

An Epidemiological Study of Fingernails of Slum Dwellers under Haldia Municipality

Report submitted to the Vidyasagar University, Midnapore-721102

In partial fulfillment of the requirements for the degree of B.Sc. (UG) in Anthropology

Under the Guidance of

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Submitted by

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DECLARATION

I declare that,

- a. The work contained in the report is original and has been done by myself under the supervision of my supervisor.
- b. The work has not been submitted to any other institute for any degree.
- c. I have conformed to the norms and guidelines regarding the study on human being and maintained ethical issues in anthropological research.
- d. Whenever I have used materials (data, theoretical analysis and text) from other sources, I have given due credit to them by citing in the text and giving their details in the references.

Date: 09/08/2023

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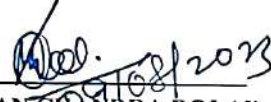
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This is to certify that Smt. TANUSHREE RUHI DAS KARIKAR, University Roll No. 1126116, No. 200009, Registration No. 1160532 (Session: 2020-21) a student of the Department of Anthropology of this College did her compulsory fieldwork of B.Sc. (Hons.) VI Semester, Paper-DSE4 (Project Work) and prepared this report entitled "**An Epidemiological Study of Fingernails of Slum Dwellers under Haldia Municipality**" under my guidance and supervision. She was very sincere and dutiful during the fieldwork and preparation of the report. We wish her every success in life.


(MOHAN CHANDRA DOLAI)

II

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It is an immense opportunity to express my sincere gratitude to participants of the slum dwellers of College Para under Ward No. 26 of Haldia Municipality, Purba Medinipur, without their consent and unconditional help it will be impossible to carry out the study. College Para under Ward No. 26 of Haldia Municipality

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Last but not the least; I am very much thankful to my family members and college friends for their continuous moral support and encouragement. And I am especially thankful to my friend Mis Arpita Jana for helping me to collect the data.

Date: 9th August, 2023

Tanushree Rishi Das Karikar
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BACKGROUND

Nail is one of the epidermal derivatives that produces the hardest epithelial derivatives that produce the hardest epithelial structure known in mammalian biology. Nails also provide protection, tactile sensation and social communication. It protects the terminal phalanx and fingertip from trauma and gives deftness and precision in picking up small objects. Nail may be diseased in many dermatological, as well as, systemic disorders (Wali and Prasad, 2021).

During the 5th century Hippocrates described clubbing as a significant sign to the myriad of systemic manifestations. Since then many nail findings are identified in association with various diseases. Hence forth, nails examination should be an essential component of a complete dermatological examination. Furthermore at times, various nail abnormalities can be presenting features before other signs of the disease become apparent.

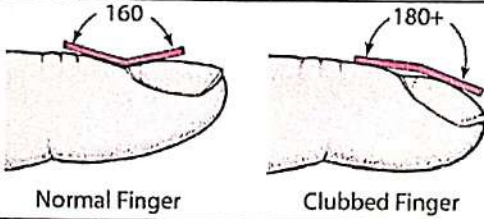
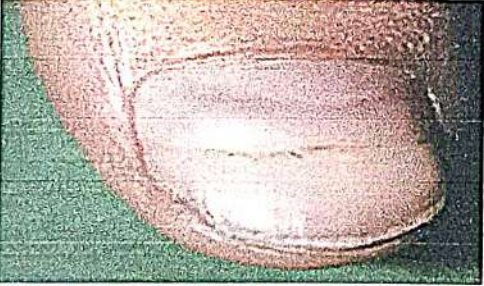
Nail disorders comprise more than 10% of all dermatologic conditions. Nail disorders include those abnormalities that affect any portion of the nail unit (Samman, 1972; Berker et al., 2004). The nail unit includes the plate, matrix, bed, proximal and lateral folds, hyponychium, and some definitions include the underlying distal phalanx. These structures may be effected by heredity, skin disorders, infections, systemic disease, and aging process, internal and external medications, physical and environmental agents, trauma, and tumours, both benign and malignant. The main contributors being papulosquamous disorder. Nail changes in papulosquamous disorder have been inadequately discussed and only limited studies are present. This study aims to throw some light about frequency of nail involvement in papulosquamous disorders and its various patterns.

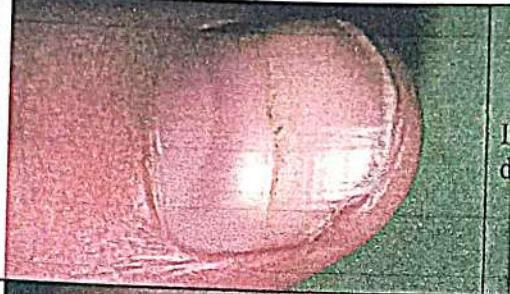
It's important to study nail disorders and diseases because it affects a number of organs and systems in your body eg. gastrointestinal system, nervous system, cardio-vascular system etc. whereas, without appropriate hand hygiene includes diligently cleaning and trimming fingernails, which may harbor dirt and germs and can contribute to the spread of some infections, such as by bacteria and fungal. Therefore, proper hygiene is so important for the better health of nail. But this is observed that people are not so worried about the sanitizing and maintaining hygiene of hands and nails particularly those who are living in rural and slum areas. As a result they are more suffering from systemic diseases. Additionally it has been found that there are large number of clinical, experimental and chemical studies conducted mostly by the medical

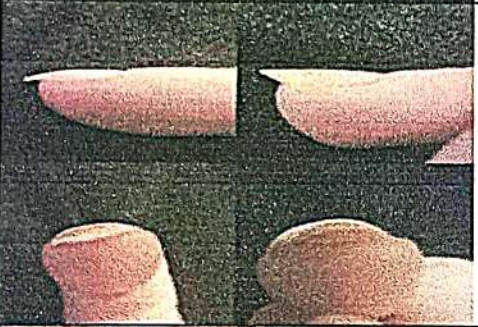
students, physician and researchers but there is a lacuna to study the nail hygiene and its associated impact in anthropological perspective. Hence, there is the rationality to do such kind of research and educate rural as well as slum dwellers through generation of knowledge about the importance of nail health and hygiene.

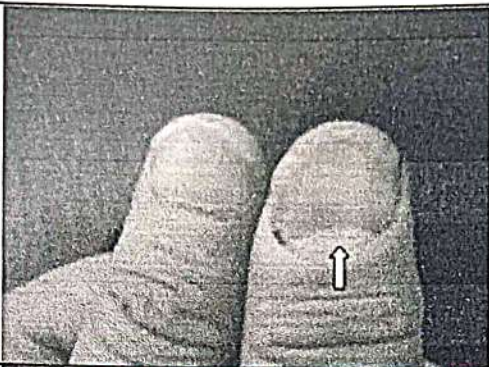
Nail related different kind of disease and abnormality and their relative causes are presented in the following table-

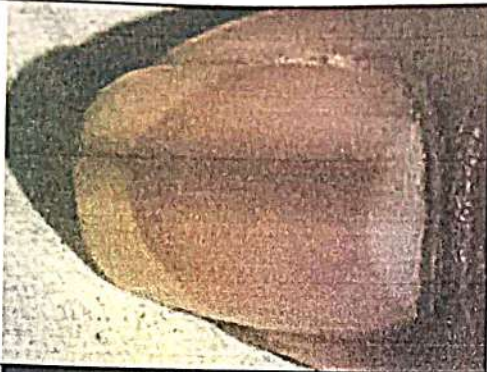
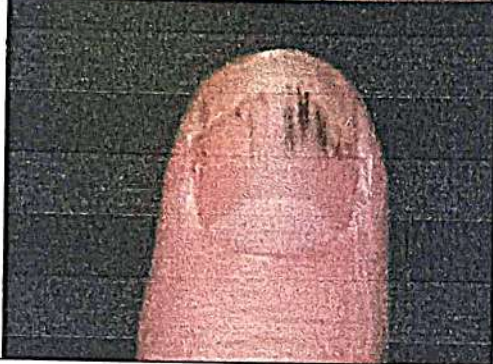
NAILS RELATED DISEASES/ABNORMALITY

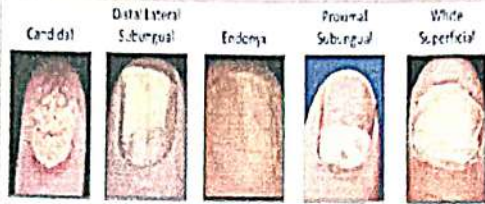
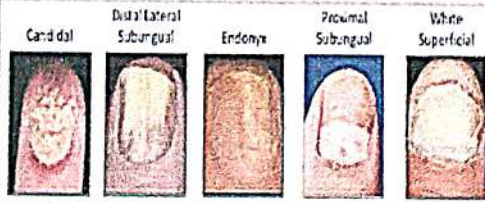
Sl. No	Name of Disease/ Abnormality	Related Images	Features
01	Clubbing	 Normal Finger Clubbed Finger	Pulmonary & Cardiovascular (80%); Gastro-intestinal(5%); Hyperthyroidism (1%); * Schamroth's Sign Study
02	Koilonychias (Spoonied Nail)		Iron deficiency, Diabetes mellitus; ProteinDeficiency (Sulphar containing amino acid)
03	Beau's Line		Growth arrest;
04	Brittle nail		Metabolic bone disease; thyroid disorder; systemic amyloidosis; malnutrition

05	nail ridge Central		Iron, folic acid and protein deficiency
06	Central nail canal/ Heller's Fir tree deformity		Arterial disease; malnutrition; repetitive trauma
07	Nail Pitting		Eczema; Lichen planus
	Nail beading		Endocrine condition (Diabetes, thyroid and Addison's disease)
	Rough nail surface		Autoimmune disease; Psoriasis; Chemical exposure; Lichen planus

	Nail thickening		Onychomycosis; Chronic eczema; Peripheral vascular disease; Yellow nail syndrome; Psoriasis
	Onycholysis (Separation of the Nail Plate)	 © 2009 Visuals	Thyrotoxicosis; Psoriasis; Trauma; Contact dermatitis; Toxic exposures (solvents); Porphyria cutanea tarda (onycholysis and blistering of sun exposed skin)
	Beaked nails (Severe Curvature)		Hyperparathyroidism; Renal failure; Psoriasis; Systemic sclerosis
	Complete Nail Destruction		Local mechanisms (Trauma; Paronychia); Generalized conditions (Toxic epidermal necrolysis; Chemotherapy; Bullous diseases; Vasculitis)

	Abnormalities of the Lunula		Red Discoloration (Cardiovascular disease; Collagen vascular disease; Hematological malignancy)
	Transverse White Lines (Mee's lines)/ Parallel continue line		Significant illness; Heavy metal toxicity; Chemotherapy
	Transverse White Lines (Muehrcke's lines)/ Parallel discontinue line		Edema to nail plate; Sign of hypoalbuminemia; Lines do not migrate and disappear; When albumin increases
	White Splotches (Leukonychia striae)		Minor trauma

	Longitudinal Brown Lines		Addison's disease; Nevus at nail base; Breast cancer; Melanoma (check for periungal pigmentation); Trauma
	Splinter Hemorrhages		hemorrhage of distal capillary loops; SBE; SLE; Trichinosis; Pityriasis rubra pilaris; Psoriasis; Renal failure
	Terry's Half and Half Nails		Proximal portion is white (edema and anemia) and the distal portion is dark; These nails imply either renal or liver disease
	Melanonychia Striata	 Melanonychia Striata Longitudinalis	
	Periungual Warts		

FUNGUL NAIL INFECTION		
Distal and lateral subungual onychomycosis (DLSO)		affects one or both of the great toenails; associated with tinea pedis; yellow-white; Less frequently, a brown, black or orange discoloration; DLSO may be associated with black pigmentation of the nail ("fungal melanonychia")
White Superficial Onychomycosis		white opaque friable patches of the nail plate; Differential diagnosis includes superficial nail fragility due to prolonged wearing of nail polish and transverse toenail leukonychia due to trauma;
Proximal Subungual Onychomycosis		Fungal elements are typically located in the ventral nail plate, producing a proximal leukonychia; white discoloration of the proximal nail plate; due to dermatophytes is very rare, and in the past, the form due to <i>T. rubrum</i> was considered as a sign of HIV infection;
Endonyx onychomycosis		white discoloration of the nail plate that is firmly attached to the nail bed; affected nail may show lamellar splitting and a milky white discoloration; This type of infection is very rare and caused by <i>T. soudanense</i> or <i>T. violaceum</i>

	Total dystrophic onychomycosis (TDO)		it can result from a long-standing DLSO or PSO; The nail plate is diffusely thickened, friable and yellowish;
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Chapter-II

REVIEW OF LITERATURE

A study was conducted by Singh (2022) on the brief study on the human nail. We know about this study that there is a difference between healthy and unhealthy nails which is recognizable by the variation in colour, good nails are pink in colour and have a flexible smooth and glossy surface of nail. This study illustrates the human fingernail structure wherein the nail is situated at the distal portion of each finger. Secondly, depicts the nails sections, furthermore pH range of nail has been presented which changes according to the gender of individuals. In this article addressed the hydro power plant energy generation technique, and its benefits, limitations and its applications at different locations.

A study was conducted by Yorulmaz and Artuz (2017) on a study of dermoscopic features of nail psoriasis. The objective of this study to evaluate the dermoscopic features of nail psoriasis and to assess the relationship between these features and disease severity. They were study a total number of 67 patients with psoriasis vulgaris and clinically detectable nail involvement were prospectively enrolled in the present study over a period of 6 months. Following a through clinical examination, patients were graded according to the nail psoriasis severity index and physician global assessment score. A dermoscopic examination of all finger nails or toe nails was performed using a video dermatoscope. Mann- Whitney U and χ^2 tests were used for statistical analysis with a significance threshold of $P < 0.05$. The data analysis process is statistical analysis which was performed by SPSS software (version 16; SPSS Inc., Chicago IL, USA). The most frequently observed dermoscopic features were splinter haemorrhage (73.1%), pitting (58.2%) distal Onycholysis (55.2%), dilated hyponychial capillaries (35.8%) and the pseudo- fiber sign (34.3%), the psedo- fiber sign, dilated hyponychial capillaries, nail plate thickening and clumbing subungual hyper keratosis, transverse grooves, trachyonychia, pitting and salmon patches were positively associated with disease severity. And, they were given conclusion that that the pseudo-fiber sign described in this study appears to be a novel dermoscopic feature of nail psoriasis. We have demonstrated positive associations between a number of dermoscopic manifestations and disease severity. Further studies are required to support the present findings.

Another study was conducted by Sharma and Sharma (2017) study on A clinical epidemiological study of ingrown toe nails. Ingrown toenail or onychocryptosis is a common toenail problem encountered in primary care practice. The commonest symptom is pain in the affected nail which, if left untreated leads to infection, discharge and difficulty in walking, greatly hampering the quality of life of the individual. Ingrown toenails often have a chronic course and can interface with quality of life. Its exact etiology is unknown but many anatomic and behavioral factors are thought to contribute to ingrown toenails, such as improper trimming, repetitive or inadvertent trauma, genetic predisposition, hyperhidrosis, and poor foot hygiene. The study aims to study clinical patterns and various epidemiological factors associated with ingrown toenails.

A study was conducted by Amutha (2018) study on a clinical study on nail changes in papulosquamous disorder. This study main aim is to describe clinical patterns of fingernail alterations in patients with papulosquamous disorder. And objectives are to evaluate the pattern, clinical characteristics and severity of nail involvement in individual papulosquamous disorders , to assess the association of nail changes with various papulosquamous disorders individually. This is a descriptive study of nail changes in papulosquamous disorder conducted in the outpatient clinic in the department of Dermatology Venereology and Leprosy at Coimbatore Medical College Hospital between the time period June 2016 - June 2017. Ethical committee clearance was obtained.

A study on conducted by bhat (2020) study on a study on nail changes in dermatology . Many nail changes are often found in the Department. They are considered the windows to the inner pathologies. The present study was undertaken to study the different types of nail changes seen in a regular dermatology OPD over a period of six month and prepare an epidemiological data on these findings.

A study on conducted by Usha Rani, Haritha, Rao & Rao(2019)study on nail disorder in dermatology. The nail disorders comprise approximately 10% of all dermatological conditions. The nail unit may reflect dermatological disorder by its own and may show specific changes that are markers for a wide range of systemic disorders. Consequently, no physical examination is complete without a study of the nails. Study objective is to record the clinical spectrum of nail disorders including congenital, developmental, infectious, neoplastic, degenerative, dermatologic and systemic diseases.

Garg et al., (2017) conducted a clinical study of nail disorders including congenital, developmental, infectious, neoplastic, degenerative, dermatological, and systemic diseases affecting the nail unit. Materials and methods: A total of 100 consecutive cases of nail disorders reporting to the dermatology outpatient department in Rohilkhand Medical College & Hospital were examined. Complete dermatological, systemic, hematological examinations, Gram staining, scraping for fungus, nail clipping for potassium hydroxide mount, fungal culture, biopsy from nail bed were undertaken in doubtful cases. Observations and results: Among 100 cases, the most common was onychomycosis – 28 cases, followed by nail psoriasis – 13 cases, pitting – 10 cases, paronychia – 9 cases, trachyonychia – 5 cases, onycholysis – 4 cases, clubbing – 3 cases, koilonychia – 3 cases, ingrow toenail – 3 cases, pterygium – 3 cases, onychogryphosis – 2 cases, subungual wart – 2 cases, half and half nail – 2 cases, anonychia – 2 cases, longitudinal grooves – 2 cases, clubbing with resorption of fingers – 2 cases, onychomadesis – 1 case, nail discoloration – 1 case, melanonychia – 1 case, pachyonychia congenita – 1 case, beau's line – 1 case, racket nail – 1 case, transverse groove – 1 case. Conclusion: Among examined cases, onychomycosis was most common followed by another nail disorders.

Significance of the Study:

Significance of the proposed study is discussed below-

- a) This study will educate slum dwellers about maintaining nail hygiene.
- b) Will aware about the reasons of nail abnormality behind number of systemic, nutritional deficiency and fungal infection.
- c) Study will be able to highlight the social-cultural variables on the changes of nail.

Study Objectives:

- 1) To study the awareness of nail hygiene among the slum dwellers.
- 2) To evaluate the pattern, clinical characteristics and severity of nail involvement in individual systemic disorders.
- 3) To assess the association of nail changes with systemic disorders, fungal infections as well as with nutritional deficiency.

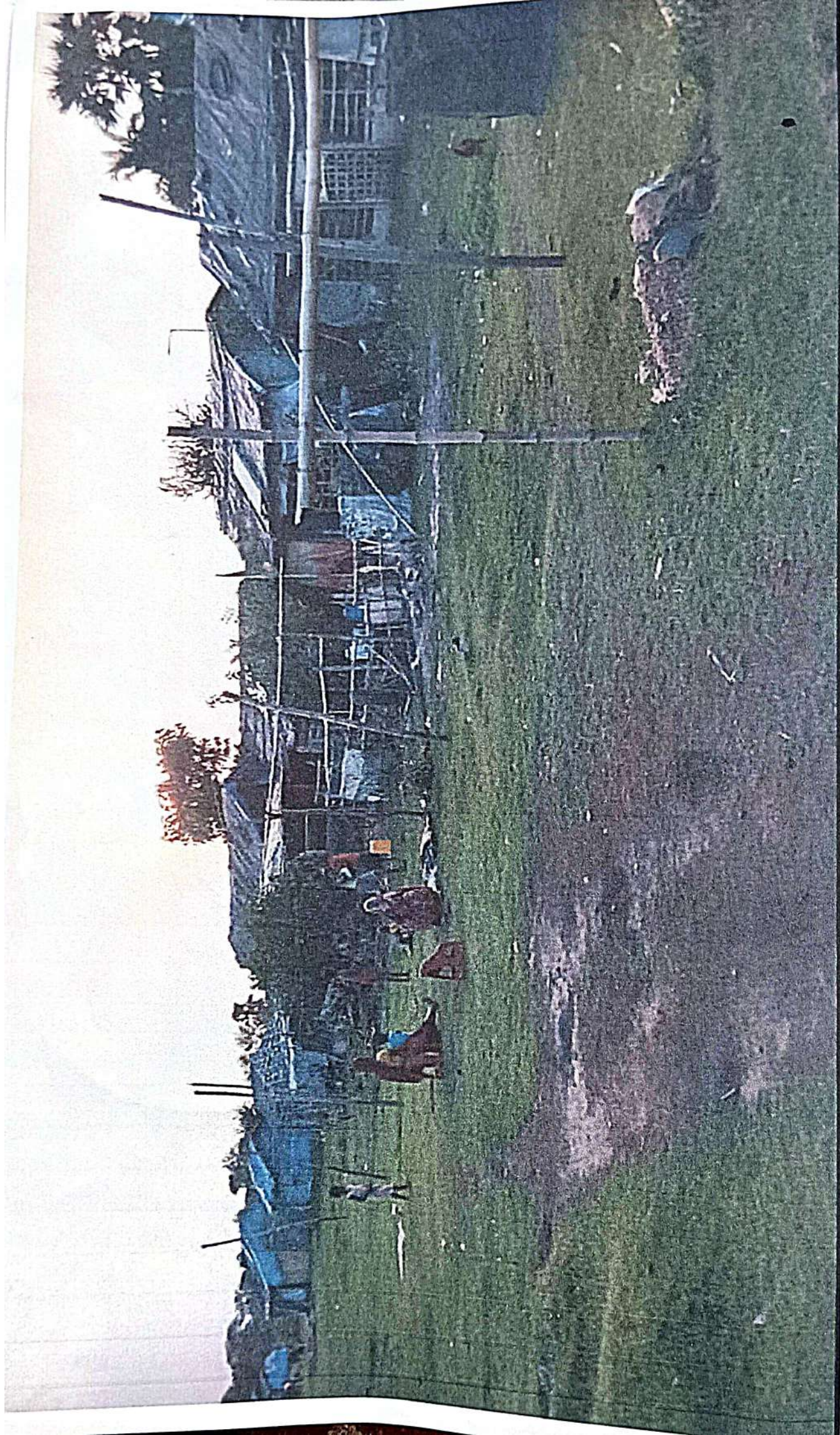


Figure - View of Study Hamlet.

Chapter-III

MATERIAL & METHODS

Study Setting & Study Design:

This is the cross-sectional descriptive study. It was conducted among the slum dwellers of College Para under Ward No. 26 of Haldia Municipality, Purba Medinipur. All the adult residents (Aged 18 years and more) were be considered as participants for this study irrespective of their sexes. Informed consent in the regional (Bengali) language was obtained from all participants.

Inclusion & Exclusion Criteria:

Inclusion Criteria:

- All the aged residents (Aged 18 years and more) both males and females who were present in their residential complex during data collection.

Exclusion Criteria:

- Pregnant and lactating females,
- Residents who did not give consent for study was excluded.
- Residents who had history of using artificial nails, at any time of their lives and nail bed covered with nail polish was also be excluded.

Sampling Procedure:

The study area is selected purposively but information was collected from all the prospective informants (aged 18 years and more).

Tools and Technique for Data Collection:

Detailed socio-economic and hygienic behavioural information including age, sex, social group, occupation, hand and nail hygiene maintaining behavior etc. were collected using pre-designed questionnaire. The nails were numbered 1 to 10 from left to right with right little finger was assigned number 1 and left little finger number 10.

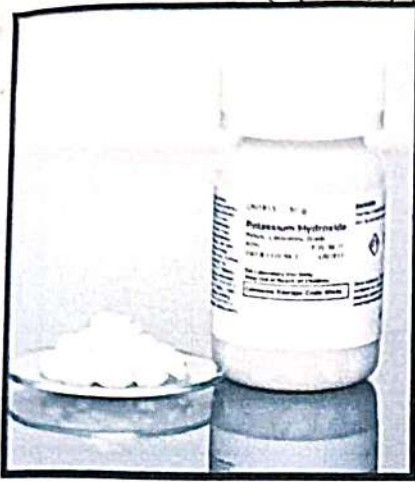
Further detailed history including changes of nails (bed form, colour, duration etc.), diagnosis and treatment initiated or not, site of skin lesion any relevant co-morbid illness were obtained. Thorough and detailed nail examination was carried out regarding the number of nail involvement, initial nail to be involved and the different types of nail changes.

These were followed by general physical examination of nail with bare eyes or by magnifying glass if needed whereas digital dermoscopic images were taken with a VIVO Y20 smart phone. Relevant laboratory investigation like KOH examination carried out in relevant cases.

Nail Photography and Sample Collection:

Relevant photography of the abnormal nail of changes nail were taken by VIVO Y20 smart phone and infected or abnormal nail sample were collected using new razor blade. New razor blade singly used for single sample collection, after using the blade put on the dustbin.

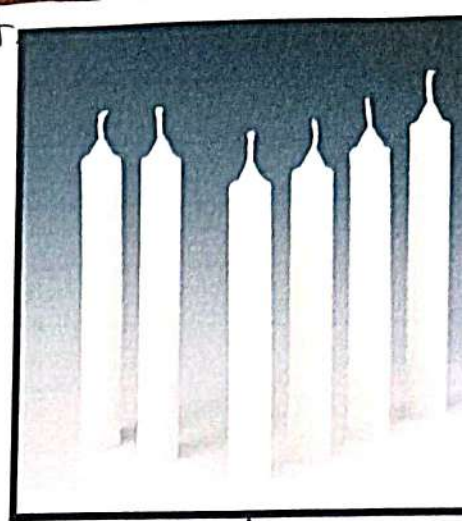
KOH Experiment- Equipment



KOH



Distal water



Candle



KOH



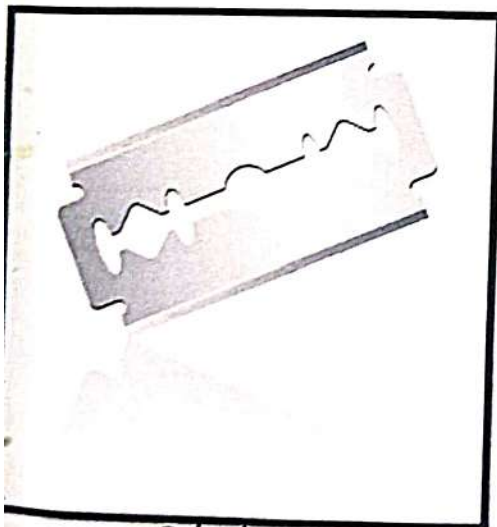
Clippers



Match box



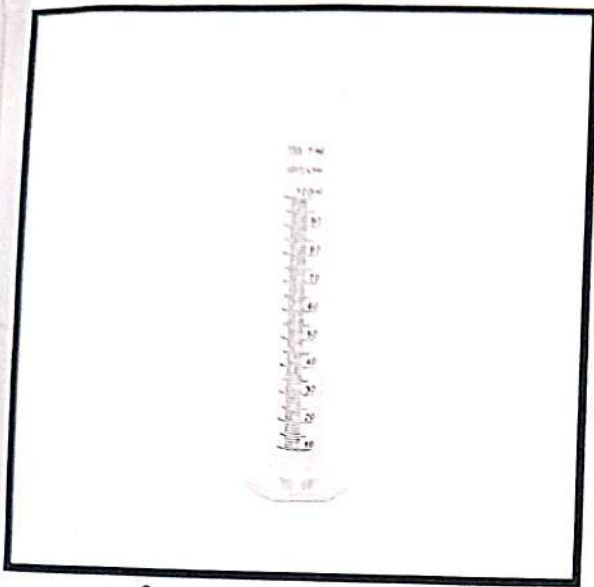
Slide & covers slide



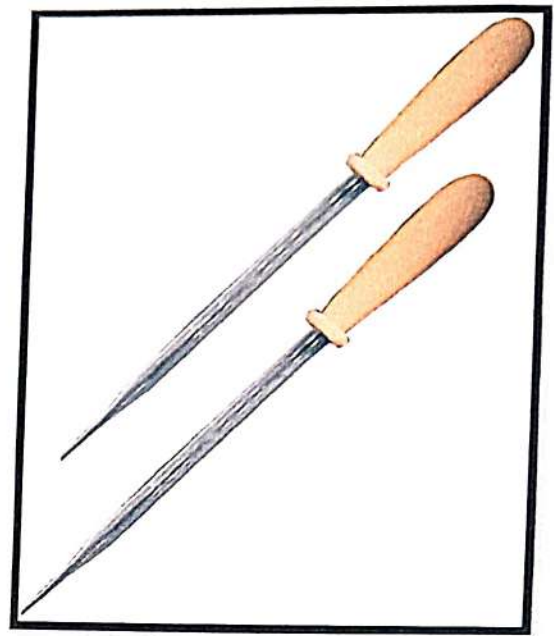
Blade



Cotton



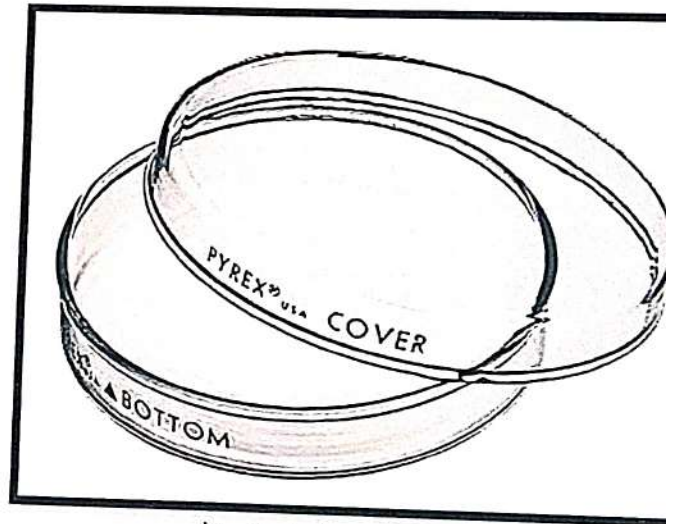
Graduated cylinder



Droppers



Cover slide



Petri dish

KOH Laboratory Experiment Procedure:

Direct potassium hydroxide (KOH) testing is a simple, quick and inexpensive technique integral to dermatological practice for identifying fungal organisms (Dasgupta, 2012; Weinberg et al., 2003). It involves retrieving the specimen from the nail bed and underneath the nail plate then dissolving it in KOH (51). KOH dissolves the keratin, allowing microscopic visualization of the fungal septate hyphae (Velasquez-Agudelo, 2017). Specimens can be further treated with stains such as Calcofluor White, Evans Blue, Gram, Giemsa, and India ink (Gupta and Simpson, 2013; Ghannoum, 2018). KOH testing has 61% sensitivity and 95% specificity (Velasquez-Agudelo, 2017). It is cost-effective and can determine the presence of fungal organisms within an hour.

Specimen was placed on a clean glass slide, and a drop of 20% KOH solution was added on the sample and softens keratin more quickly than KOH alone in the absence of heat. A cover slip was applied with gentle pressure to drain away excess solution. The sample was kept for 30 minutes.

The slide may be gently heated taking care to avoid boiling which leads to crystallization. Nail clippings take a long time to dissolve. After 30 minutes the slides were heated with a candle for complete soften of keratin, and then examined thoroughly for the presence of filamentous, septate, branched hyphae with or without arthrospores. KOH mount samples were evaluated for the presence of hyphae and/or spores. Cases showing hyphae and/ or spores were considered positive. When the material has been softened by KOH, pressure on the cover slip is applied to squash the specimen and then it is examined under the low power microscope. Microscopy can differentiate between dermatophytes (hyaline hyphae) nondermatophytes (long sinus hyphae) and yeast (budding cells with pseudo hyphae) but species identification cannot be made from wet mounts.

Materials and Equipments used for KOH Experiment:

- 1) Personal protective equipment
- 2) Sharps container
- 3) Biological waste container and bag
- 4) Sterile microscope slides
- 5) Sterile pipettes
- 6) Glass coverslips

- 7) Potassium hydroxide (KOH)
- 8) Candles
- 9) Match box

Data Process and Data Analysis:

All this data were recorded in a pre-designed proforma and tabulated in a master chart of a IBM SPSS v 20.0 software. Sensitivity was defined as the proportion of people with disease who had a positive test result. The different performance tests were compared using the chi-square test. P value < 0.05 was considered statistically significant.



5g KOH
(a)



Using 20% distal
water (b)



20% distal water
added 5g K (c)



then mixed (d)



(e) Used Hand gloves



then (f) 30 ml distal
water added



(g) 30 ml
distal
water used



Numbering
nail (h)



slide
(i) number



nail
(j) clipping



(k)



(l)



(m)



(n)



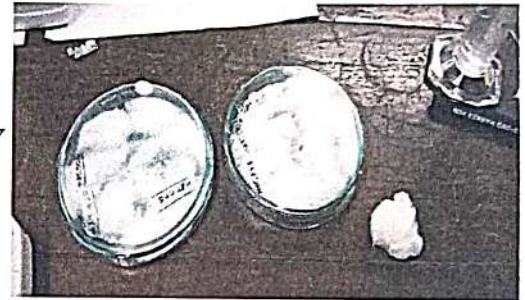
(o)



(p)



(r)



(s)



Precaution during KOH Experiment:

The study will be conducted only after approval by the institutional ethics committee or research committee, Haldia Government College. A written consent form will be used. Participant data that is entered into IBM SPSS v 20.0 software so all responses to be stored confidentially. Secondly, because the study is purely descriptive in nature, no additional risk is expected to occur from this study than the standard management protocol.

Data Process and Data Analysis:

All this data were recorded in a pre-designed proforma and tabulated in a master chart of a IBM SPSS v 20.0 software. For qualitative data analysis Chi square analysis were applied for significance. P value <0.05 will be considered as significant.

Chapter-IV

RESULTS & DISCUSSION

Socio-Economic Background of the Respondents

Table 01: Age-Group wise distribution of the Respondents

		AGE-GROUP IN YEARS						Total
		BELOW 20	21-30	31-40	41-50	51-60	61+	
SEX	MALE	02	09	06	07	07	04	35
		5.7%	25.7%	17.1%	20.0%	20.0%	11.4%	100.0%
	FEMALE	07	17	19	12	07	03	65
		10.8%	26.2%	29.2%	18.5%	10.8%	4.6%	100.0%
Total		09	26	25	19	14	07	100
		9.0%	26.0%	25.0%	19.0%	14.0%	7.0%	100.0%

Table no. 1 shows that total 100 individual were participated in the research, out of which 35 are male and 65 are females. Most of the participants are belonged in the age-group 21-30 years (26%) followed by 31-40 years age group (25%), 41-50 years (19.0%) and so on. The population characterized by mean age 46.3 years whereas, minimum age is 18 years and maximum age is 78 years.

Table 02: Socio-Economic Characteristics of the Study Population

Characteristics	Category	Male		Female		Total	
		N	%	N	%	N	%
Religion	Hindu	28	43.1	37	56.9	65	65.0
	Muslim	07	20.0	28	80.0	35	35.0
	Total	35	35.0	65	65.0	100	100
Social Category	General	21	47.7	23	52.3	44	44.0
	Scheduled Caste	07	35.0	13	65.0	20	20.0
	Muslim Community	07	19.4	29	80.6	36	36.0
	Total	35	35.0	65	65.0	100	100
Literacy Level	Can sign only	0	0.0	01	100.0	01	01.0
	Primary	11	32.4	23	67.6	34	34.0
	Secondary	06	33.3	12	66.7	18	18.0
	Higher Secondary	04	40.0	06	60.0	10	10.0
	Graduate	00	0.00	01	100.0	01	01.0
	Illiterate	14	38.9	22	61.1	36	100
Residence	Own	35	35.00	65	65.00	100	100
	Rented	00	00.00	00	00.00	00	00.00
	Other's	00	00.00	00	00.00	00	00.00
Occupation	Daily labour	21	84.00	04	16.0	25	25.0
	Job at industry	03	42.9	04	57.1	07	07.0
	Housewife	01	02.2	44	97.8	45	45.0
	Business	03	42.9	04	57.1	07	07.0
	Unemployed	07	46.2	08	53.8	15	15.0

Table 02 highlighted the different socio-economic characteristics of the study population. The table shows that 65% belonged in Hinduism and remaining 35% in Muslim by faith. Among them 44% belonged in General category followed by 20% in Scheduled Caste and 36% in Muslim community. The table also shows that most of them are completed primary level of education (34%) followed by secondary level (18%), higher secondary level (10%), whereas 36% are illiterate. Among illiterate population females are more in number in the status of illiteracy over their male counterparts. All the participants are staying in their own house. The participants mostly involved in daily wage earner and a little portion of them are works in nearest industrial activities, only 7% are engaged in petty business. Females are more involved as housewife.

Personal Medical History

Table 03: Changes of Nail during last five years

		NAILCHANGES		Total
		YES	NO	
SEX	MALE	07	28	35
		20.0%	80.0%	100.0%
	FEMALE	29	36	65
		44.6%	55.4%	100.0%
Total		36	64	100
		36.0%	64.0%	100.0%

Table 3 depicted the changes of nail in last five years. In this response 20% males responded that their minimum single nail changes in last five years, whereas 44.6% replied for that.

Table 04: Age-group wise distribution of Nail Changes occurred or not

		NAILCHANGES		Total	χ^2
		YES	NO		
GROUP	BELOW 20	03	06	09	$\chi^2 = 17.564$ $df = 5$ $sig. = 0.036$
		33.3%	66.7%	100.0%	
	21-30	10	16	26	
		38.5%	61.5%	100.0%	
	31-40	11	14	25	
		44.0%	56.0%	100.0%	
	41-50	07	12	19	
		36.8%	63.2%	100.0%	
	51-60	4	10	14	
		28.6%	71.4%	100.0%	
	61+	01	06	07	
		14.3%	85.7%	100.0%	

Table 04 highlighted the nail changes according to different age-group wise. The table highlighted that 44% participants' nail changes those are belonged in the age group 31-40 years, 38.5% participants' nail changes in the age-group 21-30 years, another 36.8% changes during the 41-50 years.

Table 05: Nail changes and presence of Ailments

Ailments	Nail Changes				Total	
	Yes		No			
	N	%	N	%	N	%
Diabetes	11	37.9	18	62.1	29	29.0
Hypertension	11	35.5	20	64.5	31	31.0
Cardio-vascular	01	33.3	02	66.7	03	03.0
Renal	01	33.3	02	66.7	03	03.0
Pulmonary	00	0.0	01	100.0	01	01.0
Gastro-intestinal	17	30.4	39	69.6	56	56.0
Hematology	04	44.4	05	55.6	09	09.0
Endocrine	02	50.0	02	50.0	04	04.0
Central nervous System	01	33.3	02	66.7	03	03.0

Table no. 5 shows the presence of ailments and its impact on nail changes. From the table it revealed that out of total diabetes 37.9% participants nails were changed, 35.5% hypertensive patients, 33.3% cardio-vascular and renal patients, 30.4% gastro-intestinal, 44.4% hematology and 50% endocrine related patients nail were changed.

Table 06: Nail changes association with Habits

Ailments		Nail Changes				Total		χ^2
		Yes		No		N	%	
		N	%	N	%			
Smoking	Yes	04	20.0	16.0	80.0	20	20.0	$\chi^2= 17.641$ $df=1$ $sig.=0.847$
	No	32	40.0	48	60.0	80	80.0	
Alcoholism	Yes	04	28.6	10	71.4	14	14.0	$\chi^2= 0.390$ $df=1$ $sig.=0.532$
	No	32	37.2	54	62.8	86	86.0	
Drug	Yes	01	100.0	00	00.0	01	01.0	$\chi^2= 1.796$ $df=1$ $sig.=0.180$
	No	35	35.4	64	64.6	99	99.0	

From the above table it revealed that habits of smoking, alcoholism and drug use are not significantly related with nail changes. Non-habits participants in smoking, alcoholism and drug use are also faced nail changes incidents during last five years.

Table 07: Nail changes in different fingers of the hands

		RIGHT HAND					LEFT HAND					Total Right Hand	Total Left Hand
		Little	Ring	Middle	Index	Thumb	Little	Ring	Middle	Index	Thumb		
Nail changes	Yes	17	12	21	07	11	16	30	17	09	21	57	93
	No	83	88	79	93	89	84	70	83	91	79	443	407

Table 07 shows the nail changes in different fingers of both hands of the study participants. From the table it revealed that among the total number of participants in case of right hand middle fingers are changed followed by little, ring, thumb and index. Whereas, in case of left hand ring fingers are mostly changed followed by thumb, middle, little and index.

Table 08: Sensitivity of performed mycological investigations

Test		Investigated	Positive	Sensitivity
KOH		40	21	52.5%
Chi-square test	X^2	2.74		
	p	0.098		

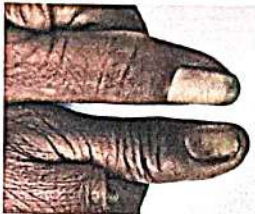
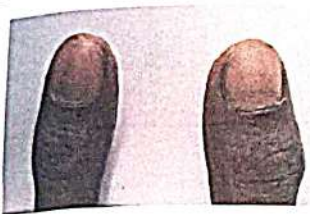
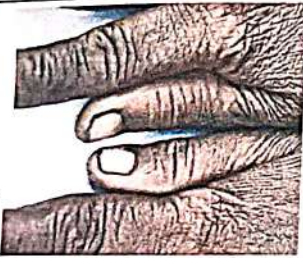
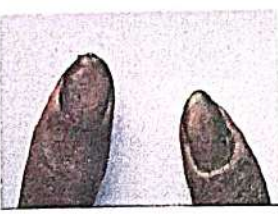
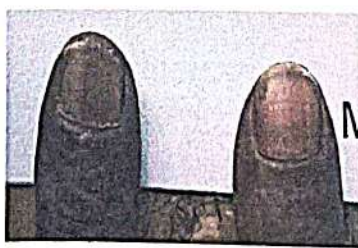
In the present study, it is found that by KOH method only 21 cases out of 40 (52.5% sensitivity) proved to be KOH positive while 19 (47.5% negative sensitivity) are non-sensitive. It is also said that there is no statistically significant difference.

Table 09: Prevalence of different types of nail abnormalities detected

Sl.No.	Nail Disorders	Frequency
01	Onycholysis	18%
02	Signs of onychomycosis	29%
03	Beau's lines	09%
04	Brittle nails	17%
05	Koilonychias	23%
06	Paronychia	09%
07	Nail clubbing	13%
08	Psoriasis	14%
09		
10		
11		

In the present study, nail changes with associated dermatoses were present in 29% of patients. Among them, psoriasis (14%) was the commonest dermatoses followed by onychomycosis with cutaneous involvement. Second most common abnormality in this study population is koilonychias (23%) followed by onycholysis (18%), brittle nails (17%), nail clubbing (13%) etc.

Nail Abnormality and Diseases

	Melanonychia		Onycholysis
	Clubbing & Beau's Lines		Nail Bed Yellowish
	Melanonychia		Melanonychia
	Fungal Infection		Clubbing & Beau's Lines
	Nail Bed Roughness		Nail Roughness
	Melanonychia		Pitting
	Melanonychia		Melanonychia & Onycholysis

Chapter-V

DISCUSSION & CONCLUSION

Discussion:

Variable results obtained with these procedures are reported in the literatures. Agreeing with our results, Gianni et, al (2001) showed that 102/112 (91%) patients were positive with KOH while 94/112 (84%) proved positive with PAS. Also, our results were parallel to Hsiao et, al (2007) who showed that sensitivities of KOH and PAS were 87% and 81% respectively. On the other hand, Machler et, al. (1998) found that 100% of patients got positive results with both PAS staining and KOH mounting, Our results are on the other side of the results obtained by Weinberg et, al. (2003) and Lawry et, al. (2000).

Incidence of onychomycosis was more in females than males attributed due to higher number of female respondents in our study. Among the females the majority were housewives 37/52 (71%). This is due to frequent contact with water and detergent that damages the cuticle, which then favours the invasion by fungi.

Weinberg et, al. (2003) investigated 105 patients with KOH preparation, culture and PAS staining. They reported sensitivities of 92% for PAS, 80% for KOH mount and 59% for culture. Lawry et, al. (2000) found PAS to be 85% sensitive while sensitivity for KOH was 53%.

Among 100 cases, 18 cases (18%) were Onychomycosis. This was the most common nail change in our study. According to Leyden JJ, (1978) Onychomycosis accounts for 20% of all the nail disorders. In our study, majority of patients were in the age group of 21- 40 years (51.42%). This is in accordance with various studies by Garg et al. (2004) (20-40 years), Grover S et al. (2003) (20-40 years). Majority of cases in this study were among labourers (37.14%) and housewives (34.28%).

KOH mount is a simple, rapid, inexpensive test to perform, which requires minimum infrastructure but some amount of experience to interpret the smears (2006). Reported false-negative rates are relatively high and may vary based on the experience of the laboratories (1991). Accordingly, if investigators depended solely upon the results of KOH preparation, they would have missed a good number of patients (2008). Feuilhade de Chauvin (2005) mentioned that direct microscopy must always be coupled with fungal culture for accurate diagnosis and allowing correct species identification.

Conclusion:

KOH examination could be used as a first line preliminary routine test in diagnosis of onychomycosis as it is relatively simple and rapid which can be used as a confirmatory method. From the preceding chapter it may be stated that in this study females are more commonly affected than males. Common age group is between 31-60 years. Few ailments Diabetes, hypertension were found to be the precipitating factor. Distal and lateral subungual onychomycosis is the commonest type. No specific systemic disease association is noted in this study.

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APPENDICES:

INFORMED CONSENT FORM

Study Title: An Epidemiological Study of Fingernails of Slum Dwellers under Haldia Municipality

Contact Details of Researcher/Student:

Tanushree Ruhi Das Karikar, VI Semester, Department of Anthropology, Haldia Government College; Mobile No.: 8927567923; E-mail: dastanushree308@gmail.com

Subject's Full Name:

DOB/Age: **Mobile Number:**.....

Address:

PART-1

1. Purpose of the Study:

বস্তীবাসীদের নখ ও নখের স্বাস্থ্যগত সমস্যার পর্যালোচনা।

2. Study Procedures:

বর্তমানে নখের পরিস্থিতি পর্যবেক্ষণ, সংশ্লিষ্ট নখের ছবি বা আলোকচিত্র গ্রহণ এবং অস্বাভাবিক নখের নমুনা সংগ্রহ ও তার পরীক্ষাগার পরীক্ষা।

3. Risk from the Study:

এই গবেষণায় কোনও প্রকার বিপদের সম্ভাবনা নাই।

4. Benefits from the Study:

গবেষণা হতে প্রাপ্ত তথ্য কেবলমাত্র বিজ্ঞানবিষয়ক ক্ষেত্রে ব্যবহৃত হইবে।

5. Complications:

উপর্যুক্ত ব্যবস্থাপনার প্রোটোকল মেনে যেহেতু এই গবেষণা সংগঠিত হবে তাই এতে কোনো জটিলতা নাই।

6. Compensation:

এই গবেষণায় অংশগ্রহণের জন্য কোনও ক্ষতিপূরণ দেওয়া হইবে না।

7. Confidentiality:

গবেষণায় অংশগ্রহণকারীর ব্যক্তিগত পরিচিতি কোনোভাবেই প্রকাশ্যে আনা হইবে না, সকলক্ষেত্রে উক্ত অংশগ্রহণকারীর ব্যক্তিগত তথ্য কোড সংখ্যায় ব্যবহৃত হইবে।

8. Rights of the Participants:

স্বেচ্ছায় এই গবেষণায় অংশগ্রহণ নাও করিতে পারেন বা অংশগ্রহণ করিলেও যেকোনো সময় নিজেস্বতন্ত্রে সরিয়ে নিতে পারেন কোন কারণ ছাড়া।

PART-2

CONSENT:

- আমি এই গবেষণার প্রকৃতি সম্পর্কে সম্পূর্ণ অবহিত হয়েছি গবেষিকা ছাত্রীর থেকে এবং এ সম্পর্কে কিছু প্রশ্ন থাকলে ভবিষ্যতে জানার অধিকার আমাআর আছে।
- আমি এটা জানি যে এই গবেষণায় আমার অংশগ্রহণ সম্পূর্ণই স্বইচ্ছাকৃত এবং এখান হতে আমি নিজেকে যে কোন সময় সরিয়ে নিতে পারি কোনো কারণ ছাড়া।
- এই গবেষণায় প্রাপ্ত তথ্য যেকোন বিজ্ঞানবিষয়ক কাজে কেবল মাত্র ব্যবহৃত হলে আমার কোনো আপত্তি থাকবেনা বা কখনো আপত্তি করিবোনা।
- সকল বিষয় বুঝিয়া নিজ ইচ্ছায় এই গবেষণায় অংশগ্রহণ করিতে ইচ্ছুক হইলাম।

স্বাক্ষর বা বৃদ্ধাঙ্গুষ্ঠের ছাপ

**DEPARTMENT OF ANTHROPOLOGY
HALDIA GOVERNMENT COLLEGE
DEBHOG, HALDIA, PIN: 721657, PURBA MRDINIPUR**

A PROJECT WORK ON

**An Epidemiological Study of Fingernails of
Slum Dwellers under Haldia Municipality**

A. Personal Profile

Individual ID: _____
Name: _____
Address: _____
Contact Number: _____
Age: (Years)
Religion: Hindu/ Muslim/Others (.....)
Caste/Community:
Education:
Primary Occupation:
Sex: Male/ Female/ Others
Social Category: UR/SC/ST/OBC (A/B)
Clan:
Residence: Own/Parental/Rental/Others
Secondary Occupation:
Duration of skin lesion: _____
Site of lesion: _____
Nail changes or not: _____

Past Medical History

Disease	No. of years of involvement	On treatment	Remarks
Diabetes			
Hypertension			
Asthma/Atopy			
Cardio			

Personal History:

Smoking	Alcoholism	Tobacco chewing	Drug	Others

Hygiene:

	Regularly	Weekly	Frequency Monthly	Whenever Necessary	
Wash before taking food					
Wash after latrine					
Wash after domestic or work rearing					
Sanitizing					
Nails					
Shaving					

Are you ever or are you currently receiving nail treatment? Yes No
 Yes, when was your last treatment?

Nail Examination:

Involved	Hand				
Finger Nail (LEFT)	1	2	3	4	5
Pattern					
Finger Nail (RIGHT)	6	7	8	9	10
Pattern					