

Assessment of Productivity and Work Place Environment among Self-help group women involved in large scale Chapatti making.

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Abstract

Keywords:

Self-help group

Entrepreneurship

Physical discomforts

Ergonomics

The self-help group is one of the platforms where women could play the role of “necessity entrepreneurship”. This study is aimed to emphasize on postural discomforts and workplace environment which is directly related to enhancement in productivity and sustainability among self-help group women involved in large-scale chapatti making. The various physical discomforts faced by the women during the chapatti making process were measured using the Rapid Upper Limb Assessment tool. The discomfort level was observed in the shoulder, wrist and the neck while kneading and portioning the dough. The rolling and frying action caused the maximum discomfort.

The workplace assessment being one of the prime objectives of the study revealed that it needed redesigning. The temperature and thermal comfort was lowest in the frying area which was the most difficult place to work followed by the rolling area where the ventilation was poor. The different ways to cope with the physical discomforts caused during the work were lying down and relaxing substituted with painkillers, without realizing the muscle damages caused by the postural discomfort. Thus, their productivity can be enhanced by adopting the proper ergonomic posture.

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1.0 Introduction

In India, women entrepreneurship can be considered as “necessity entrepreneurship” rather than “opportunity entrepreneurship”. Women usually have smaller networks and less geographical mobility than men, more so in the case of young/ married women who need to take care of their families. These women can use their skills and available local resources to start their own enterprise. However, the location of the enterprise and the strength of the relationship with contacts are very important, as it determines the entrepreneur’s ability to acquire and employ the resources

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available in their community. The Self-help group (SHG) is one of the platforms where women could play the role of “necessity entrepreneurship”.

In India SHGs were started and formed in 1975 and NABARD initiated it in 1986-87. SHGs are small problems. A reasonably educated but helpful local person takes the lead in mobilizing these people to form a group. Non-form activities like handicrafts, rope making, embroidery, catering service etc., give scope for women to earn their livelihood. In recent years, several governments and non-governmental education and training providers have taken steps to develop and deliver training for decent work in the informal economy but such initiatives have been episodic and not well documented.

The participation of women in the income generating activities for the family has been increasing continuously over time. Female work participation not only increases their family income but also bring in economic independence among women in the households. Entrepreneurship development and proper workplace environment can be considered as a positive approach to economic empowerment of women.

Though there has been an international observation on the informal sector over the past two decades on training, skill formation and education for workers are being continuously assessed but, this sector is receiving much less attention than it deserves, from the researchers and policymakers.

Most of Self-help group are involved in both formal and informal modes of income-generation activities. The Non-form activities which help to earn their livelihood needs to be addressed for enhanced productivity, physical discomforts and health issues in the long run.

The physical discomforts are studied by the application of ergonomics in the workplace environment. Ergonomics is a design-based discipline concerned with fitting tasks and environments to workers. Ergonomics aims to ensure that human needs for safe and efficient working are met in the design of work systems. The importance of ergonomics in workspace design is to achieve a transparent interface between the user and the task such that the users are not distracted by the equipment they are using. Distractions may be due to discomfort or to workspace usability problems. In working stations for standing workers, lack of clear space for the feet may impede task related postural movements. Posture is defined as the mutual disposition of body parts, irrespective of the spatial orientation and location of the body and its relation to the support. Postural stress refers to the stress on the spine or vertebrae arising out of specific posture at work. Well-designed workstations should be unobtrusive with respect to task performance.

This study was aimed to assess and understand the self-help group women’s physical discomforts & postural variations in the work environment in the large-scale activities.

2.0 Methodology

2.1 Statement of the Problem:

The study on “Assessment of Productivity and Work Place Environment among Self-help group women involved in large-scale Chapatti making”, revealed the importance of the women workforce physical discomforts and its impact on their health conditions. The aim of the study was to understand the physical discomforts caused while preparing many chapattis in the limited time frame and the workplace environment. This was analysed and assessed with reference to the postural stress among workers.

2.2. Objectives of the study

The study was done with the following objectives:

1. To understand the role of self-help group women involved in large-scale chapatti making in Hosur, Tamil Nadu, India.
2. Assess their physical discomfort & health related issues while making Chapattis.
3. Assess the work environment in relation to productivity.

2.3 Definition of the terms

The study dealt with few concepts which are the essential feature of the Ergonomics.

Work Place Environment: Workplace environment is the sum of the interrelationships that exist within the employees and the environment in which they work. According to Heath (2006), this environment involves the physical location as well as the immediate surroundings, behavioural procedures, policies, rules, culture, resources, working relationships, work location, all of which influence the ways employees perform their work.

Posture and Posture discomforts

Static postures (or "static loading") always refer to physical exertion in which the same posture or

position is held throughout the activities. These types of exertions or activities put increased loads or forces on the muscles and tendons, which contributes to fatigue and discomfort.

Dynamic posture is the other form of posture where it simply denotes the position of the body at the moment of action or movement pattern.

Poor posture contributes to the formation of knots in tired muscles. Trigger points seem to be closely associated with a wide variety of other common pain problems. In ordinary conditions, many aches and pains suffered by humans, especially low back pain could result in reduced efficiency and economic productivity and an even greater unmeasurable cost to quality of life.

2.4 Design of the study:

To assess and understand the problem, the investigator has done the study in Hosur, Tamil Nadu, India among the selected Self-help group members involved in large-scale chapatti making. The sample size was restricted to small numbers (N=30) to create rapport and understand their physical discomfort in-depth.

2.4.1. Questionnaire and Interview method:

The members of the self-help group women involved in large-scale chapatti making were interviewed with the help of a structured questionnaire. The questionnaire comprised of questions pertaining to the physical discomforts related to chapatti making, normal daily life, their role in the SHG and so forth.

2.4.2 Direct Observation Method:

The women members were observed while performing the individual task. The posture and its variations, the number of movements and the body discomfort were observed. The postural discomfort was studied with the help of ergonomic tool RULA (Rapid Upper Limb Assessment) designed by McAtamney & Corlett, (1993). The RULA technique was proposed to provide a quick assessment of the loading on the musculoskeletal system due to postures of the neck, trunk, upper limbs, muscle function, and the external loads exerted. Based on the grand score of its coding system, four action levels, which indicate the level of intervention required to reduce the risks of injury due to physical loading on the worker, were suggested:

- action level 1: posture is acceptable;
- action level 2: further investigation is needed and changes may be needed;
- action level 3: investigation and changes are required soon;
- action level 4: investigation and changes are required immediately.

ERGONOMICS RULA Employee Assessment Worksheet

Task Name: _____ Date: _____

A. Arm and Wrist Analysis

Step 1: Locate Upper Arm Position: **3** Upper Arm Score

Step 2: Locate Lower Arm Position: **2** Lower Arm Score

Step 3: Locate Wrist Position: **4** Wrist Score

Step 4: Wrist Twist: **2** Wrist Twist Score

Step 5: Look-up Posture Score in Table A: **5** Posture Score A

Step 6: Add Muscle Use Score: **0** Muscle Use Score

Step 7: Add Force/Load Score: **2** Force / Load Score

Step 8: Find Row in Table C: **7** Wrist / Arm Score

B. Neck, Trunk and Leg Analysis

Step 9: Locate Neck Position: **3** Neck Score

Step 10: Locate Trunk Position: **2** Trunk Score

Step 11: Legs: **1** Leg Score

Step 12: Look-up Posture Score in Table B: **3** Posture B Score

Step 13: Add Muscle Use Score: **0** Muscle Use Score

Step 14: Add Force/Load Score: **2** Force / Load Score

Step 15: Find Column in Table C: **5** Neck, Trunk, Leg Score

Table A: Upper Arm

Upper Arm	Wrist Score			
	1	2	3	4
1	1	2	2	3
2	2	2	2	3
3	2	3	3	4
4	1	2	5	5
5	2	3	3	4
6	3	4	4	4

Table B: Neck, Trunk and Leg

Posture Score	Table B: Trunk Posture Score					
	1	2	3	4	5	6
1	1	2	3	3	2	2
2	2	3	4	4	3	3
3	3	3	4	4	3	3
4	4	5	6	6	5	5
5	5	5	5	5	6	6
6	6	6	6	6	7	7

Table C: Neck, Trunk and Leg

Wrist / Arm Score	Neck, Trunk and Leg Score				
	1	2	3	5	7
1	1	2	3	4	5
2	2	2	3	4	5
3	3	3	4	4	5
4	3	3	4	4	5
5	4	4	4	5	6
6	5	5	5	6	7
7	6	6	6	7	7

Scoring: (Final score from Table C)

1-4 = acceptable posture
 5-6 = further investigation, change may be needed
 7 = investigate and implement change

RULA Score: 7

Figure -1 The RULA Evaluation Sheet

2.4.3 Photography and Video The individual members were photographed and video shots taken with the specific focus on postural variations for different activities. The workplace environment like heating, ventilation, and the thermal comfort was also recorded and analysed later by the investigator.

3.0 Results and Discussion

The findings of the study are discussed under following headings:

3.1 Assessment of Physical health of individual members

3.2 Physical discomforts through RULA.

3.3 Impact of Work Place Environment.

3.1 Physical health of individual members:

The Women involved in the large-scale chapatti making were in the age group of 40-50 years and most of them have more than 10 years of experience in this particular activity. They work for eight to nine hours per day for two days in a week and produce between twelve to fifteen thousand chapattis daily. Each SHG takes the job rotation for 2 days per week, to get employment for all the six groups. The study revealed the various physical discomforts faced by the women during the chapatti making process (Table 1). While kneading process was performed, the members felt more pain in the shoulder, followed by neck and back pain. The wrist was more painful for the majority of women when portioning of dough was done, as it needs precise size and shape. The process of rolling caused more discomfort in the wrist (75%) followed by shoulder, neck, and back pain. Majority of women (80%), opined that the leg, knee and thigh pain the most while frying the chapattis, while some felt calf muscles and toes were also hurting in the frying process. In the packing activity, 35% of women felt the pain in wrist and shoulder whereas in the cleaning process 50 % of women had severe back pain. Few members felt eyes and fingers are burning while frying chapattis and though this number is negligible, the cause needs to be analysed.

Table -1 Physical Discomforts caused during chapatti making process

Physical Discomforts	Kneading	Dough Portioning	Rolling	Frying	Packing	Cleaning
Shoulder Pain	8	1	12	-	6	1
Wrist Pain	6	10	15	4	7	6
Neck Pain	7	4	12	5	4	10
Back Pain	5	5	12	8	2	7
Thigh Pain	-	2	5	16	1	3
Leg and Knee Pain	2	-	3	16	2	2
Calf muscles and toes	1	-	2	14	-	1
Fingers	-	1	-	1	-	-
Eyes Burning	-	-	-	1	-	-

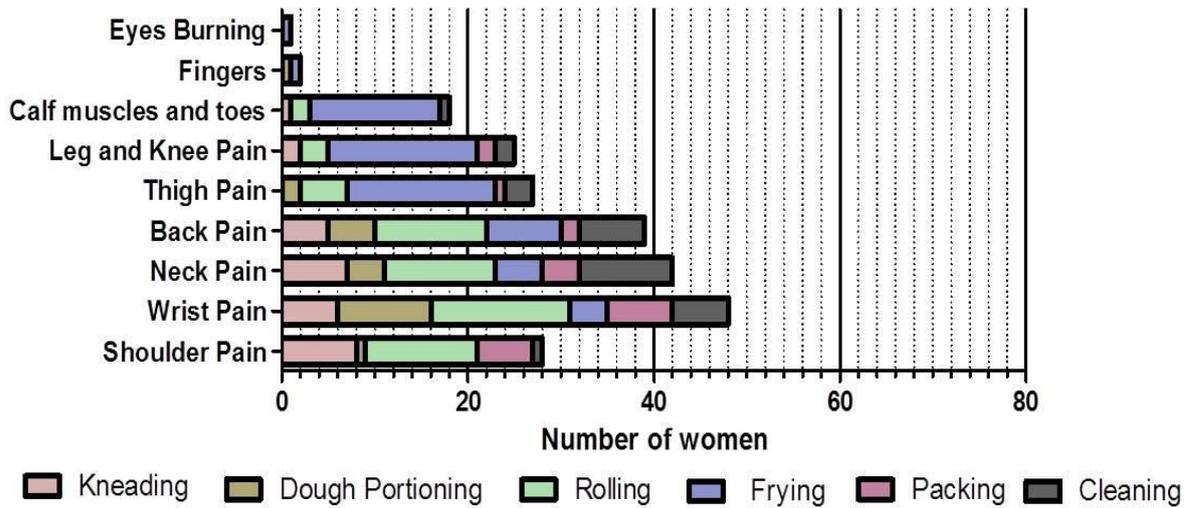


Fig: 2 Physical Discomfort caused during chapatti making process

The different ways of coping the physical discomforts (figure 3) caused during the work were revealed by the members. 40 percent of women responded that they go home and lie down and 35 percent of them sit and relax whereas 15 percent of members told they continue work with pain and other 15 percent suggested will have a hot water bath and continue work to cope up the discomfort.

Figure 3- Coping up with Physical discomfort

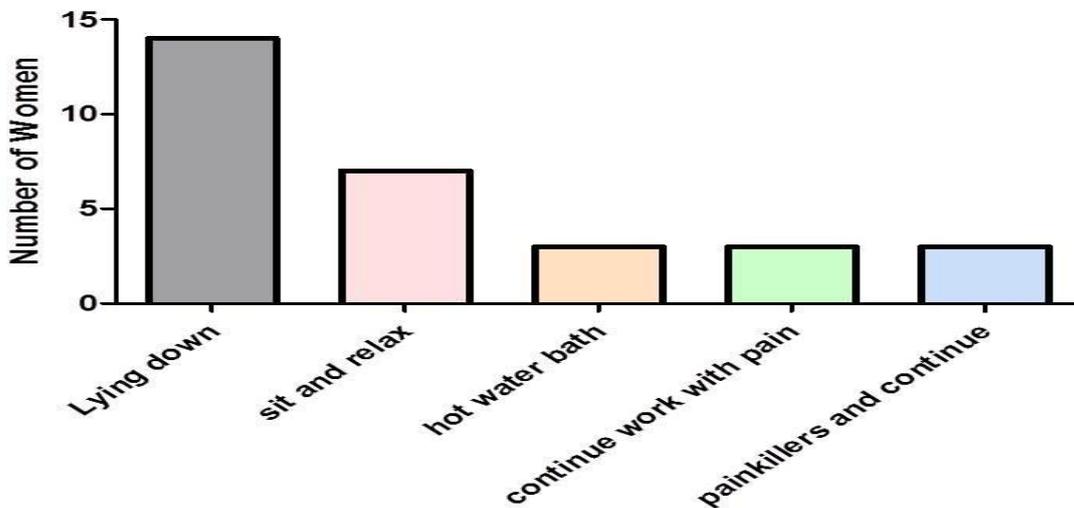


Table 3 A and 3 B gives the picture of the member's way of handling the discomfort. Around 40 percent of women visit the doctor once in two months for general pain and most preferred treatment in injection form and a painkiller when the body pain is not tolerable.

Table 3 A—Visit to Doctor for Physical Discomforts

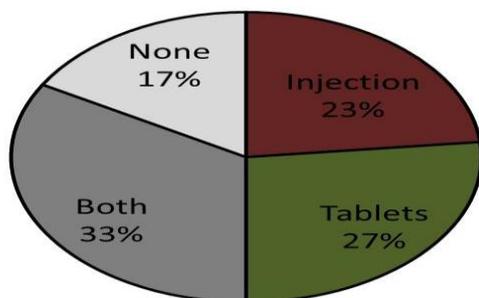
Visit to Doctor	Frequency				
	Monthly	Once in 2 months	Once in 3 months	More than 3 months	None
	8	9	4	3	6

Table 3 B- Preferred Treatment Method

Preferred Treatment Methods			
Injection	Tablets	both	None
7	8	10	5

Fig:4 Preferred Treatment Method

Preferred Treatment Method



This shows the lack of awareness on the postural discomfort caused by the work nature and their negligence to their body discomfort creating more damages to muscle and tissue. The severity of postural discomforts was further analysed with the support of RULA applications.

3.2 Assessment of Physical Discomforts through RULA:

The RULA results revealed around 75 percent of the women were in the scores of 7, (Level 4) which needs immediate changes in posture. Whereas, the other 20 percent belong to level 3, with scores of 6, which indicates investigation and changes are required soon. Only 5 percent of women belong to the level 2 (score 3), where the analysis reveals the investigation is needed and changes may be required.

Table 4 -The RULA Score card of the workers

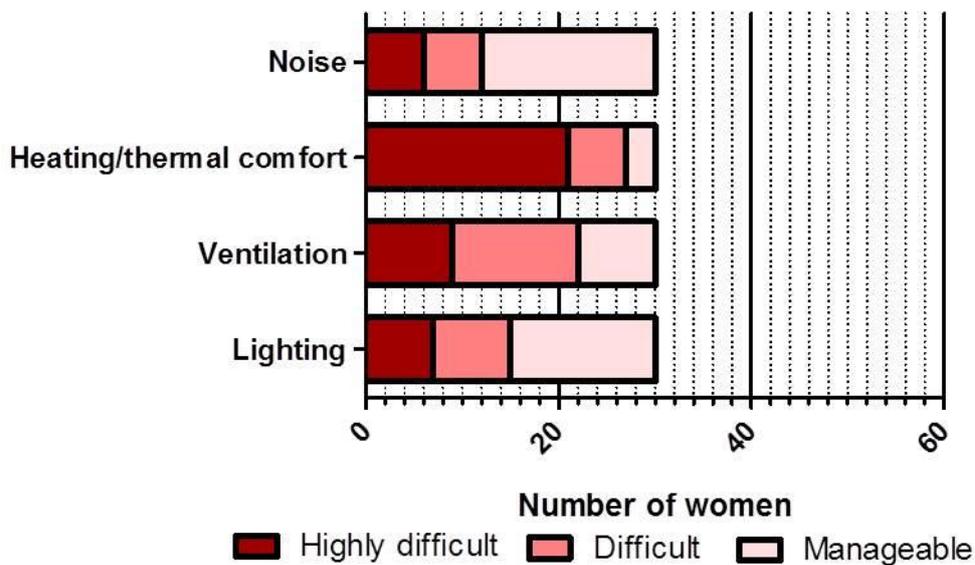
Scores	Level	Percentage of Women	Indications of the severity of problem
7	4	75	Investigate and implement immediate changes
6	3	20	Further Investigation and change soon
3	2	5	Changes may be needed

3.3 Impact of Work Place Environment:

The workplace assessment which is one of the prime objectives of the study, revealed that it needed redesigning. The frying area is the most difficult place to work (70%) because of the thermal discomfort and followed by the frying & rolling area (45%) because of poor ventilation. Majority

of members felt the effect of noise and lighting are manageable compared to other parameters which is depicted in figure 5.

Fig:5 Assessment of Work Place Design



4.0 Discussion:

The study revealed the need for the postural adjustment and the importance of workspace environment like lighting, ventilation and thermal comfort of the self-help group women involved in large-scale chapatti making. Occupational health hazards amongst Indian women are very arduous and strenuous especially in the semi-urban and rural areas on their farm and home activities (Gite, 2002).

These Women who are involved in making fifteen thousand chapattis per day also have other routine household activities, which causes serious musculoskeletal disorders. The lack of awareness on the importance of posture and its long-term damage to the muscle and tissues is creating further health-related issues. The work environment observed also was not conducive for the long-term working, which results in eye-straining and breathing discomforts.

The study throws light on the postural discomforts, its impact on women members' health in the long run and the need for redesigning of the workplace environment.

5.0 Conclusion:

The study found women were suffering from musculoskeletal problems, as evidenced by the occurrence of the back, wrist and lower body pain and stress. Preventive measures need to be adopted to eliminate this body discomfort and maintain good posture while making chapattis thereby increased productivity. It was observed that the study group was unaware of efficient and comfortable workplace design. Hence, an effective application of ergonomics in workplace design, proper seating while rolling out chapattis, is essential to achieve a balance between worker and task demands. The Self-help group women work towards the motto of sustainable income generation and the findings have opened more avenues for the enhanced productivity and sustainable income generation through chapatti making by adopting the above-said practices for a better living.

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References

- Ramasamy.T., (2009), “Strategic Entrepreneurial Dimensions of Self-Employed Women A Micro Study”. Southern Economist, Vol.48, No.14, pp.39-41.
- Gunasekaran. A., (2010), “Micro Credit and Women Employment through Self Help Groups: A Case study of Chennai City”, Rural Credit in the Era of Globalization, Madhav books, Haryana.
- Roopa Rao. (2014). Prevalence of Musculoskeletal Discomfort among Women Working in Khakhra Making Units, Online International Interdisciplinary Research Journal, {Bi-Monthly}, ISSN2249-9598, Volume-IV, Issue-I, Jan-Feb 2014
- Bridger, R. (2003). Introduction to Ergonomics (2nd ed). Taylor & Francis. London; New York.
- Gandotra, V. & Patel, S. (2009). Women, Working Conditions and Efficiency. Oscar Publications. New Delhi, India.
- V. Zinchenko; V. Munipov. (1989). Fundamentals of ergonomics, Published by Progress. ISBN 10: 5010011379 ISBN 13: 978510011376.
- Gite, L.P. (2002). Training for Investigators of the National Agricultural Technologies Project, Empowerment of women in Agriculture on Women friendly Agricultural Technologies. Central Institute of Agricultural Engineering, Bhopal, 22-24 January 2002, p.22
- Amit Mitra. (2002). InFocus Programme on Skills, Knowledge and Employability, Informal Economy Training and Skill Formation for Decent Work in the Informal Sector: Case Studies from South India by International Labour Organisation Geneva, Presented on June 2002
- Uma Narang. (2012). Self Help Group: An Effective Approach to Women Empowerment In India by Published in International Journal of Social Science & Interdisciplinary Research Vol.1 Issue 8, August 2012, ISSN 2277 3630
- Ranjula Bali Swain and Adel Varghese. (2012). Evaluating the Impact of Training in a National Microfinance Program: Self Help Groups in India.
- McAtamney, L., Corlett, and E.N., RULA A Survey method for the investigation of work related upper limb disorders, Applied Ergonomics, Vol.24 (2), pp.91-99, 1993.