Musculoskeletal Discomforts in Papad Industry

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ABSTRACT

In developing countries, great efforts are directed towards the development of cottage and small scale industries as the engine for their economic growth.As per the records of the District Industries Centre of Madurai (2013) there are 2933 registered small scale food industries in Madurai. One hundred and fifty papad industry workers were randomly selected for the study from Madurai district. During the survey, it was found that about eighty one per cent of the employees were women. Musculoskeletal discomfort (MSD) was the major health problem of the workers. Analysis of MSDs reveal that low back pain (95%)was more predominant followed by neck (89%) and shoulder pain (77%).The degree of discomforts of low back pain indicate that extreme level of discomfort was faced by fifty nine per cent of the workers and twenty one per cent indicated severe discomforts. Further analysis of neck pain reveals that one-fourth of the workers had extreme discomfort as against forty six per cent who had severe discomfort. This clearly indicates that the postures adopted in the papad making industries may be the reason for the MSDs. To sustain human progress and well-being, there is an urgent need to tackle these problems of the workers.

Key words: Occupational health, Work, Musculoskeletal discomfort, Papad industry, Health

INTRODUCTION

In developing countries, great efforts are directed towards the development of cottage and small scale industries (SSIs) as the engine for their economic growth.According to WHO, over 1000 million people worldwide are employed in small scale industries[3].According to the third all-India census of small scale industries conducted in 2001/02, comprised of 22, 62,401 registered SSIs and 91, 46,216 informal SSIs. Most commercial food processing is undertaken in the informal sector [4].The papad industries are identified with women empowerment in India, the employees are not subjected to occupational health and safety provisions. As a result they suffer adverse health impacts.

Various population based surveys have shown positive associations between musculoskeletal disorders and work factors like awkward postures, high physical exertion and vibration[6].The common disorders that arise as repetitive strain injury are carpel tunnel syndrome, epicondylitis and tendinitis of the wrist or hand, rhinitis, asthma, dermatitis, etc[7].In the papad industry there is no provision for retirement age, which however increases the duration of occupation and increases the possibility of suffering more from musculoskeletal problem.

To sustain human progress and well-being, there is an urgent need to tackle these problems. Thus this study will describe the health problems and its relation to the work activity done by

the papad industry workers. The study aims to identify the health problems of workers in small scale papad industries.

MATERIALS AND METHODS

Selection of Area: Madurai city was chosen for the conduct of the present study. As per the records of the District Industries Centre of Madurai (2013) there are 2933 registered small scale food industries. Madurai has all the facilities to promote small scale food processing units and thus this area has been chosen for the study.

Selection of the sample: Madurai district has many small scale papad units in which 5 to 20 workers are employed per unit (Fig 1). Forty units were selected randomly for the study. One hundred and fifty workers were selected by random sampling method.

Interview with the workers: A well structured and pre-tested interview schedule was prepared. The questionnaire consists of the socio economic status, occupational details and musculoskeletal discomforts of the workers to collect information by direct interview. Each worker was interviewed during the work hours and the details are presented in the subsequent lines .In addition to it, observation as a tool of research was also adopted for the study.

Fig 1 : Overview of the Papad unit

RESULTS AND DISCUSSION

Socio economic status of the papad industry workers were assessed and given in Table 1. The mean age of the workers was 36.76 years with a SD of ±10.226. From the given data it is clear that thirty six percent of them are in the range of 35-44 years. About eighty one percent of the workers were female which indicates that it is a predominately women based small scale papad industries. Regarding the educational qualification of the workers, about forty one percent of them have completed their primary school level, twenty percent of the workers have passed their secondary school education. Sixteen percent of the workers were illiterate and only minimum of five percent of the workers have done their higher education.

In this study, eighty one percent of the workers were married. Regarding the earning status of the workers in the family, about seventy percent of them are supportive earners in the family. The monthly income of the workers ranged from Rs. 1000-10000 with the mean income of Rs. 4257/-. Forty two percent of them earn Rs. 2500-5000.Thirty percent of the workers earn monthly income of Rs.6000-10000.Remaining of twenty eight percent workers earn only less than Rs. 2500 as their monthly income.

The age of entry of the workers and their years of work experience in papad industry are represented in table 2.

Table 1: Socio economic profile of workers

S.No	Particulars	No. of Workers (N=150)	Percentage
1.	**Age (in years)**		
	Less than 25	18	12
	25-34	44	29
	35-44	54	36
	45-54	24	16
	More than 55	10	7
2.	**Gender**		
	Female	122	81
	Male	28	19
3.	**Educational status**		
	Illiterate	24	16
	Can read and write	7	5
	Primary school	62	41
	Secondary school	30	20
	High school	20	13
	Higher secondary school	6	4
	Graduation	1	1
4.	**Marital status**		
	Unmarried	16	11
	Married	121	81
	Widow	13	8
5.	**Earner status**		
	Main earner	45	30
	Supportive earner	105	70
6.	**Monthly income of the worker**		
	Less than 2500	43	28
	2500-5000	63	42
	6000-10000	44	30

The mean age of entry in the unit for the workers is 21.27 years (SD ±10.152). Thirty nine percent of the workers have joined this industry at the age of between 15 to 25 years. Almost one –third of the workers have joined the industry after 25 years and the mean work experience was 15 years. Thirty five percent of the workers had work experience of 10-19 years and thirty three percent of the workers had work experience less than 10 years. Remaining thirty two percent of the workers had work experience in papad making for about more than 20 years. Table 3 explains the work activities that were performed in papad industries.

Table 2: Age of entry and work experience

S.No	Particulars	No. of workers (N=150)	Percentage
1.	**Age of entry (in years)**		
	Less than 15	45	30
	15-25	58	39
	26-35	36	24
	36-45	8	5
	More than 45	3	2
2.	**Work experience (in years)**		
	Less than 10	50	33
	10-19	52	35
	20-29	29	19
	30-39	17	11
	More than 40	2	2

Table 3: Tasks performed in papad industry

S.No	Particulars	No. of workers (N=150)	Percentage
1.	Dough making	4	3
2.	Cutting	4	3
3.	Rolling the papad	22	15
4.	Dough making and cutting	19	13
5.	Rolling, drying and packing	31	19
6.	Rolling till packing	70	47

The sequence of the work activities in papad industries were dough making, cutting, rolling of papad (Fig 2), pressing the papad to different sizes, drying and finally packing. It is very clear that forty seven percent of the workers carried out all these tasks from rolling to packing. However the workers exchange their tasks depending upon the work load. All the works were taken over by women and only dough making and cutting activities were performed by male workers. Table 4 represents the discomfort level of body parts for the workers.

Fig 2: Worker rolling the papad

Table 4: Discomfort level of Body parts

Body part	Discomfort level (%) N=150				
	ND	MD	MOD	SD	ED
Head	41	5	7	13	34
Neck	11	7	10	46	26
Shoulder	23	9	16	28	24
Upper back	27	13	14	21	25
Lower back	5	5	9	21	60
Upper arm	42	18	12	15	13
Fore arm	32	15	13	27	13
Finger &palm	33	15	16	27	9
Buttocks	38	39	10	9	4
Thighs	47	13	6	23	11
Knee	27	9	11	33	20
Leg	21	7	7	39	26
Foot	64	8	6	14	8

ND- no discomfort, MD-mild discomfort, MOD-moderate discomfort, SD-severe discomfort, ED-extreme discomfort

Analysis of musculoskeletal discomfort indicates that ninety five percent of the workers reported discomforts ranging from mild to extreme in low back region. Hoy et, al. (2010) in their study revealed that, in occupational settings people with jobs that require manual materials handling are at increased risk for low back pain[2]. Sixty percent of the workers reported extreme discomfort in the low back region. This is due to the performance of repetitive task such as rolling the papad and pressing the papads to different sizes. Roy and Dasgupta (2008) reported that neck is the most commonly affected parts followed by low back[5]. Eighty nine percent of the workers reported a mild to extreme level of discomfort in neck. Almost forty six percent of the workers have reported severe discomfort and extreme discomfort (26%) in the neck.This is due to the constant bending of neck which results in severe discomfort. Seventy seven percent of the workers have reported mild to extreme level discomfort in the shoulder region, which twenty eight percent of the workers had severe discomfort and twenty four percent had extreme discomfort in the shoulder region. This may be due to the work posture obtained by the workers for prolonged time. Forsman (1999) has concluded that overuse of upper extremity results in shoulder myalgia[1].These discomforts were followed by upper back, leg and knee region. Extreme discomfort was reported in leg (26%) followed by upper back region (25%) and knee region (20%). Severe discomfort was reported by the workers in the leg region (39%).Low back,neck and shoulder discomforts were reported to be higher as against other body parts.

CONCLUSION

The work postures adopted in the papad making industries, long working hours, monotonous work might be the major reasons for musculoskeletal disorders in the selected population. Health and safety of workers in small scale units is of great importance as it is linked directly with a good work. Thus, it is very essential that the occupational health of the workers have to be properly examined and necessary steps have to be taken to reduce their discomfort level while performing their task.Interventions such as job rotation, awareness programmes on work postures will help in bringing the desired changes to enhance their productivity.

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