CHAPTER – V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Marble are rock formations formed by nature. These are formed naturally by enormous pressure under the earth. Marbles are used in decorating and sculpturing from the moment civilization was born. These are time tested for their natural beauty. Ancient buildings and monuments made of natural stones during early civilization still stand erect narrating the beauty and durability of natural stones.

India, one among the top most five marble producing countries possesses a wide spectrum of mines of granite, marble, sandstone, limestone, slate, and quartzite. It is amongst the largest producer of raw stone material. Among these stones, marble is the most demanded one used for commercial as well as residential areas.

Marble deposits are widespread in India across different states like Rajasthan, Gujarat, Madhya Pradesh, Haryana, and Andhra Pradesh. Gujarat produces very fine marble followed by Madhya Pradesh. Rajasthan is the main depository of marble which accounts for over 90 per cent of total marble production in India [1100 m tons]. Newer varieties of marble are being developed in Bihar, Jammu & Kashmir, Maharashtra, Sikkim, Uttar Pradesh and Bengal. A number of new marble deposits have been located, explored and exploited in various parts of the Rajasthan. Marble is produced in 20 out of 32 districts.

Kishangarh is a tehsil of Ajmer district in Rajasthan. It is biggest marble mandi of Asia. The Kishangarh marble area is developed by Kishangarh marble association. In 2019, more than 9000 marble selling units are situated in the market with an investment of Rs. 5000 crore (approx). There are 32 Granite enterprises having capital investment of Rs 16 crore & 385 persons have been employed. Other main enterprises are of marble cutting with an investment of Rs. 15.30 crore & also around 1995 persons have been employed in marble edge cutting units by the year 2019.

A drastic change in marble scenario during half century of independence has generated job opportunities manifold. A large number of persons are engaged in marble mining and marble based industries. When a certain order is placed, the raw stone block is transported to the factory to be cut as demanded either into tiles or slabs of various thickness (usually 2 cm or 4 cm). Stone-cutting is a lengthy process that can take more than a continuous 12-16 hours of operation, depending on the model of the cutting machine as well as the status of its diamond wire or diamond blades.

Despite of the technological development for lifting bulky marbles and cutting them, the role of a human being cannot be denied. Sometimes these slabs weigh from 25-75 kg.

Excessively stretching a muscle can lead to a strain. A strain is an injury to a tendon or muscle resulting in swelling and pain. When a group of fibers get torn apart, a more serious injury occurs.

Musculoskeletal disorders (MSDs) and pain are the major causes for workers' inability, expense raise, and efficiency reduction in industrialized and developed countries

Posture is a static state - 'A position of the body' or an arrested movement' the bones hold the body, the joints link the bones, the muscles move the bones around the joints and the nerves facilitate control of the whole.

Poor posture at work is a major cause of back pain, workplace stress, repetitive strain injury, resulting in lost time, reduced productivity, poor employee health, low morale, and higher costs. Pain may arise when nerves are stretched or inflamed by mal-alignment in poor posture.

The environment of the worker includes noise, illumination, humidity, temperature and vibration which affects the workers' performance and health. Improving workers' productivity, occupational health and safety are major concerns of industry, especially in developing countries. Improper working conditions could lead to workplace hazards, poor worker health, disabilities, and affect the productivity of workers and quality of products.

Noise is one of the physical environmental factors affecting the health in today's world. The marble industry has a number of equipment's which are used for processing marble. The machines produce noise and thus the workers are exposed to noise. Noise control possibilities on-site are limited.

It has been reported that noise impairs performance and output. A decline in performance may be attributed to certain kinds of jobs requiring skill and dexterity. Many studies have shown that a level of noise above 90 db, discontinuous or unexpected can impair mental performance. Noise has negative effects on jobs requiring skill, learning dexterity and high levels to impair mental performance.

Thermal environment may contribute to the overall health and well-being of the employee and the well-being of the organization. Poorly managed thermal environment may cause absenteeism, turnover of staff and complaints. If an employee is thermally comfortable, it can increase employee motivation, productivity and quality of output.

Understanding the impact of high temperatures on human behaviour and economic performance is especially important for poor and middle income countries where populations are less protected.

Good lighting in the workplace with well-lit task areas is essential for optimizing visual performance, visual comfort and ambience, especially with an ageing workforce. Poorly illuminated workstations may increase the error of the worker as well as add to the risk of working on the marble cutting workstations as the workstation has rotating blades.

Vibration is the mechanical oscillations of an object about an equilibrium point. The oscillations may be regular such as the motion of a pendulum or random such as the movement of a tire on a gravel road.

The risk of vibration induced injury depends on the average daily exposure. An evaluation of the risk takes into account the intensity and frequency of the vibration, the duration (years) of exposure and the part of the body which receives the vibration energy.

The analysis of physiological cost of work plays a pivotal role in the process of carrying out ergonomic evaluations of any job. Determining the physiological cost of work of the marble cutting workers would assist in utilizing their work productivity efficiently. Thus, a need was felt to find out the physiological cost of work of the marble cutters.

Fatigue increases the risk of injuries or other accidents. Fatigue also has significant consequences for society. Several studies have showed that fatigue sustained for a long time can predict future morbidity and mortality. Fatigue also can result in declines in worker productivity due to the debilitating nature of fatigue. It may also impair individuals' quality of life. Therefore, fatigue is a grave public health issue that requires the development and implementation of effective interventions and more studies to be conducted to understand fatigue and its risk factors.

Justification of the study

Marble industry in Kishangarh comprises of more than 500 marble industries. The area has employed a large number of direct and indirect labourers. It has more than thousand persons employed in marble cutting units. The marble industry is emerging as an important industry for the construction agencies. The marble cutting in tiles is done on marble cutting workstation. The marble cutting machine on which the small slabs are cut making tiles or decorative pieces requires the worker to adjust the marble on the machine and hold it till the blade cuts the marble through. In order to improve the performance and maintain the health of the marble cutting worker, the environment of the workplace need to be adequate. Health of the worker is important because it affects the efficiency and the production of the industry worker but at the same time affects the total production of the industry. The loss of human resource is the loss to the economy of the nation.

While performing the marble cutting activity, body segments are manipulated in the space available resulting in changes to posture. The industrial working environment, the environmental factors like illumination, noise, humidity, temperature affect the productivity of the worker.

Stone quarrying, cutting and masonry is one of the many industries which involve moderate to heavy manual work. Due to the nature of manual work and use of tools, stonecutting job may potentially cause work-related upper limb musculoskeletal disorders.

The review of literature highlighted that work-related musculoskeletal disorders/ occupational disorders have been investigated and reported for workers from various sectors in India. These include computer operators / keyboard users, goldsmiths, stone carvers and workers from sand core making, mining and weaving industry (Gangopadhyay et.al., 2010, Dasgupta and Harrison, 1996, Ghosh et. al., 2010, Nag et. al., 2010, Silvian et. al., 2011, Talwar et. al., 2009 and Dhar, 2007). There are very few studies been conducted on marble cutting workers within and outside India (Gangopadhyay, et. al., 2010 Mukhopadhyay and Srivastava, 2010, Bovenzi, 1994, Harger and Barbosa, 2005). Not a single study was found to be carried at the locale selected for the present study.

The review of literature further revealed that the postural analysis of stone cutters was conducted by Gangopadhyay et. al. (2010) in West Bengal. The environmental factors were studied by Singh et.al. (2009), Talwar et. al. (2009), Ghosh et. al. (2010) on forging industry, computer professionals and goldsmiths respectively.

The anthropometric data of the marble cutting workers involved in marble industry, their working environment, physiological cost of work, their posture analysis and occupational related disorders experienced by them is yet to be explored. Thus, the present study is conceptualized. The findings of the study will be helpful in making the owners of the marble industries aware about the existing working environment of their industry. The findings will also be helpful for the marble cutting workers in the industry as it will help them review their postures and adopt the improved ones to reduce musculoskeletal pain. This has a direct relationship on the increased productivity and output of the marble industry.

Statement of Problem

The present research aims to assess the musculoskeletal pain and postural discomfort experienced by the marble cutting workers in the marble industry.

Objectives of the Study

1. To gather the information on demographic profile perceived Health Status and the anthropometric data of the marble cutting workers in the marble industry and their workstation dimensions.
2. To identify the musculoskeletal pain as perceived by the respondents working in the marble industry.
3. To analyze the postural discomfort experienced by the respondents while carrying out their work working in the marble industry.
4. To assess the environment of the workplace of the respondents working in the marble industry.
5. To determine the physiological cost of the work carried out by the respondents and fatigue as perceived by them during their work in the marble industry.
6. To organize an ergonomic intervention programme by providing guidelines for the selected owners and marble cutting workers of the marble industry for their

    a) protection during work and,

    b) maintaining appropriate posture while lifting marble tiles.

Hypotheses for the Study

1. The Perceived Musculoskeletal Pain experienced by the respondents will vary with the Personal Variables (Age in years and Perceived Health Status), Situational Variables (Years of Working Experience and Environment of the Workplace (Noise and Light)).
2. The Physiological Cost of Work of the respondents will vary with their Personal Variables (Age in years and Perceived Health Status),

Situational Variables (Years of Working Experience and Environment of the Workplace(Noise and Light)).

3. The Perceived Fatigue experienced by the respondents will vary with the Personal Variables (Age in years and Perceived Health Status), Situational Variables (Years of Working Experience and Environment of the Workplace (Noise and Light)).
4. There is an association between Physiological Cost of Work and Perceived Fatigue experienced by the respondents.
5. There is an association between Physiological Cost of Work and Perceived Musculoskeletal Pain.
6. There exists a relationship between Perceived Fatigue and Perceived Musculoskeletal Pain.

Delimitations of the Study

1. The present research was limited to the marble cutting workers involved in cutting of marble slabs into marble tiles at the marble cutting workstation.
2. The present study was limited to the respondents having a minimum work experience of 2 years in cutting marble.
3. The present research was limited to the healthy marble cutting workers those who were not suffering from any chronic or acute disease.
4. The present study was limited to the marble cutting workers who were regular to work.

Methodology

The research design of the study was descriptive because information regarding the musculoskeletal pain experienced by the marble cutting workers, physiological cost of work and fatigue experienced by the respondents was also collected. The unit of enquiry for the present study were the workers involved in cutting Marble on the Marble Tile Cutting Workstation working in the Marble Industries of Kishangarh Tehsil of Ajmer, Rajasthan. The sample comprised of 220 marble cutting workers working on the marble

tile cutting workstation in the marble industry. Purposive sampling design was utilized for selecting the sample. An interview schedule cum observation sheet was resorted to gather the data.

The interview schedule cum observation sheet comprised of five sections. The first section comprised of information regarding the demographic profile of the marble cutting workers. The second section collected information regarding the Anthropometric data and Workstation Dimensions which were collected with the aid of anthropometry kit and a non-stretchable measuring tape. Information on Perceived Musculoskeletal Pain experienced by the respondents was collected in Section three wherein Nordiac Questionnaire was modified in order to identify the musculoskeleral pain experienced while doing certain movements namely lifting weight (overhead, at chest level, below chest), while carrying the weight and keeping the weight on a surface, while tightening a screw, while sitting on floor/ mattress, while squatting, while running, while standing still, pain experienced while at rest, and identifying whether pain interferes in daily activities since the past 7 days and 12 months. The fourth Section comprised of Postural Discomfort for which The Rapid Entire Body Assessment (REBA) checklist was used to assess the body posture, forceful exertions, type of movement or action of the respondents. The fifth section comprised of information on the Environment of the Workplace of the Respondents which included the temperature (^{o}C) and humidity (%),noise (in db), light (lux) available in the working area and the vibration (hz), produced by the marble tile cutting workstation. Section 5 also focused on the Assessment of the Working Environment through PMA Ergonomic Checklist, ISO (9001: 2000). The PMA (Precision Metal forming Association) along with the association of OSHA (Occupational Safety and Health Administration) had developed a checklist to identify and think about the potential safety issues in the plant. Data on Physiological Cost of Work was collected in the sixth section. This section dealt with information on physiological cost of work of the marble cutting workers. The Digital Heart Rate Monitor was be used to measure the heart rate (beats/ min) stresses during the activity. It was measured by the severity of physiological workload as given by Varghese et.al (1994). Section seventh comprised of data

regarding Perceived Fatigue which was measured by the researcher through prevalidated FACIT Scale.

The precisely constructed Interview cum Observation Scale was then submitted to a panel of seven judges having expertise in the field of Ergonomics and those who had conducted researches in the field of Ergonomics. The judges for the content validity of the present research included were experts of Academics from the Department of Family Resource Management, SNDT, Womens' University, Mumbai, Nirmala Niketan College of Home Science, Mumbai BMS College of Home Science, Mumbai and Doctor from Department of Physiotherapy, Apollo Hospital, Ahmedabad. The procedure used to analyse the data were categorization, coding, tabulation and statistical analysis. The data were presented in frequencies, percentage, mean and standard deviation. Analysis of Variance, t test, Co efficient of Correlation and chi square were carried out to test the hypotheses postulated for the study.

One of the objectives of the present research was the development of ergonomic intervention programme for the selected owners and marble cutting workers to improve the environment of the workplace and maintaining appropriate work postures during the work. The respondents experiencing more musculoskeletal pain were also exposed to this programme. A brochure was prepared with detailed description on the use, benefits and availability of the protective aids. The brochure was prepared in English and Hindi language so that maximum number of people can be made aware regarding the same. Posters were also developed and designed for the workers in hindi language as they did not have a command on English. The posters consisted of information stressing upon the benefits of protective aids for better productivity and less injuries. The Content regarding the Ergonomic Intervention Programme was developed based on the review of literature collected. The content prepared in English language was translated in Hindi language. The Intervention Programme was made on the basis of the consultation of experts from the Department of Family and Community Resource Management and Ergonomics.

Major Findings

The major findings of the study are presented here.

Section I : Demographic Profile of the Respondents

The mean age of the respondents was 36.77 years. Less than one half of the respondents belonged to the age group of 35- 40 years. More than one-third of the respondents had educational qualification upto Primary Education (upto 5th standard). The mean years of experience was 12.26 years. Slightly less than on half of the respondents had experience of working since 11-15 years in the marble industry. The mean years of working experience in the present marble industry was 5.66 years. Slightly more than two-third of the respondents had a less than or equal to 5 years of working experience in the present industry. Majority of the respondents were right handed. More than one-half of the respondents were found to be feeling “Very Good” regarding their physical wellness before the start of their work as compared to during work and after work.

Section II Anthropometric Data and Workstation Dimensions

The mean anthropometric measurements of the respondents were calculated in the present study. The mean height of the respondents was logged as 67.09 inches. The mean forearm length of the respondents was measured as 16.33 inches. Their mean vertical maximum reach was recorded as 63.14 inches and horizontal maximum reach as 23.92 inches. The height of the workstation was measured 34.5 inches. The width of the workstation was 43 inches. The length of the workstation was 77 inches for fitting to the length of the marble and thus aid in smooth running of the machine and less wastage of the marble.

Section III Perceived Musculoskeletal Pain

On calculating the weighted mean for perceived musculoskeletal pain for each body part of the respondents for the past 7 days and past 12 months, it was observed shoulder was ranked highest in the past seven days followed by elbows and back. The third in number was palms in the past seven days as

the palms were in direct contact with the vibration produced by the workstation. The analysis of the perceived musculoskeletal pain in the past 12 months it was revealed that back was ranked highest followed by palms and shoulder.

Section IV Postural Discomfort

Majority of the respondents were at 'high risk' of Musculoskeletal Disorder requiring further investigation and changes on an immediate basis. More than one-tenth of the respondents were found to be at a very 'High risk'.

Section V Environment of the Workplace

Less than two third of the industries had light below recommended levels (1000 lux). It was surprising to record that 4-5 industries had light ranging from 520-546 lux.

The analysis of the comfort level of the respondents revealed that slightly more than one half respondents perceived that the lighting was "comfortable". On asking the preference of the respondents regarding light, majority of the respondents "liked as it is". The lowest measurement of noise produced by the machinery was 93 db and the highest was 112 db in the industry. The data revealed that slightly more than one-half of the industries were found to be producing noise equal or above mean i.e. 104.13 db. The lowest humidity recorded was 33% and highest humidity recorded while the respondents were working was 46%. Slightly less than two third of the industries had humidity ranging from 33-37%. Slightly less than two third of industries were having temperature ranging from 36-38 ^{o}C. The vibration produced by the marble cutting workstation was 46.67 Hertz (Hz).

Majority of the respondents were not provided any training for vibration and posture. It was also observed that slightly less than on-half of the respondents were provided training for avoiding repetition of work. Majority of the respondents were not provided any rest breaks to relieve stress from repetitive motions. The use of any protection of hands was not found to be a practice by majority of the respondents. Majority of the respondents were not found to be using ear plugs for protection from excessive noise.

Section VI Perceived Fatigue and Physiological Cost of Work

Almost half of the respondents were found to be severely fatigued and slightly less than one half of the respondents experienced “Less Fatigue”. Slightly less than two third of the respondents had “Moderately Heavy” physiological workload of the task performed by them.

Testing of Hypothesis

- A significant variation (F value 0.3, α 0.01) was found in the Perceived Musculoskeletal Pain of the marble cutting workers in various parts of the body with their Perceived Health Status during work.
- The results showed a significant relationship (t value 2.97, α 0.01) with the physiological cost of work and the Noise level.
- The results showed a significant variation in the Perceived Fatigue experienced by the respondents with their Health Status before (F value 2.8, α= 0.05) and after work (F value 4.3, α= 0.01).
- The results revealed there was a significant (r value 0.136, α= 0.01) positive relationship between the Perceived Fatigue and Perceived Musculoskeletal Pain experienced by the respondents.

Ergonomic Intervention Programme

Posters were developed and designed for the marble cutting workers in English first and then translated to Hindi language with the help of Language Expert as the respondents did not have a command on English. The posters consisted of information stressing upon the benefits of protective aids for better productivity and less injuries.

The posters had guidelines for the workers the correct technique of lifting weight thus avoiding risk of musculoskeletal pain and any injuries in the future. Each poster was explained by the researcher via telephonic conversation to the owners and displayed near the workstation of the respondents.

The researcher had also provided a list of vendors of protective aids. E commerce options for buying the protective aids were also provided by the researcher.

The researcher took permission from the Marble industry regarding conducting the intervention programme by requesting the owners to try and implement the

suggestions suggested by the researcher. There was a lot of resistance experienced by the researcher from the owners of the industries as due to pandemic their business was affected. The safety shoes, safety gloves and the ear plugs were provided by the researcher. The shoe size of the respondents were enquired and confirmed by the researcher. Ten workers in the industry were identified and were trained by the researcher via telephonic conversation as travelling was not possible due to the quarantine rules. The workers were then asked to implement the suggested guidelines for maintaining proper posture, using the protective aids namely safety gloves, safety boots and ear plugs while working. Regular feedback and update were taken by the researcher to ensure the practice of guidelines and suggestions developed by the researcher. Majority of the participants expressed their appreciation for conducting the programme and the purpose for which it was organized. The workers were ecstatic to use protective aids as they had to use other methods like wrapping fabric around the hands, feet and work. The researcher had taken a feedback of the respondents regarding the guidelines suggested. The workers opined that the posture guidelines helped them in doing the work easily. The rest breaks gave them more time to rejuvenate from the tiredness due to the work and stress in the body parts. They opined that learning new method of lifting especially with the use of safety shoes gave them more confidence and ease of lifting and moving marble tiles and slabs. Most of the workers were very much comfortable using the ear plugs, safety gloves. The respondents shared that the safety shoes were very comfortable in wear. On being asked if they would continue implementing the guidelines, all the respondents readily agreed and were enthusiastic for the changes seen in their work. The respondents also shared that they will ask their other fellow members also to follow the guidelines as they are designed for the benefit of the worker.

Conclusion

The “Musculoskeletal Pain and Postural Discomfort experienced by the Marble cutting workers in the Marble Industry” was conducted in Kishangarh tehsil of Ajmer, Rajasthan. The mean age of the respondents was 36.77 years. The mean years of working experience in marble industry was 12.26 years. The mean years of working experience in the present marble industry

was 5.66 years. More than one-half of the respondents were found to be feeling “Very Good” regarding their physical wellness before the start of their work as compared to during work and after work. The analysis of the perceived musculoskeletal pain in the past 12 months it was revealed that back was ranked highest followed by palms and shoulder. Majority of the respondents were at “high risk” of Musculoskeletal Disorder requiring further investigation and changes on an immediate basis. A significant variation was found in the Perceived Musculoskeletal Pain of the marble cutting workers in various parts of the body with their Perceived Health Status during work. This reflected that the Perceived Health Status during work varied with their Perceived Musculoskeletal Pain.

Less than two third of the industries had light below recommended levels. More than one-half of the industries were found to be producing noise equal or above mean. The lowest humidity recorded was 33% and highest humidity recorded while the respondents were working was 46%. Slightly less than two third of industries were having temperature ranging from 36-38 ^{o}C.

Majority of the respondents were not provided any training for vibration and maintaining posture. More than three fourth of the respondents were not provided training concerning the use of tools to decrease the injuries revealed.

Majority of the respondents were not provided any rest breaks to relieve stress from repetitive motions. The use of any protection of hands was not found to be a practice by majority of the respondents. Majority of the respondents were not found to be using ear plugs for protection from excessive noise.

Almost half of the respondents were found to be severely fatigued and slightly less than one half of the respondents experienced “Less Fatigue”. The results showed a significant variation in the Perceived Fatigue experienced by the respondents with their Health Status before and after work. This reflected that the Perceived Fatigue experienced by the respondents varied with their Health Status. The results also revealed there was a significant positive relationship between the Perceived Fatigue and Perceived Musculoskeletal

Pain experienced by the respondents. Since the relationship was found positive it can be concluded that more the perceived fatigue more will be the perceived musculoskeletal pain experienced by the respondents. Hence the null hypothesis was rejected. Slightly less than two third of the respondents had “Moderately Heavy” physiological workload of the task performed by them. A significant relationship was found with the physiological cost of work and the Noise level. Thus, it can be concluded that the Physiological Cost of Work varied with the Noise of the workplace.

Implications of the Study

The findings of the present study had the following implications:

For the Field of Family and Community Resource Management

- The field of Family and Community Resource Management is concerned with the field of Ergonomics as Ergonomics and Consumer Ergonomics are the subjects offered for the Masters Student for Hospitality Management and Interior Design specialization. The findings of the study will be helpful for the students where they can learn about the various methodology of doing a research as well as understand and gain perspective towards workplace environment. The students will also gain some understanding regarding the Musculoskeletal pain and postural discomfort among the workers.

For Government

- The government should make efforts in implementing the formulated strategies and a policy which mandates each worker a protective and safe working environment. The government should stringently check whether the rules are being followed by the Marble industry owners.
- The findings revealed that the respondents were not provided protective aids while working. This reflected a need for the government to regularise the system wherein the industry mandatorily provides protective gears for the safety of the marble cutting workers.
- The findings revealed that the there was High Noise and Very high Noise. Thus, the government must ensure some regulatory steps to protect the marble cutting workers from excessive noise exposure.
- Government must give subsidy to the Marble Industry owners who follow the guidelines of maintaining proper noise level, provide training to their employees as well as provides protective gears to the workers.
- The attention of the government can be drawn towards the health of the Marble cutting workers as many of them experienced Musculoskeletal pain in their back, palms and shoulders. Thus,

government must introduce policies which protect the marble cutting workers and in protecting them from deteriorating health.

For Marble Industries

- The findings of the present study would act as a feedback to the Marble industry owners in aiding them to look into the problems faced by the workers. The industry can gain an awareness regarding the improvement of the working conditions and facilities to the workers thus increasing productivity and efficiency and reducing absenteeism, musculoskeletal pain and fatigue.
- The findings of the study revealed that majority of the respondents experienced musculoskeletal pain. Thus, it reflected that the industry owners must make some provisions for rest breaks and provide training to the marble cutting workers for maintaining posture, avoiding repetitions, overcoming stress, vibration.
- The findings revealed that the industries had High Noise and Very high noise, therefore the industrial owners can take certain measures in controlling the noise which may damage the marble cutting workers in future as well as cause noise pollution.
- The findings also revealed that more than one-half of the respondents experienced severe fatigue therefore the industry owners can provide rest breaks aiding in reduction of fatigue experienced by the respondents.

For Kishangarh District

- Kishangarh is the hub of Marble industry, but if efforts be taken to improve the workers safety, it will boost the working productivity leading to higher profits. The findings of the present study can aid the Tehsil to look into the problems faced by the workers and thus regulate and reduce the issues faced by them from day to day.

For Marble Cutting Workers

- The findings of the present study will guide and sensitize the workers into the root cause of the problems faced by them, thus aiding them to gain a better understanding in reducing the effects of not using protective gears while working. The workers will gain knowledge regarding maintaining proper posture and importance of the use of protective gears thus protecting them from work related injuries and increasing their efficiency.

Recommendations for the Future Studies

1. An investigator in different states in India can conduct similar type of research to find out the musculoskeletal pain and postural discomfort among Stone Cutters.
2. A similar study can be conducted on a larger sample size.
3. Study of similar nature can be conducted for construction workers.
4. A study can be conducted to find out the effect of vibration on Marble cutting workers.
5. A study can be conducted to find out the extent of satisfaction working environment of the Marble Cutting Workers.
6. A study can be conducted to find out the opinions of Marble Industry owners regarding importance of worker friendly working environment.
7. A similar type of research can be conducted on the Marble workers who make artifacts from marble.
8. A similar study can be conducted for any field like architects, beauty salons, drivers, policemen, doctors and nurses etc.