense are inborn and imbibed from their forefathers [8]. The Department of Micro, Small and Medium Enterprises and Textiles (MSME and T), Government of West Bengal Khadi and Village Industries Board has also built a community museum and resource centre [9-11]. The centre has all the basic amenities and guests and visitors can stay there overnight. In 2018, Dokra craft from West Bengal was presented with the Geographical Indication (GI) tag.

Bikna is 15 minutes from Banapura railway station. It is about 4-5 hours drive from Kolkata and the motorable roads are quite smooth. So, with the onset of winter, why not gear up for a short weekend tour with your family. It will be an enriching experience undoubtedly.

Dokra is non-ferrous metal casting using the lost wax casting technique. Dokra horses, elephants, peacocks, owls, religious image, measuring bowls, and lamp caskets etc. are highly appreciated. The lost wax technique for casting of copper based alloys has also been found in China, Egypt, Malaysia, Nigeria, Central America and other places.



Fig:- Dokra village where field
Survey had done

AIMS AND OBJECTIVES

The aims and objectives of this field survey was :-

- ① To estimate the number of male and female subjects engaged in this traditional dokra work at Bankura district.
- ② To assess the influences of dokra activities, such as physically demanding occupation on physical fitness.
- ③ To compare whether the subjects involved dokra activities have more cardiovascular fitness or respiratory fitness or not.

REVIEW OF LITERATURE

In 2013 Guin Debarshi, studies on "Marketing of Dokra Handicrafts and Livelihood status of the Artisans: A case study of Bankura district.

In 2015, Raj Kumar Samanta has worked on "Socio-economist use of Dokra Artisans a case study of Bankura district, west Bengal, India". His paper shows an account of their livelihood, Socio economic conditions of dokra workers, marketing situation, various problems relating with this art has been assessed and an attempt regarding solution of problems has also suggested.

In 2016, payel Kundu, has worked on "current status of Dokra craft in Birka. A case study of Bankura district, west Bengal, India". According to her proposed research study is a modest attempt to provide an account of Dokra craft in Bankura and Socioeconomic condition of Birka village.

In this paper, various problems relating with this art has been assessed and an attempt regarding solution of problems has been also suggested.

In 2020 Sniparna Guha, Dr. Arun Banerjee and Anirban Mandal has worked on "empowering the dokra artisans through the accessibility of financial resources for survival of their indigenous technology a study of west Bengal, India". This article attempts, by illustrating the numerous problems associated with this craft, to research the subsistence and Socioeconomic conditions of Dokra workers from those two villages, with

the aim of preserving their heritage in the future and concentrates on the accessibility of financial resources so that they can sustain a proper livelihood.

In 2021 Susmita Pramanik, P. P. Sirdar, Debabrata Bandyopadhyay and Aniruddha Banerjee worked on "reviving indigenous craft of west Bengal, terracotta of Panchmura; a review of Socio Economic Study" this research article focuses on the Socio-economic, demographic and cultural profile of artisan community (Kumbhakar community) in Panchmura village located in Bankura district of west Bengal. This article also emphasizes on major challenges and difficulties of this craft hub and their possible recommendations.

In 2023, Mahanty et al., Studies on prevalence of malnutrition and chronic energy deficiency among Dokra artisans: First report from Bankura district, west Bengal, India. This study was conducted to assess malnutrition and chronic energy deficiency (CED) among Dokra artisans across diverse age groups. Demographic and socioeconomic data were rigorously collected, while anthropometric parameters were calculated using established formulas. CED served as the key malnutrition indicator. This study underscores the gravity of malnutrition among Dokra artisans, calling for targeted health education initiatives within this demographic to address this formidable public health concern in India. public health interventions should transcend nutritional improvement and extend to marginalized and vulnerable populations throughout India.

MATERIALS AND METHODS

The present study is a cross-sectional study, conducted in the rural area of Bankura Dokra village. The study period was

Assessment of important physical sign at different portion of the body, demographic analysis, male and female population by age groups, duration and daily working hours, cardiorespiratory parameters, comparison of muscle strength was done during the field study. An informed written consent was taken from all the subjects and they are personally agreed to do the survey.

Exclusion criteria:-

- Chronic respiratory disease
- Cardiac disease
- Examination finding suggestive of respiratory or cardiac disease
- Body mass index more than 35 kg/m^2 .

Method of collection of data

Sample Size

Statistically adequate samples of 40 Dokra workers (20 male and 20 female) with the age group were selected in the present study.

① Anthropological Parameters

Determination of BMI

① Measurement of Height :- Height was measured using a standard stadiometer with the subject standing in an erect posture. The readings were taken to the nearest 0.1 cm.

Anthropometric measurements were taken by using standard protocols given by Weiner and Lourie [12, 13]

② Measurement of weight :- weight was recorded in Kgs using a calibrated weighing machine (Avery) scale with a capacity of 120 kg and a sensitivity of 0.05 kg.

The BMI was calculated as the weight in kilograms divided by the square of the height in meters

$$[\text{weight (kg)} / \text{height (m)}^2] \quad \text{BMI} = \frac{\text{weight (kg)}}{\text{Height (m)}^2}$$

② Body Surface Area (BSA)

In physiology, the body surface area (BSA) is the measured or calculated surface of a human body. Various calculations have been published to arrive at the BSA without direct measurement. Dubois and Dubois formula was used for estimating body surface area (BSA) (21)

$$\text{BSA (m}^2\text{)} = 0.007184$$

③ Measurement of Pulse rate and Blood Pressure

Resting Heart Rate :- Baseline HR was obtained after five minutes rest in the sitting position. The resting heart beat was measured at carotid pulse. When two successive heart rate become equal then it was considered as resting heart rate (14).



Figs- Measurement of Height

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Measurement of Blood Pressure:- Blood pressure was measured by the auscultatory method in the right arm in supine, sitting and standing position by using a mercury sphygmomanometer with a cuff of 12 cm width. All the subjects were made to rest for at least 10 min before taking the readings. The manometer cuff was snugly tied around the arm with tubing on the medial and the lower side. Systolic blood pressure was recorded to the nearest 2 mm of Hg at appearance of first Korotkoff sound and diastolic blood pressure was recorded to the nearest 2 mm of Hg at the disappearance of Korotkoff sound. Systolic and diastolic blood pressure was recorded first in the supine position and then standing position, with cuff tied to the arm. Reading was taken in all 3 positions and was analysed. [15]

④ Determination of PEFR

Peak flow measurement is a quick test to measure air flowing in and out of the lungs. The measurement is called the peak expiratory flow rate (PEFR). It's also known as the peak expiratory flow (PEF).

Peak flow measurement is mostly done by people who have asthma. Peak flow measurement can show;

- ① The amount of air breathed in,
- ② The amount of air breathed out,
- ③ The rate at which the air is breathed in and out from the lungs.

Peak expiratory flow is typically measured in units of liters per minute (L/min).

Green Zone - 80 to 100 percent of the usual or normal peak flow reading are clear, Yellow Zone - 50 to 79 percent of the usual or normal peak flow reading. Red Zone - Less than 50 percent of the usual or normal peak flow reading.

(5) Skin-fold thickness measurement.

The skin-fold method is based on the principle that the thickness of fat under the skin is an accurate representation of the amount of fat elsewhere in your body. Approximately half of the body's fatty tissue is directly beneath the skin (subcutaneous). By measuring the thickness of skin fold (a fold of skin and fat, not muscle) at various sites on the body, total % of body fat can be determined. The skin-fold measurement at various sites is used in a prediction equation to estimate body density and then is converted to percent fat. The skin-fold techniques has been found to be a reliable and valid method of determining % body fat. Body fat measurement was done by using skin-fold thickness of different body areas -

Skin-fold Sites

- Biceps** - A vertical fold on the front of the arm over the biceps.
- Triceps** - A vertical fold on the back of the upper arm, half way between the shoulder and the elbow.
- Subscapular** - A fold taken on a diagonal line coming from the vertebral border to 1-2 cm. from the inferior angle of the scapula.
- Suprailium** - A diagonal fold above the crest of the ilium (on the side of the hip).

(6) Assessment for Handgrip strength :- The most common method of assessment for grip strength is the use of a hand held dynamometer. Hand-held grip strength dynamometry is used to measure the muscular force generated by the flexor mechanism of the hand and forearm. Grip strength has long been thought of as a possible predictor of overall body strength.

and also grip strength may also play a role in injury prevention and rehabilitation. The participant was in a standing position arms at their sides not touching their body. Keeping elbow bent slightly. Administer to the test on the dominant hand. Now by asking the participant to squeeze the dynamometer with as much force as possible, being careful to squeeze only once for each measurement. Three trials were made with a pause of about 10-20 seconds between each trial to avoid the effects of muscle fatigue.

⑦ Blood sugar measurement by glucometer

By pricking the finger with a lancet (a small sharp needle). Put a drop of blood on a test strip.

Statistical Analysis :- The data was analyzed statistically by using appropriate statistical tools such as mean, standard deviation and percentage. Coefficient of correlation and was also performed and the level of significance was also tested.



Fig:- measurement
of Hand-grip
Strength

Fig:-
Measurement
of
Blood
Sugar



Table-1 Assessment of important physical sign at different portion of the body among Doka workers of Bankura District.

SL.No.	clinical sign	category
1.	General Appearance	Good
		Fair
		Poor
		very poor
2.	Eye discharge	Absent
		watery
		Mucopurulent
3.	Lips	Normal
		Angular stomatitis mild
		Angular stomatitis marked
4.	Gums	Normal
		Bleeding
		pyorrhoea
		retracted
5.	Teeth	Absent
		chalky teeth
		Pitting teeth
		Discoloured
6.	Skin	Normal
		Loss of luster
		Dry & Rough
7.	Stature	Average height
		Low height
		More height
8.	Pain at different sites	Knee joint
		Ankle joint
		Fingers
		Back Pain
		Waist Region

RESULTS

Table-2 Assessment of important physical sign at different portion of the body among dokra workers of Bankura district.

Sl. No	Clinical sign (General appearance)	Category	Male	Female
1	General appearance	Good	50%.	40%.
		Fair	30%.	20%.
		Poor	15%.	39%.
		very poor	5%.	1%.
2	Eye discharge	Absent	99%.	98%.
		watery	1%.	2%.
		Mucopurulent	—	—
3	Lips	Normal	98%.	97%.
		Angular stomatitis mild	2%.	1%.
		Angular stomatitis marked	—	2%.
4	Gums	Normal	100%.	100%.
		Bleeding	—	—
		Pyorrhoea	—	—
		Retracted	—	—
5	Teeth	Absent	5%.	20%.
		Chalky teeth	40%.	30%.
		Pitting of teeth	30%.	25%.
		Discoloured	25%.	25%.
6	Skin	Normal	59%.	80%.
		Loss of Luster	4%.	5%.
		Dry & Rough	45%.	15%.
7	Stature	Average height	90%.	95%.
		Low height	10%.	5%.
		more height	—	—
8	Pain at different Sites	Knee joint	45%.	30%.
		Ankle joint	5%.	5%.
		Fingers	5%.	5%.
		Back Pain	30%.	10%.
		Waist Region	15%.	55%.

Table 2 shows the percentage distribution of the nutritional deficiency signs amongst the dokra workers of Bankura district. The description of the dokra workers of Bankura district is as follows- General Appearance: A majority of the male dokra workers are classified as good (50%), fair (30%), poor (15%), very poor (5%). Eye discharge: we have observed eye discharge for dokra workers this are classified as absent (99%) and watery (1%) for male and absent (98%) and watery (2%) for female. Lips: In dokra workers of dokra village we observe the lips of male classified as normal (98%), angular stomatitis mild (2%) and for female normal (97%), Angular stomatitis (1%), Angular stomatitis marked (2%). Gums: were observed normal in both male and female dokra workers. Teeth: 5% of male absent, 40% is chalky teeth, 30% pitting of teeth and 25% have the discoloured. For female 20% is absent, 30% is chalky teeth, 25% is pitting of teeth, 25% is discoloured. Skin: is normal (59%), Loss of Luster (4%), Dry & Rough (45%) in male and 80% normal and 5% loss of luster and 15% Dry & Rough in female. Stature: In male average height is (90%), low height (10%) and 95% have average height and 5% have low height in female workers. Pain at different sites: we observed them knee joint pain (45%), 5% ankle joint pain, 5% fingers pain, 30% Back Pain and waist Region pain (15%) in male dokra workers and also observed in female knee joint pain (30%), ankle joint pain (5%), fingers pain (5%), Back Pain (10%) and waist region pain (55%).

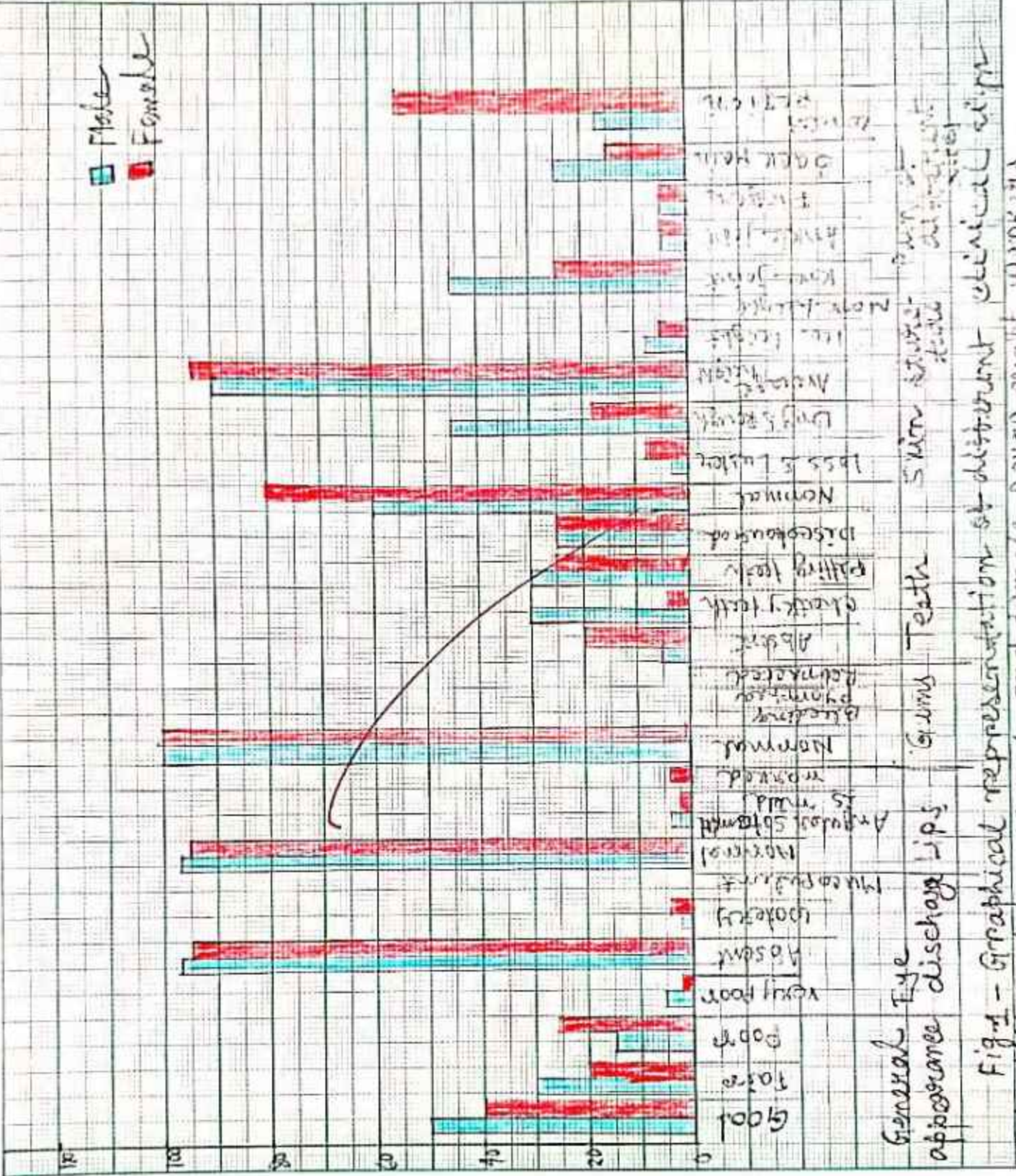


Fig. 1 - Graphical representation of different clinical signs of different among male and female Down Crab workers.

Table-3 :- Distribution of population Sex-wise
on the basis of population size in
Dokra artisans

DOKRA WORKERS	
Male (%) N=20	Female (%) N=20
20 (50%)	20 (50%)

Table-4 Distribution of male and female population by age groups.

Age group (in years)	Dokra		
	Male (%)	Female (%)	Total
20-25	30 %	15 %	45 %
25-30	15 %	10 %	25 %
30-35	10 %	10 %	20 %
35-40	5 %	10 %	15 %
40-45	15 %	10 %	25 %
45-50	0 %	15 %	15 %
50-55	5 %	15 %	20 %
55-60	5 %	10 %	15 %
60-65	10 %	0 %	10 %
65-70	0 %	5 %	5 %

Table-4 shows the population of dokra workers at Bixna. The population of male is 30% between 20-25 years and female is 15%; Between aged of 25-30 years male have 15% and female is 10%; Between aged of 30-35 years male have 10% and female is 10%; 35-40 years aged male is 5% and female is 10%; 40-45 years aged male is 15% and female is 10%; 45-50 years aged male is not found and female is 15%; 50-55 years aged male is 5% and female is 15%; 55-60 years aged male is 5% and female is 10%; 60-65 years aged male is 10% and female is not found; 65-70 years aged male is not found and female is 5%.

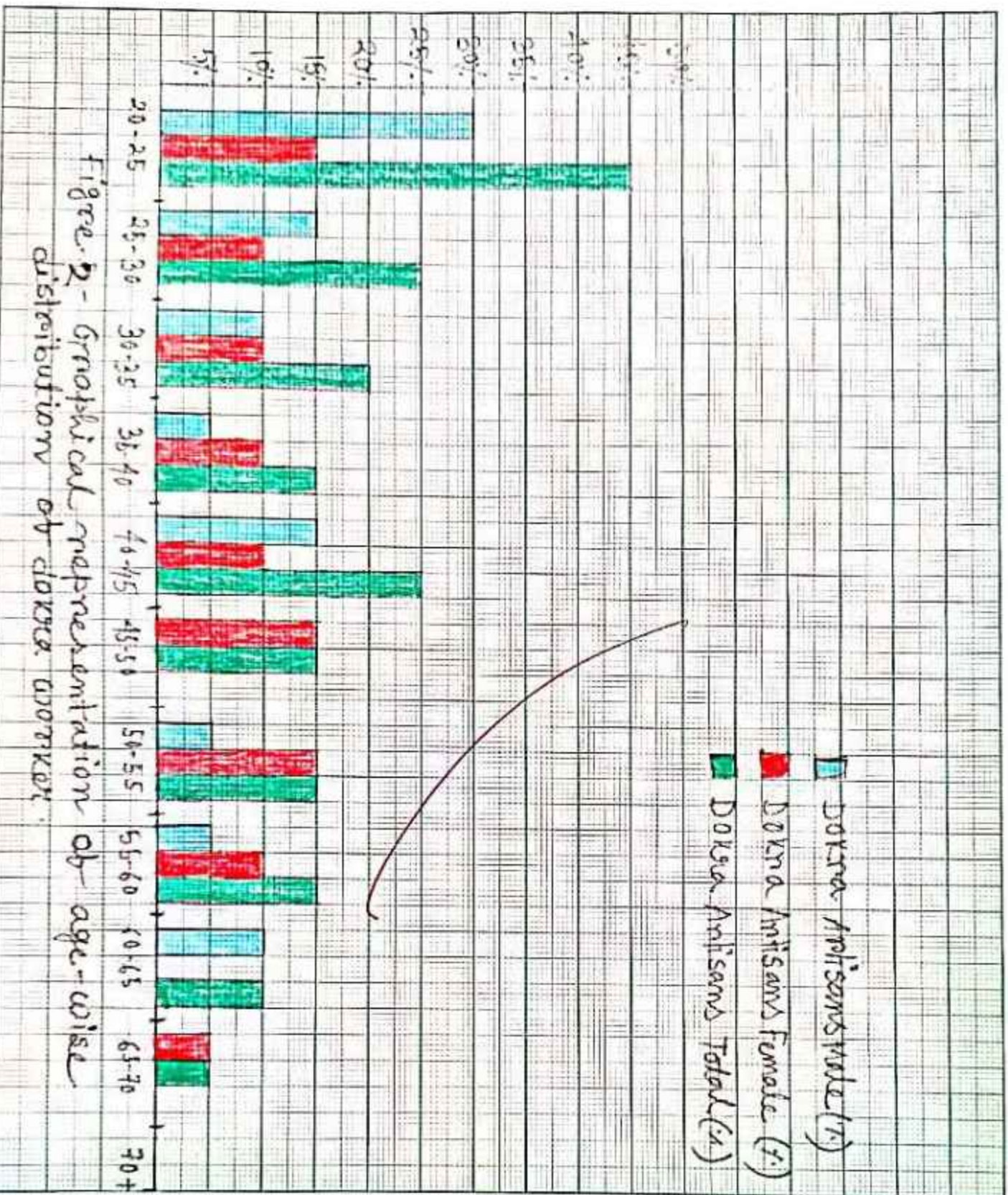


Figure 2- Graphical representation of age-wise distribution of doree workers.

Table-5 Demographic analysis among dawa workers of Bankura District

SL.No	Parameters	Mean $\pm$ SD
1	Height (cm)	153.825 $\pm$ 9.134
2	Weight (kg)	53.175 $\pm$ 6.274
3	BMI (kg/m ²)	21.846 $\pm$ 2.12
4	MUAC	24.05 $\pm$ 1.025
5	We (cm)	78.7 $\pm$ 3.5
6	Hc (cm)	88.475 $\pm$ 4.831
7	WHR	0.867 $\pm$ 0.312
8	BSA	1.484 $\pm$ 0.124

25

20

15

10

5

BMI (kg/m^2)

WHR

BSA (m^2)

Figure-2 - Graphical representation of BMI, WHR and BSA of school students.

Table-6: Cardiovascular and Respiratory Parameters changes among Dokra Artisans.

Sl. No.	Parameters	Measurement $\pm$ SD	
		Male (N=20)	Female (N=20)
1.	HR (beats/min)	94.5 ± 1.920	89.7 ± 1.924
2.	SBP (mm/Hg)	141 ± 2.790	132 ± 2.421
3.	DBP (mm/Hg)	82 ± 2.102	78 ± 2.021
4.	RR	16.94 ± 0.884	20.86 ± 0.948
5.	PEFR	184.04 ± 2.741	164.42 ± 2.710

Table-6:- Summarizes the cardiorespiratory status among dokra workers of Bankura district. There is significantly difference BP among the male dokra workers of Bankura district. The value of systolic blood pressure and diastolic blood pressure of male dokra workers of Bankura district were comparatively more than the study female groups. The respiratory rate of male ~~than~~ dokra workers of Bankura district were less than female dokra workers of Bankura district. Peak expiratory flow rate of male dokra workers were more than female dokra workers.

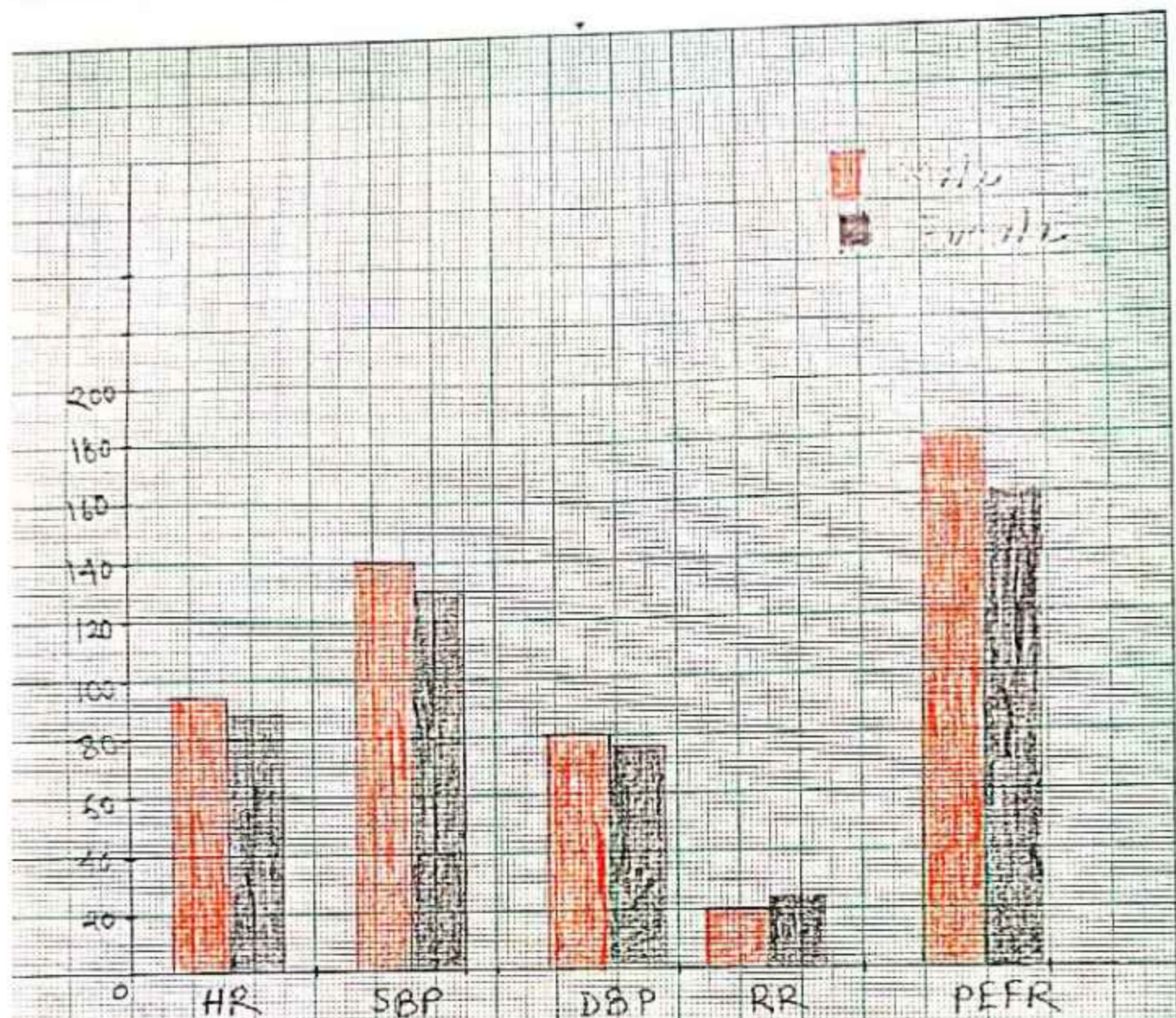


Figure 4 - cardiorespiratory parameters among male and female doka workers

Table -7 :- Percentage of Blood Sugar level among Dokra artisans.

Parameter	Blood Sugar level	
	Male (N=20)	Female (N=20)
Blood Sugar (PP)	34.99 %.	33.75 %.

DISCUSSTON

This study concludes that the dokna workers are at greater risk to develop cardio respiratory impairment as well as musculoskeletal disorder and joint pain. Ethnographic studies on the dokna artisan of west Bengal have been made. Most of the studies because of their over reliance on numerical data have felt to explain their physiological status and musculoskeletal disorder. This study thus by looking at how their life style, cardiovascular parameters and health problems are arises.

In this study we have observe that dokna artisans facing pain at different region like knee, ankle, fingers, back pain and waist pain. During their working time they use to sit long time in front of fire as well as they are exposed on the weight lifting activities. All these leads to they are facing joint pain.

In the demographic section of dokna worker male have more BMI than female workers. we have observed most of the male workers are in smoking habitate and their food habits are not in regular manner. Sometimes in a day they use take twice or may be three or even less. very few female workers have the smoking habits as well as food consumption below their normal requirement. Male dokna workers usually hyperglycemic where as female have less blood sugar than the male workers.

In the cardiorespiratory parameters male dokra workers are suffering from hypertension as well as some other cardiovascular disease.

Our results shows there was statistically significant change in cardiovascular parameters as well as respiratory parameters before and after dokra artisans activities. In the present study we have observe that maximum number of dokra workers of male and female are working more than 20 years and their daily activities also more than 12 hours/day. For that reason may dokra workers expose to musculoskeletal disorder or joint pain in different region.

CONCLUSION

This is one of the first attempt to understand MSD, CVD risk factors among dokna artisan in Bankura district we have tried to explore the occupational health hazards which is neglected area of Bankura district. In this study we have examine the physical sign of their body as well as duration and daily working hours. demographic analysis, cardio respiratory parameters, muscle strength etc. This is the first kind of study done in the dokna village of Bankura district. Hence the comparison could not be made with other studies.

There is high prevalent of MSD, CVD risk factors among dokna artisans. Although the study population not represent the similar kind of MSD risk factors. Hence, further studies are required to conclude that dokna artisan were having musculoskeletal disorder and CVD.

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