



Occupational health profile of workers in chilligrinding industry in relation with their working environment

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Abstract: *Until few years ago, dried chillies were usually powdered in the kitchen for the use of the individual household, but in recent years, the grinding of chilli has become minor industry. Boom in the industry has also raised occupational health related problems among workers which are least recognised and concerned. Present study deals with the health problems faced by chilli grinding industry workers arising from occupational environment. Total fifty five subjects were randomly selected for the cross sectional study and written consent was obtained. The anthropometric measurement and physiological parameters like heart rate, blood pressure, peak expiratory flow rate of each subject was studied. Musculoskeletal discomforts and health problems of the subjects were studied by standard questionnaire. Study revealed that the worker was facing many health related problems and pains in their body. Not only physically but working environment has also caused psychological stress in the workers. There is an urgent need to make owners and workers aware of the protective measures in the working atmosphere and modify certain working practices to reduce the negative health effects.*

Keywords: - chilli industry, workers, occupational health, psychological, protective measures.

1. INTRODUCTION:

Spices are an integral part of the Indian diet since centuries and chillies are the cheapest spices available in India which are eaten across all groups of people. India is the world's largest producer, consumer and exporter of chillies in the world. India exports its chilli to various Asian nations like Vietnam, Thailand, Sri Lanka, Bangladesh and U.A.E and USA, UK, Canada, Australia, Brazil, China, Turkey, Cuba, Denmark, Egypt, France, Spain, Hungary, Italy, Latvia, Malaysia, Mexico, Indonesia, Singapore, Burma, Turkmenistan, Kuwait, Israel, Bahrain, Portugal, Norway, Romania etc. (1). The most important chili growing states in India are Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu, which together constitute nearly 75% of the total area. (2).

In everyday life chillies are the main used in a wide range of food as it adds sharpness, taste, flavour and shading to the dishes. They help to enhance the taste of food (3). Until few years ago, dried chillies were usually powdered in the kitchen for the household use, but in recent years, the chilli grinding has become minor industry. The chillies are sun dried until they become light and papery, maintaining their pungency and red colour and then grinded. This is done by machines operated by fuel/electricity (4). Sun-dried chillies, which contain capsaicin and dihydrocapsaicin, contain nitrophenols, which by producing nitrosation of foodstuff, often believed to be gastric stimulant, are known to cause toxicity in the gastrointestinal tract. (5). This chilli mill units machines produce a generous amount of dust particles, particularly airborne dust because of fugitive emanations from different tasks, during milling operations workers are exposed to various degrees of particulate matter (PM). (6). This is major occupational health hazard to workers respiratory system, skin and eyes. Some irritating effects and burning sensations too are caused to workers working here. Inhalation of these particles causes various respiratory symptoms which may include chronic obstructive diseases (COPD) and allergic rhinitis and associated ocular symptoms like itchy eye red eye and conjunctivitis. (3). Workers are under continuous pressure of work to increase the productivity and to meet higher demands with less resources and management skills. (7). In Karad city chilli powder is made with manually operating devices and whole family work in the same working environment. Working for long hours in same position, lack of rest and improper diet the physical fitness of workers is greatly affected. Workers get affected physiologically and psychologically (8). Occupational health deals with all aspects of health and safety at the workplace with special emphasis on primary prevention of hazards (WHO). There is a requirement for sufficient personal protective equipment's to minimize exposure to hazards that cause serious workplace diseases and disorders.

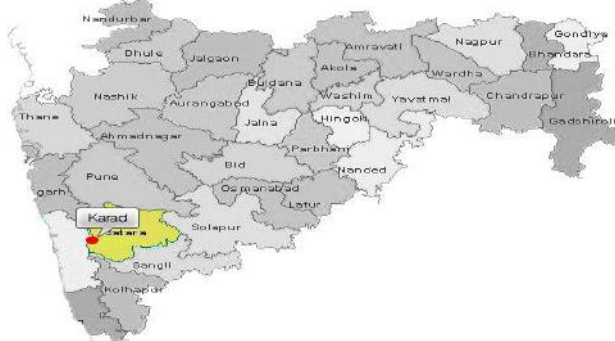
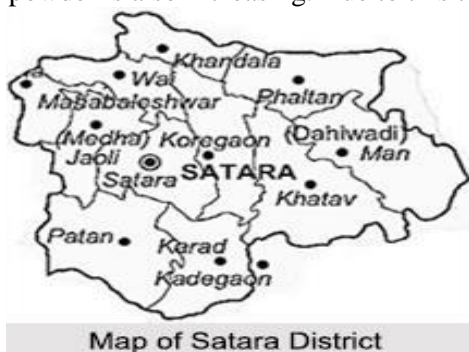


So the present investigation was carried out to know the physical problems faced by spice grinders and study their health profile and ill effects that could be attributed to the nature of their occupation, particularly in view of the irritant quality of material with which they deal.

2. MATERIALS AND METHOD:

2.1. About The Study Area:

The present study was conducted in Karad city and area around the Karad city. Karad is situated at the confluence of Krishna and Koyana River. It is considered as an important educational hub in Western Maharashtra due to presence of many prestigious educational institutes. Due to transport, educational, and medical facilities the population in this area is increasing. With developing markets and hotels the demand for spices especially for red chilli powder is also increasing. Due to this the dry chilli powder industry is flourishing in this area.



Fifty five workers of age eighteen and above eighteen years were selected for the study and a written consent was obtained from each. Selected workers were interviewed as per standard questionnaire to gather socioeconomic information. The musculoskeletal discomforts of the selected subjects were studied by preparing self-standard questionnaire. All the responses were gathered and maintained for further study. Anthropometric study, height, weight of selected subjects was measured and there BMI were calculated. In physiological study the heart rate, blood pressure and lung capacity of the selected subjects was recorded. The statistical analysis like frequency, mean, standard deviation, standard error of mean was done by using Microsoft excel 2013 and SPSS software 2.0.

3. RESULTS:

After the survey of the study area fifty-five workers were selected for the study. Out of fifty-five selected subjects fifteen were males and forty were females. From the standard questionnaire of socioeconomic study of workers in chilli grinding industry following results were obtained

Table no1: Socioeconomic status of the workers of chilli grinding industry

Socioeconomic characters		Number of workers
Religion	Hindu	42
	Muslim	13
Education	Illiterate	29
	1-5	15
	5 and above	11
No. of children	0-1	10
	2	22
	2-more	23
Marital status	Married	48
	Unmarried	7
Reason for working in chilli industry	Illiteracy	26
	poverty	17
	Unemployment	12
Sources of Family Income (Other Than chili industry)	Milk	13
	Poultry	7



	Farm labor	20
	Construction	15

Table no2: Mean BMI of workers in chilli grinding industry

Data expressed as Mean \pm S.E



Chart no.1: Musculoskeletal discomforts of workers in chilli industry

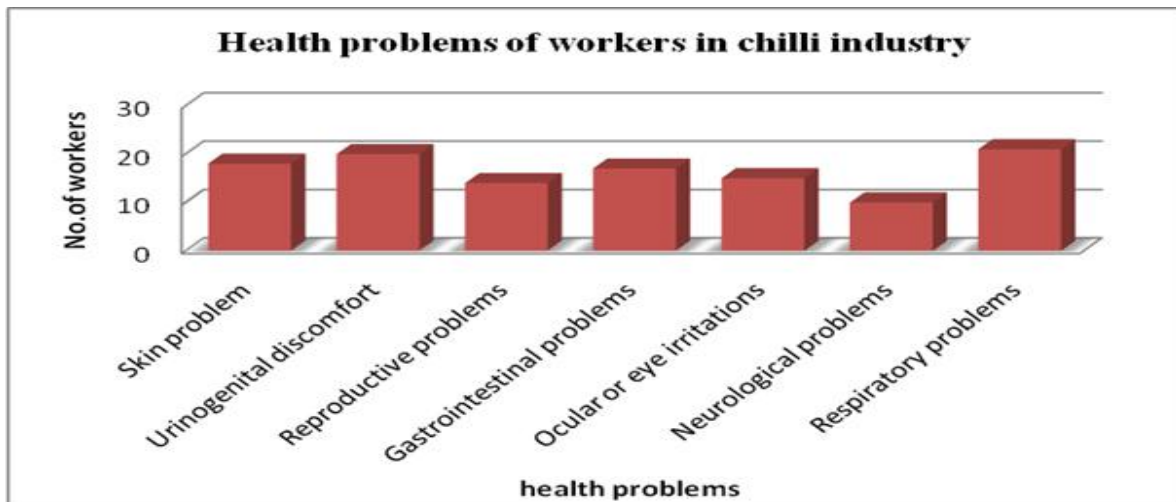


Chart no.2: Health problems of workers in chilli industry

Work experience	No. of subjects	Mean BMI
1-5	7	23.59 \pm 0.04
6-10	9	23.19 \pm 0.16
11-15	11	25.8 \pm 0.09
16-20	10	25.37 \pm 0.12
21-25	6	24.6 \pm 0.14
26-30	4	24 \pm 0.07
31-35	3	32.46 \pm 0.03

From the standard questionnaire and using suitable measuring devices physiological study of workers in chilli grinding industry was done and following results were obtained.

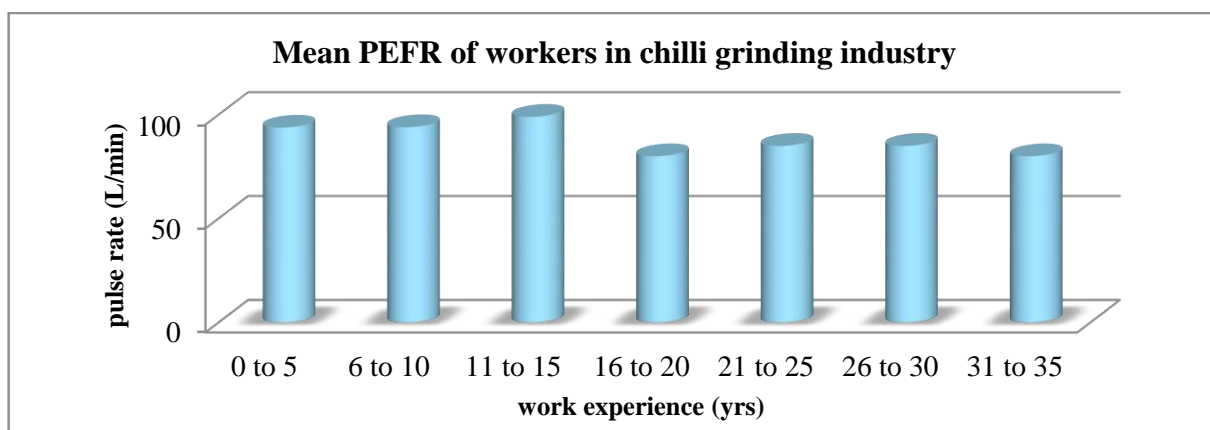


Chart no.3: Mean PEFR of workers in chilli grinding industry

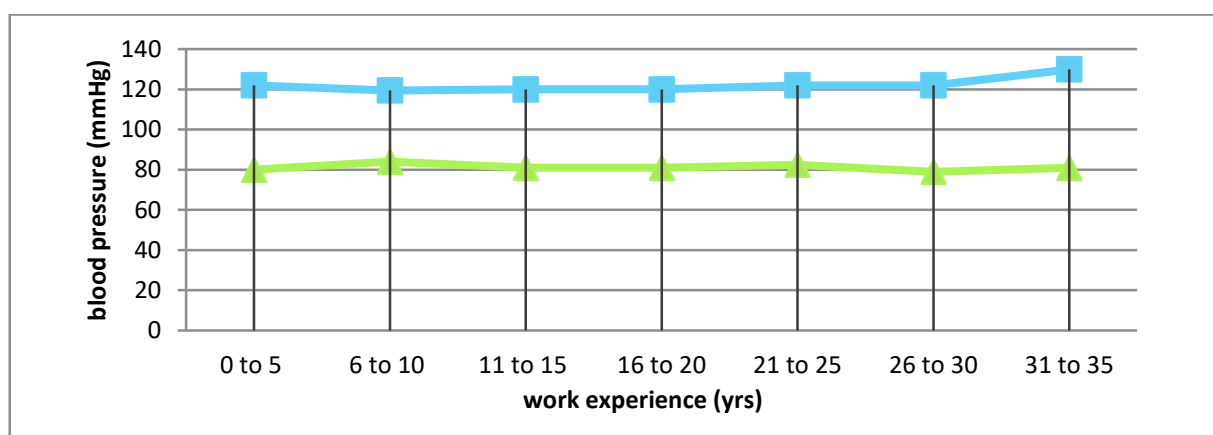


Chart no.4: Mean blood pressure of workers in chilli grinding industry

Work experience	No.of subjects	Pulse rate
1-5	7	93.8± 0.07
6-10	9	94± 0.27
11-15	11	99± 0.09
16-20	10	80± 0.05
21-25	6	85± 0.01
26-30	4	85± 0.32
31-35	3	80± 0.48

Table no 3: Mean pulse rate of workers in chilli grinding industry

Data expressed as Mean ± S.E

4. DISCUSSION:

From the study it was found that workers belonged to communities' viz. Hindu and Muslims and mostly from lower economic class with large family size. Poverty and illiteracy were the two main reasons for working in chilli grinding industry. Working in the same posture for long time causes pain and stress in the body. Workers complained about skin burn, itching, back pain, and cervical pain, sleep disturbance etc. Eye irritations are the most prominent problem observed in workers. Some of the workers complained about knee pain and shoulder pain also. Some workers are found to be suffering from disorders like diabetes, kidney stone, blood pressure, migraine, Brain damage (chronic). Some females were suffering from the illusions that they are still in their working place. The noises of chilli grinding machines were still felt by them even in their sleep. Problems like skin irritation, skin allergies, boils, and itching of skin were found in workers.



Industry shows full speed work during the summer season while on the other months of the year it is working but not as active as in summer. After the end of the summer, the workers were found to suffering from oral and skin heat problems. Physiological study of workers revealed the abnormal levels than the normal person. Female workers who have been working in this industry since 35 years were found severely affected. Head region and lower back of such workers was severely affected due to rattling noise of the grinding machine. Workers work in polluted air with extremely small chili particles and dust particles giving rise to many problems like allergies, cough, sneezing, asthma etc. Thus study of the workers in the chili industry revealed that their health status was badly affected due to occupational stress.

5. CONCLUSION:

From the study, it can be concluded that chilli grinding industry workers exposed to severe working conditions and environment and showed significant anthropometric changes such as lowering weight and in some cases obesity. Physiological study revealed that disorders such as hypertension and abnormal blood pressure levels are caused to the workers working for more than 10 years due to continuous noise, stressful postures for long time and improper food time. Some severe musculo skeletal disorders also have been found during the study. Workers were not seen practicing any protective equipments giving rise to more complications and chronic conditions. There is a strong need for certain regulation in unorganized sector especially for worker.

RECOMMENDATION:

- Worker friendly technology can be introduced to reduce the hardships associated with chili grinding.
- Safety protective equipment should be practiced and made compulsory in work like mask, gloves, and slippers.
- The schedule of workers for having meals, rest and working time should be fixed.
- Proper dietary practices should be followed by workers.
- As the noise of grinding machines is very irritating, workers should make use of ear plugs during work.
- Exhaust fans should be used in workplace environment to avoid accumulation of fine particles in the working area.
- Positive changes in lifestyle in food habits, proper exercise can help to reduce the occurrence of these issues.

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