

Epidemiological Survey of Puffed Rice (Mandakki) Workers in Davangere district, Karnataka: A Descriptive Cross-Sectional Study

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ABSTRACT

Aim:

This was a descriptive cross-sectional study with an aim to find out current health status, health issues frequently experienced over the past year, work related factors, occupational safety measures, and job satisfaction of workers among puffed rice (Mandakki) production area and workers.

Materials and Methods:

The study was done among 600 conveniently selected current puffed rice (Mandakki) workers were interviewed using a semi-structured questionnaire from 250 small scale industries

Results:

Majority of participants were aged between 18-27 years (35%), in educational qualification maximum participants education is Primary & upper primary (1-7th std) 240(40%), in relation with workers current health status, 248 (41.34%) were sick, in that 491 (81.83%) were commonly had fatigue. In case of Health issues frequently experienced over the past year, 425 (70.83%) eye irritation, 410 (68.33%) back pain, in Work related factors, duration of work 260 (43.33%) had 8-10hours per day, 226 (37.67%) don't have any fixed lunch hours, 280 (46.67%) had Break Period (recess time), 364 (60.67%) don't have Holiday facilities, 540 (90%) don't have Festival Bonus, 511 (85.17%) don't have performance bonus, 532 (88.66%) had no Health/ ESI benefits, in occupational safety measures, 414 (69%) don't have any PPE, 474 (79%) said no cleanliness is maintained in working area, 488 (81.34%) had not received any safety training, 382 (63.66%) don't had any emergency management equipment's. at last in job satisfaction, maximum were dissatisfied with job, the reason for this were exposing daily with smoke i.e, 460 (76.66%), and 412 (68.66%) were said there is no safety measures.

Conclusion

In this context, it is anticipated that the puffed rice (Mandakki) production management initiatives, following local government administrative guidelines and effective implementation of health care sectors actions could helpful to enhance the health of puffed rice workers and surrounding people.

1. INTRODUCTION

Health is inherently universal, and every individual possesses an innate state of well-being. Fundamentally, the quality of one's happiness in life is significantly influenced by their health status. To maintain a healthy lifestyle, food is crucial and indispensable for every individual. In pursuit of these food items, humans transitioned from agricultural practices to industrialization. This shift in focus resulted in the transformation of numerous raw food materials into consumable products, one of which is the production of puffed rice. Locally, puffed rice is referred to as Mandakki. Puffed Rice or mandakki is one of the very popular fast food of the Country of India like Rayalaseema, North Karnataka, Odisha, Tripura, West Bengal and Bangladesh. It is processed food, which is a popular snack in India. It is usually made by heating rice kernels under high pressure in the presence of steam, though the method of manufacture varies widely by small scale industries (Mandakki Bhatti) of Davangere District, Karnataka, India. Compared to other ready-to-eat cereals, puffed rice is very low in calories. Puffed rice, especially the one made from white rice, does not offer any major health benefit. White rice is produced by removing the bran layer, along with the germ. During this process workers and surrounding people are continuously and inevitably exposing to smoke through their respiratory tracts, which cause many health problems but unfortunately, we are least concerned about the effects on human health. The purpose of this study was to explore workers current health status, health issues frequently experienced over the past year, work related factors, occupational safety measures, and job satisfaction of workers.

2. MATERIALS AND METHODS:

Type of study: Descriptive cross sectional study. Study area: data had been collected from Mandakki Bhatti of Davangere. The study area was selected purposively where highest Mandakki Bhatti's are located. Study population: A total of 600 conveniently selected current Mandakki Bhatti workers were interviewed from 250 small scale industries. Inclusion criteria: Workers working in a these factories for at least one year. Workers working for minimum 8 hours per day. Any type of work in the industry is considered. Sample size and Sampling technique: A total of 600 current working Mandakki Bhatti workers were selected conveniently. Data collection instrument: A semi structured questionnaire. Data collection procedure: Interview technique. Data processing and analysis: The data were analyzed by preparing master sheet with the help of SPSS analysis. Ethical clearance: Ethical clearance was obtained from the college ethical committee before the study and the informed consent taken from the participants.

3. RESULTS:

Socio-demographic characteristics:

Socio-demographic characteristics	Frequency	Percentage
Age in years		
18-27	210	35
28-37	197	32.84
38-47	115	19.16
48 and above	78	13
Gender		
Male	423	70.5
Female	177	29.5
Educational qualification		
No institutional education	112	18.66
Primary & upper primary (1-7 th std)	240	40
High School(8-10 std)	168	28
Pre University and above	80	13.34
Marital status		
Married	212	35.34
Unmarried	388	64.66
Monthly family income in rupees		
<5000	374	62.33
5001-10000	162	27
>10001 and above	64	10.66
Working experience		
<5 years	296	49.33
6-10 years	194	32.34
>11 years	110	18.33

This table shows the socio-demographic characteristics of the participants. Majority of participants were aged between 18-

27 years (35%), in case of gender maximum were males 423 (70.5%), in educational qualification maximum participants education is Primary & upper primary (1-7th std) 240(40%), in this sample many were unmarried 388 (64.66%), where as in family monthly income majority 374(62.33%) had salary of <5000Rs and at last 296 (49.33%) were had <5 years of experience in this field.

Workers current health status:

Workers health status	Frequency	Percentage
Healthy	352	58.66
Sick	248	41.34
Symptoms of sick		
Fatigue	491	81.83
Cough	482	80
Eye irritation	462	77
Skin allergy	342	57
Headache	310	56.83
Chest tightness	293	48.83
Throat infection	283	47.16
Cold	101	16.83

This table shows that Workers current health status, in this 352 (58.66%) were healthy in contrast 248 (41.34%) were sick, when we interviewed researcher come know that those who are sick they were suffering with multiple health problems in this out of 600 participants, 482 (80%) were had, similarly 101 (16.83%) were had cold. 293 (48.83%) has chest tightness, 462 (77%) had eye irritation, 283 (47.16%) had throat infection, 310 (56.83%) had headache, and 342 (57%) had skin allergy.

Health issues frequently experienced over the past year:

Health issues	Frequency	Percentage
Fatigue	430	71.63
Eye irritation	425	70.83
Back pain	410	68.33
Throat infection	402	67
Joint pain	391	65.16
Cough	389	64.83
Breathlessness	386	64.33
High blood pressure	231	38.5
Skin allergy	221	36.83
Chest pain	218	36.33
Headache	183	30.5
Abdominal pain	164	27.33
Menstrual irregularities in female workers	93	15.5

The above table shows the health issues frequently experienced over the past year, in this also out of 600 sample in last one year, 389 (64.83%) suffered with cough, 164 (27.33%) had abdominal pain, 218 (36.33%) chest pain, 410 (68.33%) back pain, 391 (65.16%) joint pain, 425 (70.83%) eye irritation, 402 (67%) throat infection, 183 (30.5%) headache, 430 (71.63%) fatigue, 221 (36.83%) skin allergy, 231 (38.5%) high blood pressure, 93 (15.5%) Menstrual irregularities in female workers, 386 (64.33%) breathlessness.

Work related factors:

Work related factors	Frequency	Percentage
Duration of work per day		
8 hours	182	30.34
8-10 hours	260	43.33
> 10 hour	158	26.33
Lunch hours		
< 1 hour	192	32
1 hour	182	30.33
Not fixed	226	37.67
Break Period (recess time)		
Yes	280	46.67
No	182	30.33
Sometimes not fixed	138	23
Holiday facilities		
Yes	236	39.33
No	364	60.67
Festival Bonus		
Yes	60	10
No	540	90
Performance bonus		
Yes	89	14.83
No	511	85.17
Heath/ ESI benefits		
Yes	68	11.34
No	532	88.66

This table depicts the work related factors, in duration of work 260 (43.33%) had 8-10hours per day, 226 (37.67%) don't have any fixed lunch hours, 280 (46.67%) had Break Period (recess time), 364 (60.67%) don't have Holiday facilities, 540 (90%) don't have Festival Bonus, 511 (85.17%) don't have performance bonus, 532 (88.66%) had no Heath/ ESI benefits.

Occupational safety measures:

Occupational safety measures	Frequency	Percentage
Personal protective equipment (PPE)		
Yes	186	31
No	414	69
Cleanliness of working area		
Maintained	126	21
Not maintained	474	79
Safety training provided		
Yes	112	18.66
No	488	81.34
Emergency management equipment's available		
Yes	218	36.34
No	382	63.66

This table shows that occupational safety measures, 414 (69%) don't have any PPE, 474 (79%) said no cleanliness is maintained in working area, 488 (81.34%) had not received any safety training, 382 (63.66%) don't had any emergency management equipment's.

Job satisfaction of workers:

Job satisfaction of workers	Frequency	Percentage
Yes	238	39.66
No	362	60.34

If No reason for dissatisfaction		
Daily exposing to Smoke/ Pollution	460	76.66
Hard work	420	70
No safety measures	412	68.66
No fixed in salary raise	412	68.66
Low wages	372	62
No fixed leaves	362	60.33
No fixed working hours	228	38
Less Recess time	138	23

This table depicts job satisfaction of workers and reasons for dissatisfaction, 362 (60.34%) were not satisfied with their job. The reasons are as follows out of 600 participants, 412 (68.66%) said there is no safety measures, 228 (38%) said don't have any fixed working hours, 460 (76.66%) were exposing daily with smoke. 138 (23%) had less recess time, 412 (68.66%) had no fixed rules in salary raise, 362 (60.33%) don't have any fixed leaves, 420 (70%) said they are working hard, and 372 (62%) expressed the were receiving low wages.

4. DISCUSSION:

The present study was conducted among workers employed in puffed rice units which are located in Davanagere. In this study majority of the workers were males (70.95%) aged 28-37 years (32.84%), had monthly income of less than Rs. 5000 (62.33%). In contrast to this a study done where they found maximum workers were males (95.1%), Hindus (97.2%), Married (82.5%), and belonged to joint family (65.7%).

Present Study found that currently major workers suffering commonly with fatigue (81.83%), cough (80%), and eye irritation (77%). And over the past one year workers suffered most commonly with fatigue (71.63%), eye irritation (70.83%) and back pain (68.33%). The results were in line with similar study conducted where prevalence of respiratory morbidity was 40.73% with obstructive and restrictive respiratory morbidity being 24.60% and 16.13%.

In relation with work related workers, maximum workers work for 8-10 hours (43.33%), most of them don't have any fixed lunch hours and don't have any holiday facilities (60.67%) and most importantly 532(88.66%) workers were don't have any ESI facilities too. In contrast to this study a cross sectional study was conducted among puffed rice workers where it found significant association was found between respiratory morbidity and duration of work. The risk of obstructive lung disease was 0.18 (0.03-1.40) times less among workers who worked for <5 years compared to workers who worked for more than 20 years.

In occupational safety measures, 414 (69%) don't use any PPE, there is no cleanliness (79%) at workplace, in relation with this a study was done association of Personal Protective Equipments with Respiratory Morbidity among Puffed Rice Workers in this study researcher said that majority of the workers (93.4%) were non users of any personal protective equipments. In this study Respiratory morbidity was higher among non-users of personal protective equipment.

At last the study found 362 (60.34%) workers were don't have any job satisfaction. Similarly study said that employees are not dissatisfied with welfare facilities but they expect better facilities at their workplace.

5. CONCLUSION:

In the present study, currently many health workers are suffering with minor health problems and same health problems are consistent over the last year, the cause of this may be duration of working per day, lack of proper rest because of inadequate holidays and other leaves, lack of ESI benefits, lack of PPE, and unhygienic working area. Thus, optimization of working hours, effective, and continuous use of appropriate PPE like mask and use of appropriate ventilation should be made mandatory. Take appropriate measures to reduce accumulation of smoke inside the working area. Moreover, periodic health screening of workers and surrounding area people should be done for early diagnosis and treatment of respiratory problems. This will play a long way in checking the onslaught of lung morbidity to the point of no return. Fatigue was a significant health problem that can be reduced by use of modern machinery for mechanized loading/unloading may be helpful. And even many were dissatisfied with their working place that can be compensated with by initiating safety measures, fixed and proper in time salary with regular increment facilities. Further research is required regarding effectiveness of implementing a strong and consistent occupational safety measures to find out the reduction of respiratory health problems among workers.

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