ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 07 | July - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A CROSS-SECTIONAL STUDY ON THE PREVALENCE OF SKIN DISEASES AMONG MIGRANT CONSTRUCTION WORKERS IN CHENNAI

Dermatology

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ABSTRACT

Background: India being a developing country, progressing and emerging as a developed country, has tremendous need of physical infrastructure and construction work and as a result of this , there is a rising demand of construction workers. Workers in the construction industry are mainly migratory and are employed mainly on the basis of contract or subcontract. These workers have temporary relationship between employer and employee, uncertainty in their working hours, contracting and subcontracting system, lack of basic continuous employment, lack of basic amenities, and inadequacy of welfare schemes. **Methodology :**The current study was a community based cross-sectional study. 500 construction workers at five different construction sites in and around Chennai were screened for dermatological complaints and treated for the same. After excluding the local labourers, the prevalence of dermatological diseases among 300 migrant workers are discussed in this study. Diagnosis of skin diseases were made using clinical skills by screening all the migrant construction workers who were available onsite. **Results:**The prevalence of dermatological conditions among migrant workers was found to be 55.7%. Infective skin diseases contributed to 64% and non-infective skin diseases contributed to remaining 35.9%. Among infective dermatoses, Fungal infections (32.3%) were the most common. Mite infestation (scabies) was found in 13(7.8 %) workers.12.6% of the workers had Bacterial infections. Viral infections like Warts(3%), Herpes Simplex virus(2.4%) and Molluscum Contagiosum(0.6%) have contributed to the minimal portion of the dermatological conditions. One worker had Hansen's disease(0.6%). Allergic Contact Dermatitis(12.6%), Photodermatitis(4.8%), Miliaria(3.6%), Hand Eczema(3.6%) were the common non-infective dermatological conditions affecting the study population.**Conclusion:**The pattern of dermatological condition in these migrant construction workers is an expression of poor hygiene, overcrowding and occupational hazards of the construction industry.

KEYWORDS

Contact dermatitis, Infective dermatitis, migrant construction workers.

INTRODUCTION :

Construction industry had witnessed huge growth across the globe in the last few decades, especially in developing countries like India. Working in a construction industry has been found to be associated with plethora of health associated risks. Increased risk of various dermatological conditions is one such phenomenon. Construction workers are exposed to a variety of chemicals and physical factors predisposing them to a variety of dermatological disorders.[1]

The chemical exposures includes cement and related substances, petroleum and related products used in the paints, metals, concrete mixture, silica, granite etc.[2] The most common allergen exposures found among construction workers were chromate, epoxy resin, cobalt, nickel, thiuram mixture and black rubber mix. Skin exposure to harsh environmental conditions, living in overcrowded places and unhygienic living conditions are some of the important risk factors.[4]

The prevalence of dermatological conditions reported among construction workers in India has been reported to be ranging between one third to as high as two thirds.[3] It is necessary to have an understanding of the common profile of dermatological conditions among immigrant construction workers by the clinicians, so that it may aid in planning effective screening and management strategies to manage the dermatoses among this high-risk population.[2]

An occupational dermatosis is defined as a skin disease that would not have otherwise occurred if the patient had not been doing the work of that nature.[6] Evidences in favor of dermatosis with an occupational origin are:

1. Working in contact with an agent, which is known to have caused similar skin manifestations.
2. Occurrence of similar skin condition in other fellow workers or those within the same occupation.
3. Temporal relationship between exposure and the occurrence of dermatitis.
4. Type of lesion as well as the site of lesions consistent with history of exposure and similarity to other cases.
5. Occurence of dermatitis after exposure, followed by improvement or clearing after exposure ceases.
6. History and examination confirmed by patch test results.

Contact dermatitis is the most common among all the occupational dermatoses, comprising 20-90% of all the cases.[5] Various types of workers are involved in the construction industry such as masons, helpers, supervisors, carpenters and painters.[7]

Infective dermatoses can be due to bacterial, viral, fungal, parasitic, mycobacterial or sexually transmitted causes. The prevalence of infective dermatoses among construction workers is mainly as a result of overcrowding, poor hygiene, lack of awareness and failure to have regular health checkups.[8]

Objective :

- To provide epidemiological data on various dermatoses among migrant construction workers in Chennai.
- To educate construction workers about dermatoses caused due to overcrowding, poor hygiene and occupational irritants.
- To recommend regular health checkups/ hospital visits for early diagnosis and treatment of skin diseases.

MATERIALS AND METHODS:

Study Site : 5 construction sites in and around Chennai.
Study Design: Cross-sectional study
Study Duration: 6 months
Minimum Sample Size : 300

Inclusion criteria:

Construction workers belonging to states other than Tamil Nadu .

Exclusion criteria :

Construction workers belonging to Tamil Nadu

Data collection:

500 construction workers at five different construction sites in and around Chennai were screened for dermatological complaints and treated for the same. After excluding the local labourers, the data of 300 migrant laborers with various dermatoses were assessed. Data regarding the type of work and the materials with which they came into contact were recorded. The study group included the following categories: masons, helpers, painters, rod fitters, carpenters, electricians and supervisors. Masons were involved in skilled jobs

such as laying the bricks and paving and they used cement as a basic ingredient in their work. Helpers were involved in unskilled jobs like mixing the cement, carrying it to the construction sites, cleaning and helping the masons.

Complete physical examination was done in each worker in a well-lit examination room at the construction site. The individual cases were diagnosed based on clinical appearance of the lesions. Patients requiring biopsy for confirmation of the diagnosis were referred to specialist referral hospitals. In suspected cases, the diagnosis of fungal infection was supported by microscopical examination of skin scrapings in potassium hydroxide. Special tests (patch tests and fungal cultures) were not done because of financial constraints.The study was done in remote construction site and hence all the patients could not come for review. In case of doubt in clinical diagnosis, only a few workers were referred for a skin biopsy. Also, many of the labourers changed their site of work frequently. So, many of them could not be followed up for treatment.

RESULTS :

A total of 300 subjects were included in the final analysis. The overall prevalence of any dermatological condition was 55.7 % in the study population. Infective skin diseases contributed to 64% of the dermatological morbidity and remaining 35.9% was contributed by non-infective skin diseases.

Table 1 :Prevalence and Nature of Dermatological condition(n=300)

Parameter		Number	Percentage
Prevalence of Dermatological condition(n=300)	Yes	167	55.7%
	No	133	44.3%
Nature of Dermatological condition(n=167)	Infective	107	64%
	Non-infective	60	35.9%

There was a high male(89.3%) preponderance, with male to female ratio of 8.4:1. Among the study population, majority (75.7 %) of the participants were aged between 21 to 40 years. The proportion of study population with no formal schooling and completing only up to primary schooling was 40 % and 30 % respectively. One fourth of them studied up to secondary school, with very minor portion of them studying beyond secondary school. More than half (41.7%) of workers were masons with direct exposure to cement and concrete. Carpenters and painters constituted 20%, followed by other types of skilled and supervisory staff. The working hours ranged between 8 to 12 hours with majority of them reporting 10 working hours per day. Close to three fourths of the participants were working in the construction industry for more than 10 months duration. Only very few workers stayed alone (6.7%) and majority of the workers were found to share rooms(93.3%). Only 60.7% reported use of regular personal protective equipment.

Table 2 : Baseline characteristics and Work related parameters of migrant workers(n=167)

Parameter		Number	Percentage
Gender	Male	268	89.3%
	Female	32	10.7%
Age group	<20	21	7%
	21-40	227	75.7%
	41-60	40	13.3%
	>60	12	4%
Education	Illiterate	120	40%
	Primary schooling	90	30%
	Secondary schooling	83	27.7%
	Higher than secondary schooling	7	2.3%
Type of work	Mason	125	41.7%
	Carpenters/painter	60	20%
	Supervisors	27	9%
	Helper	22	7.3%
	Electrician	20	6.7%
	Plumber	15	5%
	Welding work	12	4%
	Driver	10	3.3%
	Machine work	5	1.7%
	Surveyors	4	1.3%
Working hours	8hrs	32	10.7%
	10hrs	170	56.7%
	12hrs	98	32.7%
Period of stay	1 to 5 months	22	7.3%
	5 to 10 months	54	18%
	More than 10 months	224	74.7%
Number of persons per room	1	20	6.7%
	2 to 5	120	40%
	5 or more	160	53.3%
Regular use of protective wear	Yes	182	60.7%
	No	118	39.3%

The prevalence of infective dermatoses was 64.1%. Fungal infections contributed to majority of the infective dermatoses(32.3%), followed by Bacterial infections(12.6%). Furunculosis and Folliculitis contributed to majority of the bacterial infections. The major contributor of viral infection in these population were Warts(3%) followed by Herpes Zoster(1.8%). Fungal infections were the most common infective skin condition, with Dermatophytosis (Tinea Corporis, Tinea Cruris) being the major contributor(14.4%). Scabies contributed to 7.8% of the dermatological morbidity. One subject was found to have Hansen's disease(0.6%).

Table 3 :Prevalence of Infective Dermatoses(n=167)

Infections	Diagnosis	Number	Percentage
Bacterial	Furunculosis	7	4.2%
	Folliculitis	7	4.2%
	Ecthyma	2	1.2%
	Secondary pyoderma	2	1.2%
	Pitted keratolysis	1	0.6%
	Cellulitis	1	0.6%
	Paronychia	1	0.6%
Viral	Warts	5	3%
	Herpes zoster	3	1.8%
	Herpes orolabialis	1	0.6%
	Molluscum contagiosum	1	0.6%
	Varicella	1	0.6%
Fungal	Pityriasis versicolor	15	9%
	Intertrigo	14	8.4%
	Tinea Corporis	14	8.4%
	Tinea Cruris	10	6%
	Onychomycosis	1	0.6%
Parasitic	Scabies	13	7.8%
	Pediculosis	5	3%
Mycobacterial	Leprosy	1	0.6%
Sexually transmitted diseases	Anogenital Warts	2	1.2%
Total		107	64%

Allergic Contact Dermatitis(12.6%), Photodermatiti(4.8%), Miliaria(3.6%) and Hand Eczema(3.6%) were the most common non-infective skin conditions affecting the study population.

Table 4: Prevalence of noninfective dermatoses(n=167)

Type of dermatoses	Number of workers	Percentage
Allergic Contact Dermatitis	21	12.6%
Photodermatitis	8	4.8%
Miliaria	6	3.6%
Hand Eczema	6	3.6%
Seborrhoeic Dermatitis	3	1.8%
Irritant Contact Dermatitis	3	1.8%
Melasma	2	1.2%
Fissure feet	2	1.2%
Acne	2	1.2%
Urticaria	2	1.2%
Psoriasis	2	1.2%
Keloid	1	0.6%
Vitiligo	1	0.6%
Traumatic Onycholysis	1	0.6%
Total	60	36%

Images

Figure 1 : allergic contact dermatitis

Figure 2 : chronic eczema

Figure 3 : nummular eczema

Figure 4 : pityriasis versicolor

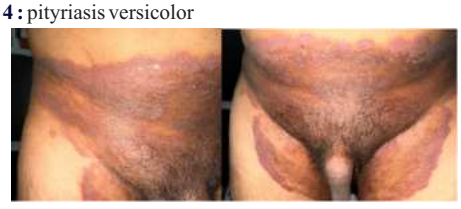

Figure 5 : tinea cruris

Figure 6 : scabies

Figure 7 : verruca vulgaris

Figure 8 : herpes zoster

DISCUSSION:

Construction industry is one of the important sectors in developing countries. Construction activity is mainly concentrated in large urban conglomerations. Majority of the construction workers are often migrated from remote areas and they experience unhealthy working and living conditions.[8] Hence, they are found to be at risk of various occupational hazards. Many of these occupational hazards are documented to be much higher among them than the general population. Skin diseases are one among them. The current study showed that the prevalence of infective dermatoses was 64% and that of non-infective dermatoses was found to be 35.9%. In the current study, the major proportion of the skin conditions were of infective in nature. Similar pattern of skin conditions was reported by most of the studies from other similar settings. In study by Senapathi P et al. infectious skin diseases were found among 64.3 % of the study subjects while non-infectious skin diseases were found among 34.7%. Kuruvila M et al. have reported infective skin diseases among 89.72 % of labourers in their study.[10] When compared to other occupations, the relative contribution of infective dermatoses appears to be much higher among construction workers. Data collected from many previous studies and the current study showed that majority of the construction workers are migrated, often live in overcrowded, poorly ventilated, makeshift accommodations.[6] Fungal infections (Dermatophytosis) were the most common among the infective skin conditions.[9] Minor portion of the subjects had Bacterial, Viral and Mycobacterial infections. Similar pattern was seen in many other studies. In study by Kuruvila, M et al. fungal infections contributed to nearly half of the dermatoses, followed by bacterial infections and scabies.[10]Dermatophytosis have been reported to be the most common infective skin disease in various other occupational and nonoccupational settings across the globe. Working in hot and humid environments which leads to continuous perspiration and moist skin conditions , together with poor personal hygiene are ideal conditions for occurrence of fungal dermatoses. Sleeping in overcrowded rooms, sharing of linen etc. also may be responsible for the higher occurence of scabies and other infective skin diseases. Delayed diagnosis, treatment and higher rates of transmission of infective dermatoses may be because most of them do not seek help from qualified medical professionals.[5]The common causes of non-infective dermatoses were Allergic Contact Dermatitis, Photo Dermatitis, Miliaria and Hand Eczema. Photodermatitis and Miliaria may be a result of the hot and humid climate of Chennai.[4] Many authors have reported that construction workers are highly susceptible to allergic and irritant contact dermatitis. Cement(Potassium Bichromate) has been found to be an important cause of contact dermatitis. Other than cement, exposure to wide range of chemical and corrosive substances, improper or no use of personal protective equipment are the key predisposing factors for the occurrence of contact dermatitis.[8]

CONCLUSION:

There is a high burden of morbidity from skin diseases among the construction workers. Majority of the skin conditions were of infectious origin, mainly caused by fungi and scabies mite. Some of the important risk factors for occurrence and transmission of skin diseases among the construction workers includes low literacy levels, overcrowded living conditions, poor utilisation of personal protective equipment, and poor personal hygienic practices . There is a strong need to sensitize all the relevant stakeholders, including the construction workers, their employers, health care practitioners, and public health authorities regarding the high burden of dermatological morbidity in these populations. It is mandatory to conduct periodic screening programs to promote early detection and treatment of skin diseases. Emphasis should be given to interventions at various workplace level and personal level aimed at primary prevention of skin diseases in this population.

Limitations:

- Small sample size, single centered study.
- The study can be done in large samples with different age groups and with wider applicability.
- Diagnosis in this study is made only on the basis of clinical examination.

Conflict of interest: Nil

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