Print ISSN : 0972-8813
e-ISSN : 2582-2780

[Vol. 18(3), Sept-Dec, 2020]

Pantnagar Journal of Research

(Formerly International Journal of Basic and Applied Agricultural Research ISSN : 2349-8765)

G.B. Pant University of Agriculture & Technology, Pantnagar

ADVISORYBOARD

Patron
Dr. Tej Partap, Vice-Chancellor, G.B. Pant University of Agriculture and Technology, Pantnagar, India
Members
Dr. A.S. Nain, Ph.D., Director Research, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. A.K. Sharma, Ph.D., Director, Extension Education, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. S.K. Kashyap, Ph.D., Dean, College of Agriculture, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. N.S. Jadon, Ph.D., Dean, College of Veterinary & Animal Sciences, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. K.P. Raverkar, Ph.D., Dean, College of Post Graduate Studies, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. Sandeep Arora, Ph.D., Dean, College of Basic Sciences & Humanities, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. Alaknanda Ashok, Ph.D., Dean, College of Technology, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. Alka Goel, Ph.D., Dean, College of Home Science, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. R.S. Chauhan, Ph.D., Dean, College of Fisheries, G.B. Pant University of Agri. & Tech., Pantnagar, India
Dr. R.S. Jadaun, Ph.D., Dean, College of Agribusiness Management, G.B. Pant University of Agri. & Tech., Pantnagar, India

EDITORIALBOARD

Members
Prof. A.K. Misra, Ph.D., Chairman, Agricultural Scientists Recruitment Board, Krishi Anusandhan Bhavan I, New Delhi, India
Dr. Anand Shukla, Director, Reefberry Foodex Pvt. Ltd., Veraval, Gujarat, India
Dr. Anil Kumar, Ph.D., Director, Education, Rani Lakshmi Bai Central Agricultural University, Jhansi, India
Dr. Ashok K. Mishra, Ph.D., Kemper and Ethel Marley Foundation Chair, W P Carey Business School, Arizona State University, U.S.A
Dr. B.B. Singh, Ph.D., Visiting Professor and Senior Fellow, Dept. of Soil and Crop Sciences and Borlaug Institute for International Agriculture, Texas A&M University, U.S.A.
Prof. Binod Kumar Kanaujia, Ph.D., Professor, School of Computational and Integrative Sciences, Jawahar Lal Nehru University, New Delhi, India
Dr. D. Ratna Kumari, Ph.D., Associate Dean, College of Community / Home Science, PJTSAU, Hyderabad, India
Dr. Deepak Pant, Ph.D., Separation and Conversion Technology, Flemish Institute for Technological Research (VITO), Belgium
Dr. Desirazu N. Rao, Ph.D., Professor, Department of Biochemistry, Indian Institute of Science, Bangalore, India
Dr. G.K. Garg, Ph.D., Dean (Retired), College of Basic Sciences & Humanities, G.B. Pant University of Agric. & Tech., Pantnagar, India
Dr. Humnath Bhandari, Ph.D., IRRI Representative for Bangladesh, Agricultural Economist, Agrifood Policy Platform, Philippines
Dr. Indu S Sawant, Ph.D., Director, ICAR - National Research Centre for Grapes, Pune, India
Dr. Kuldeep Singh, Ph.D., Director, ICAR - National Bureau of Plant Genetic Resources, New Delhi, India
Dr. M.P. Pandey, Ph.D., Ex. Vice Chancellor, BAU, Ranchi & IGKV, Raipur and Director General, IAT, Allahabad, India
Dr. Martin Mortimer, Ph.D., Professor, The Centre of Excellence for Sustainable Food Systems, University of Liverpool, United Kingdom
Dr. Muneshwar Singh, Ph.D., Project Coordinator AICRP- LTFE, ICAR - Indian Institute of Soil Science, Bhopal, India
Prof. Omkar, Ph.D., Professor, Department of Zoology, University of Lucknow, India
Dr. P.C. Srivastav, Ph.D., Professor, Department of Soil Science, G.B. Pant University of Agriculture and Technology, Pantnagar, India
Dr. Prashant Srivastava, Ph.D., Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, University of South Australia, Australia
Dr. Puneet Srivastava, Ph.D., Director, Water Resources Center, Butler-Cunningham Eminent Scholar, Professor, Biosystems Engineering, Auburn University, U.S.A.
Dr. R.C. Chaudhary, Ph.D., Chairman, Participatory Rural Development Foundation, Gorakhpur, India
Dr. R.K. Singh, Ph.D., Director & Vice Chancellor, ICAR-Indian Veterinary Research Institute, Izatnagar, U.P., India
Prof. Ramesh Kanwar, Ph.D., Charles F. Curtiss Distinguished Professor of Water Resources Engineering, Iowa State University, U.S.A.
Dr. S.N. Maurya, Ph.D., Professor (Retired), Department of Gynecology & Obstetrics, G.B. Pant University of Agric. & Tech., Pantnagar, India
Dr. Sham S. Goyal, Ph.D., Professor (Retired), Faculty of Agriculture and Environmental Sciences, University of California, Davis, U.S.A.
Prof. Umesh Varshney, Ph.D., Professor, Department of Microbiology and Cell Biology, Indian Institute of Science, Bangalore, India
Prof. V.D. Sharma, Ph.D., Dean Academics, SAI Group of Institutions, Dehradun, India
Dr. V.K. Singh, Ph.D., Head, Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi, India
Dr. Vijay P. Singh, Ph.D., Distinguished Professor, Caroline and William N. Lehrer Distinguished Chair in Water Engineering, Department of Biological Agricultural Engineering, Texas A& M University, U.S.A.
Dr. Vinay Mehrotra, Ph.D., President, Vinlax Canada Inc., Canada

Editor-in-Chief
Dr. Manoranjan Dutta, Head Crop Improvement Division (Retd.), National Bureau of Plant Genetic Resources, New Delhi, India

Managing Editor
Dr. S.N. Tiwari, Ph.D., Professor, Department of Entomology, G.B. Pant University of Agriculture and Technology, Pantnagar, India

Assistant Managing Editor
Dr. Jyotsna Yadav, Ph.D., Research Editor, Directorate of Research, G.B. Pant University of Agriculture and Technology, Pantnagar, India

Technical Manager
Dr. S.D. Samantray, Ph.D., Professor, Department of Computer Science and Engineering, G.B. Pant University of Agriculture and Technology, Pantnagar, India

PANTNAGAR JOURNAL OF RESEARCH

Vol. 18(3) September-December, 2020

CONTENTS

Marker assisted selection for aromatic and semi-dwarf segregants in cross of aromatic Katarni rice **188**
SUNDARAM BHARTI, P.K. SINGH, KUMARI SUVIDHA, SATYENDRA, S. P. SINGH, ANAND KUMAR and MANKESH KUMAR

D^2 and principal component analysis for variability studies in *Vigna* and *Phaseolus* species **193**
PRIYANKA BHARETI, R. K. PANWAR, ANJU ARORA and S. K. VERMA

Assessment of genetic parameters in F_5 recombinants derived from *Indica* rice (*Oryza sativa* L.) line Pusa 6A **198**
PRACHI PRIYA, MANKESH KUMAR, TIRTARTHA CHATTOPADHYAY, BISHUN DEO PRASAD, SWETA SINHA, ANAND KUMAR and SATYENDRA

Genetic diversity analysis by D^2 clustering of fodder yield and its related traits in forage sorghum **203**
HARSH DEEP, INDRANI CHAKRABORTY, SATYAWAN ARYA, PUMMY LAMBA, S. K. PAHUJA and JAYANTI TOKAS

Genetic diversity for morpho-physiological and seed vigour traits in wheat (*Triticum aestivum* L.) **209**
PUNEET KUMAR, Y.P.S. SOLANKI, VIKRAM SINGH and ASHISH

***In vitro* plant regeneration from mature embryo using different plant growth regulators in wheat genotype HD 3059** **215**
SWATI SHARMA, ASHWANI KUMAR, ANIL SIROHI, R. S. SENGAR, KAMAL KHILARI, MUKESH KUMAR and MANOJ K. YADAV

Weed management and crop geometry effect on nutrient uptake and yield in aerobic rice **222**
VASUNDHRA KAUSHIK, S. P. SINGH, V. P. SINGH, TEJ PRATAP and B. S. MAHAPATRA

Studies on sucker control in natu tobacco (*Nicotiana tabacum* L.) under rainfed vertisols **228**
S. JAFFAR BASHA, P. PULLI BAI, S. KASTURI KRISHNA and C. CHANDRASEKHARA RAO

Seed and oil yield of bidi tobacco (*Nicotiana tabacum* L.) varieties as influenced by planting geometry and fertilizer levels under rainfed vertisols **232**
S. JAFFAR BASHA, P. PULLI BAI, S. KASTURI KRISHNA and C. CHANDRASEKHARA RAO

Comparison of non-linear models on area, production and productivity of sugarcane crop in Uttar Pradesh **237**
JHADE SUNIL and ABHISHEK SINGH

Performance of improved varieties of true Cinnamon (*Cinnamomum verum* J. Presl.) in Andaman Islands, India **243**
AJIT ARUN WAMAN, POOJA BOHRA and R. KARTHIKA DEVI

Changing climate and its effect on rice yield in Meghalaya **249**
DEOTREPHY K. DKHAR, SHEIKH MOHAMMAD FEROZE, RAM SINGH and LALA I.P. RAY

Age related changes in morphometrical studies on ductus deferens of guinea fowl *(Numida meleagris)* **257**
TAMILSELVAN S, B. S. DHOTE and MEENA MRIGESH

Occurrence of gastrointestinal nematodes in goats slaughtered at Rewa, India **261**
D. MARAVI, A. K. DIXIT and POOJA DIXIT

Autoimmune haemolytic anaemia in a dog-A case report **265**
NEERAJ KUMAR, MUNISH BATRA and R.S. CHAUHAN

Erythrocytic anaplasmosis with *Fasciolosis* in a cross-bred cattle: A case report **269**
NEERAJ KUMAR and MUNISH BATRA

Modification and evaluation of Pant-ICAR controlled traffic seed-cum-deep fertilizer applicator for multi-crop seeder-cum-deep placement of fertilizers applicator **272**
MANISH KUMAR, T.C THAKUR, MANOJ KUMARand SATYA PRAKASH KUMAR

Drying characteristics of shrimp (*Metapenaeus dobsoni)* in electrical dryer **281**
D.S. ANIESRANI DELFIYA, S. MURALI, P.V. ALFIYA and MANOJ P. SAMUEL

Baur dam breach analysis using various Manning's roughness values **286**
MEENAKSHI RAMOLA, JYOTHI PRASAD and H. J. SHIVA PRASAD

Study of constipation and related factors among female students of Pantnagar **290**
RITA SINGH RAGHUVANSHI, NIDHI JOSHI, DIKSHA SINGH, SHIKHA SINGH, MEENAL and DASHRATH BHATI

Work -related musculoskeletal disorders among chikankari workers in Lucknow (U.P.) **297**
POONAM SINGH and KATYAYNI

Technology adoption and productivity enhancement in groundnut cultivation: An impact assessment of farm women groups **302**
K.UMA, T. NIVETHA and S. PRAVEENA

Health hazard and constraints of chikankari worker in Lucknow (U.P.) **310**
POONAM SINGHand KATYAYNI

Studies on Indigenous Agricultural Technical Knowledge prevalent among the farmers of Assam for the management of common pests and diseases in major crops **315**
DEVAMITRA TARAFDAR and NIRMAL MAZUMDER

Television viewing pattern among students of CCS Haryana Agricultural University, Hisar **325**
ANIL KUMAR MALIK, KRISHAN YADAV and SUNIL KUMAR

Media content development and it's standardization for farmers **331**
REETA DEVI YADAV, GEETAMATI DEVI and RITA GOAL

Analysis of learning behavior and pattern of online learners on a MOOC platform **338**
G.R.K. MURTHY, SEEMA KUJUR, S. SENTHIL VINAYAGAM, YASHAVANTH B.S., CH. SRINIVASA RAO, P. S. PANDEY, VANITA JAIN and INDRADEVI T.

Health hazard and constraints of chikankari worker in Lucknow (U.P.)

POONAM SINGH[1] and KATYAYNI[2]

[1]Krishi Vigyan Kendra Kannauj, [2]Department of Family Resource Management, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur (Uttar Pradesh)

ABSTRACT: The city of Lucknow has a prominent place in the history of India particularly for its art, historical monuments and rich cultural heritage. Lucknow is also known around the world over for its many fine handicrafts prominently for chikankari and considered to be the hub of chikankari embroidery. A study was conducted on 60 home based and 60 centre based chikankari workers of Lucknow city. Descriptive cum experimental research design and multistage random sampling technique was used. Socio economic status, working condition, environmental condition, angle of deviation and grip strength was measured. Results of the study reveal that more than fifty per cent home based and centre based workers were from poor socio economic status and 33.34 per cent from very poor on below poverty line. Majority were having 16-20 years experience and earnings Rs. 5000 per month. They work for 7-8 hours a day for all the 7 days in a week with only 1or 2 rest interval of 15-30 min. Temperature of work place was more whereas humidity and light was less than the recommended value. Deviation in angle of back was higher in upper back of both home and centre based workers but degree of deviation was more in the back of centre based workers. Change in grip strength was higher in the both hands of home based and centre based workers but comparatively it was more in home based workers. This ultimately leads to health hazard among works.

Key words: Angle of deviation, chikankari, environmental conditions, grip strength, socio economic status, working conditions

The state Uttar Pradesh especially the city of Lucknow is considered to be hub of chikankari embroidery. It is estimated that about 6 Lakh workers and artisans are engaged in this craft. The pivotal work of chikan craft is embroidery. Most of the artisans undertake the work sitting at their home or chikankari centers working continuously for 8 hours. This becomes more rigorous as workers continuously sit in one posture and work constantly with their arms above shoulder level. Sitting for long periods of time especially in a fixed position is particularly detrimental to back health as well as general health. Prolonged sitting in same posture fatigues and strains the lower back. Poor sitting posture makes matters worse. While sitting, there is a common tendency to allow the pelvis to tilt backward, causing the lower back to lose its natural inward curve. This creates a pull on the muscles and ligaments and uneven compression of the spinal discs in the lower back can lead to lower back pain. During repetitive task such as embroidery maintaining body position that provides a maximum of strength with least amount of muscular stress is important to minimize the risk of injury. Embroideries have identified potentially hazardous due to biomechanical stress factors. Awkward posture leads to poor performance in activities as well as muscle imbalance and faulty movements. Objective of this study is to determine the change in grip strength due to unnatural body posture adopted by chikankari workers while working in different working conditions.

MATERIALS AND METHODS

The study was conducted in Lucknow city of Uttar Pradesh on 120 physically fit chikankari workers. Sixty home based workers were selected from Kakori, Banarsi tola, Sikrauri, Daliganj area and sixty centre based workers from A.K. Chikan Industry Chowk, Sewa NGO sitapur road, Nath Chikansitapur road, ShyamChikan Industry cantt road respectively. On the basis of physical fitness multistage purposive random sampling technique was adopted and data was collected through pre-coded interview cum observation schedule. Information on SES was collected by using SES scale developed by Agrawal (2005). Working condition of chikankari workers and constraints faced by them was assessed by using pre coded interview schedule. Environmental parameters i.e., relative humidity, lighting and noise were measured by using Thermo hygrometer, Lux meter and Noise Level Meter respectively. Angle of Deviation was measured by Flexi curve and percentage reduction in grip strength was measured by Grip Dynamometer using formula given by Oberoi and Singh

(2007).

$$\textbf{Angle of deviation in back} = \frac{Sr - Sw}{Sr} \times 100$$

Where,
Sr = Strength of muscles during rest
Sw = Strength of muscles during work

RESULTS AND DISCUSSION

Socio Economic Status of Chikankari Workers: Socio Economic Status is a measure of an individual or families economic and social position based on income, education and occupation. It is such a strong predictor of health that an assessment of the health of chikankari workers would be incomplete without the consideration of their socio economic status. This section of data on socio economic status of chikankari worker presented here is based on socio economics status scale developed by Agrawal (2005).

Analysis of data in Table 1 reveals that more than fifty per cent home based (51.67 per cent) and centre based workers (66.67 per cent) were belonging to poor socio economic status whereas socio economic status of 33.34 per cent home based and 20.00 per cent centre based workers was very poor or below poverty line. Only 15.00 per cent home based and 13.33 per cent centre based workers were belonging to Lower Middle SES. None of the respondents was found in the Upper High, High and Upper Middle SES.

Working Condition of Chikankari Workers: Working environment risk factors include weather conditions, hot or cold indoor conditions, dust, dirt, grease and oil, vapours, gases and smoke, different types of noise. The

Table 1: Socio-economic-status of chikankari workers

S.No	Social Economic Status Score	Home based workers(n=60)	Centre based workers(n=60)	Total (n=120)
1	Upper High (>76)	-	-	-
2	High (61-75)	-	-	-
3	Upper Middle (46-60)	-	-	-
4	Lower Middle (31-45)	9(15.0)	8(13.33)	17(14.16)
5	Poor (16-30)	31(51.67)	40(66.67)	71(59.17)
6	Very poor (<15)	20(33.34)	12(20.00)	32(26.67)

Table 2: Working conditions for chikankari workers.

S.No	Working conditions	Home based workers (n=60)	Centre based workers (n=60)	Total (n=120)
1.	**Work experience (years)**			
	a <10	-	2(3.40)	2(1.70)
	b 11-15	15(25.00)	26(43.40)	41(34.20)
	c 16-20	15(25.00)	31(51.70)	46(38.40)
	d Above 20	30(50.00)	1(1.70)	31(25.90)
2.	**Monthly income (Rs.)**			
	a < 3000	-	-	-
	b 3000-4999	28(46.70)	19(31.70)	47(39.20)
	c above 5000	32(53.40)	41(68.40)	73(60.90)
3.	**Working hours**			
	a 5-6 hrs	25 (41.70)	-	25 (20.90)
	b 7-8 hrs	28 (46.70)	60(100.00)	88(73.40)
	c More than 8 hrs	7 (11.70)	-	7(5.90)
4.	**Number of working day/week**			
	a 5	24 (40.00)	20(33.40)	44(36.70)
	b 6		19(31.70)	19(15.90)
	c 7	36 (60.00)	21 (35.00)	57(47.50)
5.	**Duration of each rest interval**			
	a 15 min	-	45 (75.00)	90(75.00)
	b 30 min	15 (25.00)	15(25.00)	30(25.00)
	c 45 min	29 (48.00)	-	29(48.00)
	d 60 min	16 (26.00)	-	16(26.00)

category of other job-related stress factors comprises workloads, un-ergonomic working conditions, time pressure, overtime, monotony, accident risk, work on computers, etc.

Scrutiny of data in Table 2 reveals that more than 50.00 per cent home based chikankari workers were having more than 20 years and centre based workers 16-20 years of experience. Monthly income of sixty per cent workers was above Rs. 5000. Cent per cent centre based workers and 46.70 per cent home based workers work for 7-8 hours in a day. Rest of the home based workers i.e., 41.70 per cent work for 5-6 hours and 11.70 per cent work above 8 hours in a day. Similar findings were also reported by Singh and Sharma (2018). Sixty per cent home based workers and 35.00 per cent centre based workers work all the 7 days in a week. Cent per cent centre based workers take rest interval of 15-30 min whereas 74.00 per cent centre based worker takes rest for 45-60 min in a day.

Average temperature for home based workers was 11.8 degree and for centre based workers it was 12.6 degree higher than the recommended comfortable level whereas in the afternoon it rises 15 and 16 degree than the recommended level respectively for home and centre based workers. Rest of the environmental parameters noise, humidity and light was found lower than the recommended range. High temperature and low humidity cause discomfort by drying mucous membranes of nose and throat. Low light interferes with the embroidery causing strain on eyes.

Angle of Deviation in Back: Poor posture is a faulty relationship of the various parts of the body which produce increased strain on the supporting structures and in which there is less efficient balance of the body over its base of support. It means improper body mechanics and poor posture. It happens with either an increase or decrease of the normal body curves, leading to: uneven pressure within joint surface, ligament strain, and increase muscle work causing pain. Poor body mechanics may cause: serious injury to back/neck, postural deviations, chronic neck/low back pain, and increased wear on joint tissues.

Data in Table 4 depicts that angle of deviation in upper back was calculated 6.35^0 for home based workers and 8.05^0 for centre based workers whereas 2.65^0deviation was measured in lower back of home based workers and 2.75^0 in lower back of centre based workers. Difference in angle of deviation was observed more in centre base worker as compare to home based workers. It might be due to poor work station design at centre whereas, home based workers are free to arrange their work station as per their convenience.

Table 4: Angle of deviation in upper and lower back of chikankari workers

S. No	Angle of deviation	Home based workers(n=20)	Centre based workers (n=20)
1.	Upper back	6.35º	8.05º
2.	Lower back	2.65º	2.75º

Reduction in Grip Strength: Grip strength has long been thought of as a possible predictor of overall body strength. Many factors influence the strength of grip, including muscle strength, fatigue, and time of the day, age, nutritional status, restricted motion and pain. Posture and elbow positioning during hand grip testing also play an important role in the strength results Momiyama *et al*., 2006.

Analysis of data in Table 5 reveals that percentage change in grip strength was measured to be 17.75 per cent for left hand, 20.18 per cent for right hand and 21.17 per cent for both hand of home based workers, whereas, it was 19.59 per cent for left hand, 12.38 per cent for right hand and 19.60 per cent for both hand of centre based workers after work. Percentage change in grip strength of left hand was observed to be higher in centre based workers whereas, for right hand and both hands it was higher for home based workers. This might be due to 8 hours continuous work by centre based workers holding frame and fabric at left hand whereas, home based worker instead of holding frame and fabric make proper arrangement and set it at base before working. Reduced strength in right and both hands of home based workers might be due to their long hours of working at home in hope to finish the work timely and get another work and earn more.

Table 3: Environmental conditions for chikankari workers at workplace

S.No	Environmental Conditions	Home based workers (n=60)				Centre based workers (n=60)				Recommended value
		Morning	Afternoon	Evening	Average	Morning	Afternoon	Evening	Average	
1.	Temperature	34.6	38	32	34.8	34.8	39	33	35.6	20 to23
2.	Noise (db)	85.2	89.3	89.3	87.1	73.3	77.7	67.9	73.1	90
3.	Humidity	37	37	37	37	34	34	34	34	40-60
4.	Light (Lux)	130	1135	270	512.0	145	1852	740	912.0	1000-2000

Table 5: Percentage change in grip strength of hand muscles of chikankari workers

S. No.	Grip strength of hand muscles	Home based workers(n=20)	Centre based workers(n=20)
1.	Left	17.75	19.59
2.	Right	20.18	12.38
3.	Both	21.17	19.6

Drop of static muscular strength has been revealed out to be the most common occupational problem among handicraft workers in hand concerted jobs affecting women mostly as they are in the majority of workers (Melkani *et al*., 2020)

Constraints faced by chikankari workers: Constraints are situations or things that interfere with task performance at work. A constraint is something that limits or controls your act or the way you behave. Chikankari workers whether home based or centre based also faced many physical, environmental, economic and marketing constraints. To assess the constraints (frequency) faced by chikarkari workers (Likert, 1932; Vagias, Wade M., 2006) 5 point scale *viz.*, Always (5), often (4), sometimes (3), rarely (2) and never (1) is used.

Scrutiny of data in Table 6 depicts that home based worker faced major physical constraints due to itching in eyes backache and neck pain whereas, centre based workers experience major physical constraints due to pain in neck (mean score 3.0) followed by shoulder pain and hand pain. Similar findings were also reported by Singh and Sharma (2018). Major environmental constraint ranked I for home based workers was insufficient artificial light, inadequate ventilation and less space (mean score 2.0) whereas for centre based workers it was insufficient natural light (mean score 2.0). Low rate given by traders (mean score 2.5) was major economic constraint for home based workers and non availability of financial assistance by traders (mean score 1.3) for centre based workers. Competition among chikankari workers (mean score 2.0) and storage problem of raw material (mean score 2.0) was another

Table 6: Distribution of respondents on the basis of constraints experienced

S.No	Constraints	Home based worker		Centre based worker	
		Mean	Rank	Mean	Rank
I	**Physical constraints**				
1	Itching in eyes	3.0	I	1.0	V
2	Inflammation in eyes	2.0	II	2.0	IV
3	Watering in eyes	2.0	II	1.0	V
4	Backache	3.0	I	2.0	IV
5	Shoulder pain	2.0	II	2.3	II
6	Leg pain	2.0	II	2.0	IV
7	Hand pain	2.0	II	2.3	II
8	Neck pain	3.0	I	3.0	I
9	Elbow joint pain	2.0	II	2.0	IV
10	Finger pain	1.0	III	1.0	V
11	Knee pain	1.0	III	1.0	V
12	Low back pain	2.0	II	2.1	III
II	**Environmental constraints**				
1	Insufficient natural light	1.0	II	2.0	I
2	Insufficient artificial light	2.0	I	1.3	II
3	Inadequate ventilation	2.0	I	1.3	II
4	Less space	2.0	I	1.0	III
III	**Economic Constraints**				
1	Low rate given by traders	2.5	I	1.0	II
2	Delay in payment	1.0	III	1.0	II
3	Payment in instalment	1.0	III	1.0	II
4	Non availability of financial assistance by traders	2.0	II	1.3	I
IV	**Marketing Constraints**				
1	Exploitation by middle man	1.0	II	1.0	II
2	Storage problem of raw material	2.0	I	1.0	II
3	No knowledge of grading , packing and labelling	2.0	II	1.0	II
4	Competition among chikankari work	2.0	I	1.8	I
5	No assistance by family members in work	1.0	II	1.0	II
6	No satisfaction with present wage structure	1.0	II	1.0	II

major constraint for home based workers while for centre based workers competition among chikankari work (mean score 1.8) was major constraint ranked I.

CONCLUSION

It can be concluded that chikankari workers were from poor Socio economic status with 16-20 years experience. They work for 7-8 hours in a day for all the seven days in a week and earn only about Rs. 5000 per month. Environmental parameters were adverse with high temperature and low humidity which lead to various skin and respiratory problems. Working in awkward posture in low light put strain on eyes, neck and back. Deviation in angle was higher in upper back as compared to lower back whereas change in grip strength was also observed in both the hands of centre and home based chikankari workers. Results show that chikankari workers are working in adverbs physical, environmental, economic and ergonomic conditions and hence facing many constraints that hinder their efficiency and performance of work and also put adverse effect on their health in long run. Working in awkward posture with elevated shoulders repetitively reduces the strength of muscles leading to pain in back, hand and grip muscles which ultimately results in development of work related musculoskeletal disorder. To get better outcome of their effort and to provide comfortable work environment their work station need to be designed as per their body limitations and requirement of their job.

REFERENCES

Agrawal O.P., Bhasin, S.K., Sharma, A.K., Chhabra, P., Aggarwal, K. and Rajoura, O.P. (2005). A New Instrument (Scale) for Measuring the Socioeconomic Status of a Family: Preliminary Study. *Indian Journal of Community Medicine,* 30 (4): 111-114.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology, 140*: 1–55.

Melkani E., Mehta M. and Gandhi S. (2020). Drudgery Reduction and Grip Fatigue Review of Indian Women Making Handicrafts. *Asian Pac. J. Health Sci*., 7(2):54-57

Momiyama, H., Kawatani M., Yoshizaki K. and Ishihami H. (2006). Dynamic Movement of Center of Gravity with Hand Grip. *Biomedical Research Apr*., 7(2):55-60.

Oberoi, K. and Singh, S. (2007). Methodologies for assessment of ergonomic cost of work. Cited In Book; Ergonomic interventions for health and productivity. Humanshu Publications, Udaipur and Delhi: 52-53

Singh, P. and Sharma, P. (2018). Work profile of women workers involved in chikankari industries and impact on their health. *Journal of Pharmacognosy and Phytochemistry*, 7(4):1169-1174

Singh, P. and Sharma, P. (2018). Status of workers involved in chikankari work at small scale industry. *Journal of Pharmacognosy and Phytochemistry*, 7(4):1175-1177.

Vagias, Wade M. (2006). "Likert-type scale response anchors. Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson University.

Received: August 23, 2020
Accepted: December 24, 2020