

**SOCIO-ECONOMIC AND HEALTH CONDITIONS OF THE STONE
QUARRY WORKERS IN AIZAWL**

By

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Department of Social Work

Submitted

**In partial fulfilment of the requirement of the Doctor of Philosophy
in Social Work, Mizoram University, Aizawl**

Dedication

In Loving Memory of My beloved father

Shri. K. Lalhamchhuan

Died: 14th Feb'87

*The memories of those who leave behind are never to die.....someday we will meet
together on the beautiful shore at the feet of Lord Jesus Christ.*

DECLARATION

Mizoram University

February 2014

I, Rosie. Lalzirliani, hereby declared that the subject matter of this thesis is the record of work done by me, that the contents of thesis did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/ Institute.

This being submitted to the Mizoram University for the degree of Doctor of Philosophy in Social Work.

Date: 22nd February 2014

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CERTIFICATE

This is to certify that the thesis “ **Socio-Economic and Health Conditions of the Stone Quarry Workers in Aizawl**” submitted by Rosie Lalzirliani, in partial fulfilment of the requirement for the Ph. D Degree in Social Work, had been written under my supervision.

The scholar has fulfilled all the required norms laid down under UGC Regulation 2009 on Minimum Standard and Procedure for the award of Doctor of Philosophy (Ph. D) Degree. The thesis has not previously form the basis for award any degree of this University or any other and this work is record of the Scholar’s personal effort carried under my guidance.

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Date: 22nd February 2014

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Abbreviations

B.P.L	-	Below Poverty Line
Etc.	-	<i>et cetera</i> , and so forth
Et.al.	-	<i>et alii</i> and others
Gov't	-	Government
H.C.S	-	Health Care Scheme
I.L.P	-	Inner Line Permit
I.N.R	-	Indian Rupee
I.T.I	-	Indian Telephone Industries limited
J.A.C	-	Joint Action Committee
J.N.N.U.R.M	-	Jawaharlal Nehru Urban Renewal Mission
K.T.P	-	Kristian Thalai Pawl
M.A.P	-	Mizoram Armed Police
M.L.T.P Act	-	Mizoram Liquor Total Prohibition Act
M.N.R.E.G.S	-	Mahatma Gandhi National Rural Employment Guarantee Scheme
M.U.P	-	Mizoram Upa Pawl
N.G.O	-	Non-Government Organisation
No.	-	Number
p.	-	Page
pp	-	Pages
R.S.B.Y	-	Rashtriya Swasthya Bima Yojana
R.T.E	-	Rights to Education
S.H.G	-	Self-Help Groups
Sl. No	-	Serial Number

Sq. m	-	Square Meter
S.S.A	-	Sarva Shiksha Abhiyan
T.K.P	-	Thalai Kristian Pawl
T.V	-	Television
U.C.O	-	United Commercial Bank
V.C.D	-	Video Compact Disc
Vol.	-	Volume

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Majority (85.54) of the working population in Mizoram are from the unorganized sector (Economic & Political Weekly May 27, 2006; p.2110). Their problems are also manifold. According to the Statistical Abstract of Mizoram 2011; (from the report of 2001) census: the total number of main workers in Mizoram is 362,450 workers, 104,709 marginal workers and 421,414 non workers. Among the main workers 225,428 are males and 137,022 are females. In Aizawl the District capital of Mizoram there are 125,328 main workers, 37,633 marginal workers and 162,715 non workers. In Aizawl, 79579 main workers are males and 45749 are females (ref: Statistical Abstract of Mizoram 2011, pp. 12 & 13).

Stone quarry workers are belonging to the unorganized sector. Various types of operations involved in this work. Based on these operations, the workers are employed at different places. Generally, quarry workers are engaged in four types of work known as stone cutting work, crushing, drilling and loading. They face health problems such as back pain, miscarriage, varicose veins, silicosis, lung cancer and tuberculosis. It is reported that the hazardous working conditions leads many quarry workers to die while they are still of young age. Quarry workers work for more than fifteen years and face health problems such as chronic chest pain, chronic dyspnoea etc. (Elavarasi, R. 2006, p. 1). As of today, these minerals have been largely left in the hands of ruthlessly exploitative contractors who not only pay the workers low wages, but also force them to work in highly hazardous conditions and in conditions of near bondage. The conditions of these workers in many parts of India such as Kota, Makrana (Rajasthan), Shivpuri, Satna, Katni (Madhya Pradesh), Banda, Allahabad, Sonbharda (Uttar Pradesh), Faridabad (Harayan) to name only a few areas, have evoked widespread concern due the exploitation, bondage, high accident rate, high incidence of occupational diseases and other adversities (Dogra,B. 2003, p. 77).

The workers employed in stone quarries, which is unorganized sector of industry, are exposed to variable silica dust concentration at their work place, a very large extent of respiratory morbidity and lung function impairment is observed in this group of employee (V. B. Ghotkar, B. R. Maladhure & S.P. Zodpey. 1995, p. 6).They are working in unsafe and hazardous condition; the explosive which they use is very dangerous for the life of the quarry workers. In India, bonded labour is practiced in this type of work by the contractors, and the laborers are paid very low wages at different parts of the area. They have to work endlessly whether in summer or bitterly cold winter. They are nestled in a shanty and dilapidated home with no potable water to drink. Their health is very much affected by their working conditions with symptoms of chronic pain like; back pain, chest pain etc. The income of these quarry workers is insufficient for the well being of the family. If they happen to take a leave from their work even for just a day, they have to face hunger and thirst. Men are naturally stronger than women because they have to undertake strenuous labour like cutting, crushing, drilling and loading. The working condition of the quarry workers as depicted is very tough; hence, they become more wizened than they really are. They are part of the ignorant group and became more helpless from the government.

Quarry work involves excavating raw materials and processing them to make products for industry. This includes quarrying limestone for cement production, crushing rock to make stone chippings and aggregate used in road construction, extracting clay for brick-making and slate for roofing. Modern quarrying is a mechanical process and operatives work with large, powerful excavating, transporting and crushing machines. Quarry operators also use drilling equipment and explosives to break up rock. The nature of their work varies widely, depending on their exact job but can include working with heavy plant machinery such as excavators, draglines

and cranes, operating processing equipment like rock crusher and stone grades, setting up and operating drilling equipment, maintenance work as a fitter, vehicle mechanic or electrician setting and denoting explosives known as 'shot firing', driving tipper and dumper trucks and other heavy vehicles. Some quarry operators may also have technical duties, working in a laboratory, recording site samples and carrying out quality control checks (www.careersinquarrying.co.uk)

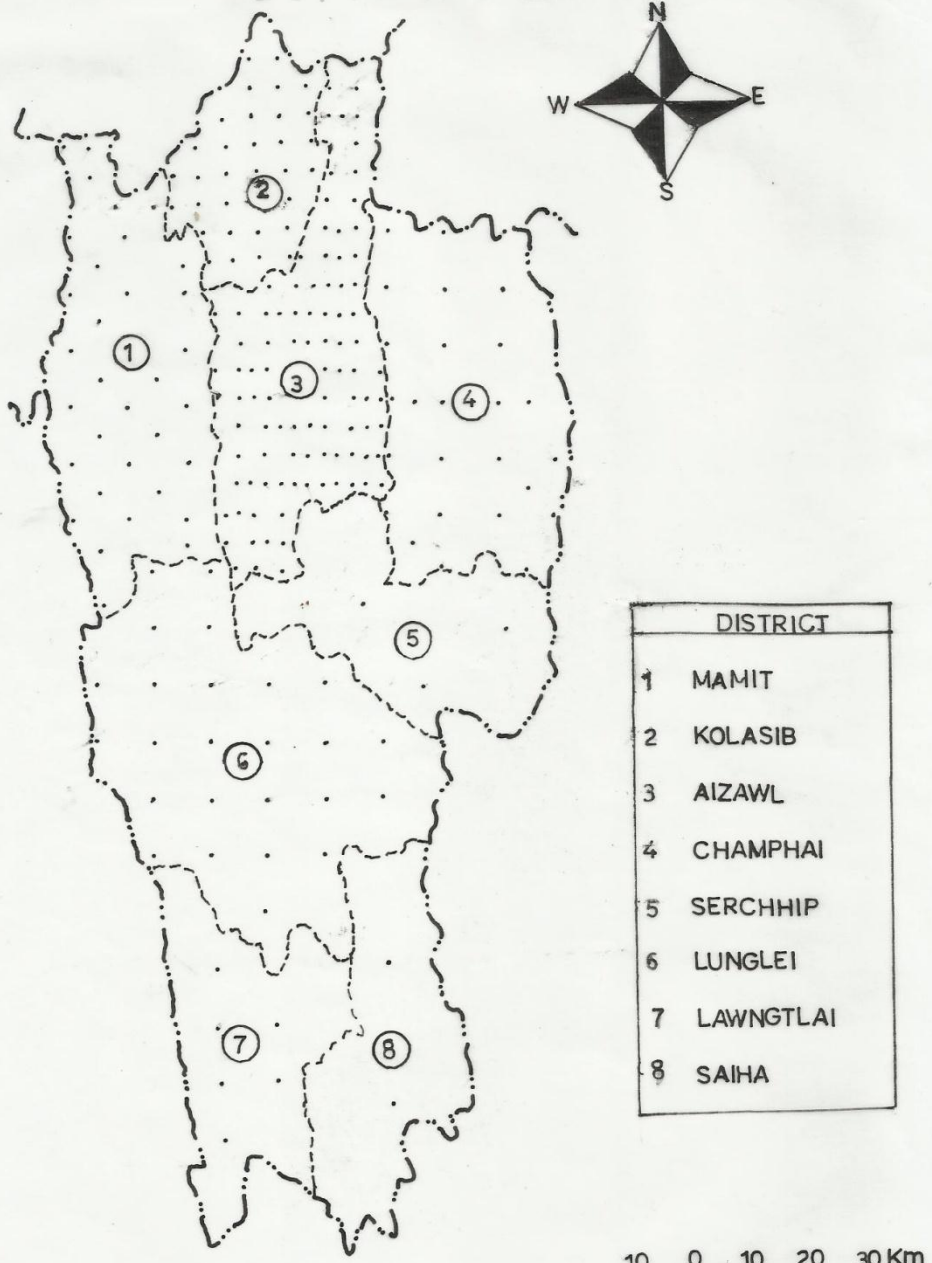
Quarry Workers in Mizoram

In Mizoram there are 419 permitted quarry holders located in different parts of the District; namely, Aizawl-176, Lunglei-29, Mamit-65, Champhai-36, Serchhip-37, Kolasib-65, Lawngtlai-6, Saiha-5 (source: Geology and Mining Dept. Luangmual). According to 2001 census in Mizoram the population is 888573. There are approximately 30 people working per day in every quarry (source: Census Data 2001).

In a quarry, the workers toil every weekday except Sunday, most of the quarry workers are the bread earner for their family. The workers work in contract basis. Every owner of a quarry has to pay the royalty in the Geology and Mining Department. If they are unauthorized they have to pay the Royalty by using a separated from O. There are five Check Gates in Aizawl established by the Geology and Mining Department; they are at Zemabawk, Hunthar/Vaivakawn, Ramrikawn, Lawipu, Melthum. In the Check Gate the keeper checks everything which is unlawful. This brings to the light the fact, that some of the quarry owners do not renew their permit in time. If their permit is invalid, they need to check for safety for safety with the help of the in charge of the specific Department. The working condition of male workers is very different in various parts of the quarry. Workers mostly work from morning to evening, crushing stones of cubic feet and boulder and drilling the stones

by using drilling machine. If they don't have the machine they usually borrow it and pay the rent to the owner of the machine. They are the neglected groups as we have seen from the book 'Encyclopedia of Development, Environment and Welfare' by Bharat Dobra. In the quarry, workers are not only from Mizoram, they are also workers from other states. They don't get any facility from the government; hence they have managed everything by their own. They work under hazardous condition. Therefore, the chance of facing accident is very high, always risking their life in a dangerous situation. They buy explosive materials secretly to simplify their work and if this fails they lose their money and time. They are bound to work in these quarries because of their economic conditions. Their health condition is poorer compared to non quarry workers because their work is tough and they have to toil in heat and rain. They cannot get enough nutrition as per their physical needs. They do not have enough time to interact in a social circle, and in the family circle too, they do not have ample time to spare with their family. Henceforth, their children lack guidance and counselling. From all of the above statement we can see that these quarry workers need to take care considering their various problems and their welfare.

DISTRIBUTION OF QUARRY IN MIZORAM BY DOT METHOD



LET 1 DOT REPRESENT 3 QUARRIES

Map of Quarries in Aizawl



Rationale of the Sample (Selected 10 quarries)

The stone quarries are located within to the East, West, North and South of the Aizawl area. The stone quarries are scattered and situated in different parts Aizawl. There are 13 stone quarries located in Aizawl Urban and 12 quarries in Aizawl rural area maintain by the owner and also give in hand by hiring to the land lord and the contractor. Approximately, there are around 400 stone quarry workers mostly working different kinds of activities like cutting, loading, drilling, chipping, and breaking and in crusher machine. The stone quarries are undertaken and control by the Directorate of Geology and Mineral Resources Department under the 'Mizoram Minor and Minerals Concession Rules 2000', Directorate of Labour and Employment Department and Pollution Control Board in Aizawl. The Labour and Employment Department implemented various legislative measures to prosper, care, security, protection and Welfare of the work force in Mizoram like; Minnimun Wages Rules 1992, Workmen's Compensation Rules 2009, The Mizoram Inter-State Migrant Workmen (Regulation of Employment conditions of service) Rules, 2008. etc. The Geology Department issues permit and collect tax from the quarry owner and stone quality as well as checking a quarry location whether it is convenient to use explosive. Stone product is very useful for in Mizoram for various purposes like drainage, roads, walls, housing etc.

Quarry 1. Mel - 4 Quarry

Mel-4 quarry is located in the Southern part of Aizawl and Lunglei Road passes through the quarry. It is about 5-6 km from main Aizawl Post Office (The area of Mizoram is measured from the Main Post Office). The nearest locality is Melthum. It is around 1 km from Melthum locality and we can reach within a short period even by walk. The extracting of stone area is about ½ hectare. The quarry does not exist

inside the locality. Some quarries are situated far from the locality. It is situated at the road side and when the time of using explosive the workers ran away and other vehicles which trying to passes through are block for a few minutes. The climatic condition is very hot in summer and very cold in winter. The environment is not favourable so that the vehicles are always moving and the pollution is very much especially for those who chipped stones near the roadside and accident may always happen for this kind of employee. Mostly the quarry workers are coming from Melthum locality. The workforce participation is around 45 males and 15 females approximately working in different parts of job. The pattern of the quarry work is sub-contract basis. The quarry workers work as piece rated and daily rate. But stone chippers are work by their own free-will. They collected and pick stones in the quarry by using Mizo traditional bamboo basket called (*Em*). Fortunately, there is no need to pay back the money for collecting the stones to the owner or the contractor and they can earn money for they own management. Mostly the stone chippers are women of middle age group. The quarry workers are needed to climb high in the mountain to drill the rock after that they explode the rock by using gelatine then big rocks are rolling down to the earth and dressed for cubic. The dressing period of rock take quite a long time. Some stone cutters are work as cubic meter of one truck trip cubic of stones. The quarry produces stones for various purposes like construction of road, retaining wall etc. The transportation of the quarry is good and easy to access for truck driver and the customers. There is sanitation and water problem exist i this area.

Quarry 2. Hlimen Quarry

Hlimen quarry is located in the South part of Aizawl. There are about 40 males and 15 females approximately working for various kinds of stone production like cutting, crusher machine work, chipping, breaking, loading etc. The environment

is over polluted while there is no rain. The climatic condition is very hot in summer and cold in winter. There are two times slope failures due to improper mining and disaster happened in the quarry in 11th July 1986 midnight. In the incidence, 64 people died and 18 casualties including non Mizo. The second time happened at 9th Aug 1992 at 4:00 a.m. There are 9 people death and casualties including quarry workers who stayed within the quarry sites, civil inhabitants and migrants and the affected area is also very wide. The quarry is filled up with huge blocks of rocks and the rocks are lying upon the earth surfaces of the quarry. Some people are not able to take out and buried under huge rock. It is very convenient that till now, the quarry workers taking the stones which had already fallen down in the quarry and it provide a good income for the inhabitants of Hlimen locality. It also increases the joining labour force to the quarry and eases the daily requirements. The period was the most shocking and memorable grievous event in Mizoram. Due to the unstable quarry rocky mountain the Geology and Mineral resources Department did not allowed to use explosive mitigate to happen again. The migrants play an important part in the quarry. Mostly they are from Jarkhand and they are especially participating in crusher machine work. Almost the quarry workers are coming from Hlimen locality. There is no sanitation problem but water problem is there too. It is not too far from the locality so that there is no need for taking a long time to reach the quarry even by walk. There is a road passes through the Samtlang quarry. The middle of the road inside the quarry is very poor especially during monsoon, it is very slippery and some pit makes hard to run a vehicle.

Quarry 3.Samtlang Quarry

Samtlang quarry is located in the South part of Aizawl rural area. The climatic condition of the quarry is unbearable during summer; dry wind is common to this

area. There is about 2-3 km from the locality and the workers reach the station by waiting the truck which is going to load the stones in the quarry by free of cost. For those who are not resides in Samtlang locality are stayed in a small hut during weekdays and left the quarry at the end of the week .Migrants are also work in the quarry. Only few of them chipping the stones, extracting cubic of stones are the major work participation. Approximately there are around 25 males and 5 women working everyday to generate income for their family. Those middle age women are participate in breaking the stones for boulder by using hammer. The mountain rock is break by using explosive and drilling machine. Extracting cubic is the main production. The work pattern is daily rate, piece rate and contract basis. The quarry owners managed the quarry production by themselves. There is a reserve forest near the quarry sites and a small valley passes through it and from that they can caught a clean water through the whole year. Sanitation otherwise has been passing wherever is possible and available near to them.

Quarry 4.Lawipu Quarry

Lawipu Quarry is located in Lawipu locality to the West part of Aizawl. The climatic condition is very sunny and hot. The stone taking place area is around 4-5 hectare. Mainly the stone taking place are stretches upon the river, but some spread near the river bank. Land degradation happens because they clear the top of the soil and also the forest which makes the river water. Different owner manage their own quarry .It splitter into different areas. Extracting of cubic of stones is the main task. There are around 60 males and 20 females working in the quarry. Stone chippers are not in large numbers and they are totally women. The married women children are often coming after school and help their parents otherwise they are playing into the surroundings. The work pattern is they hired the land to the landlord and paid a rent

for every month. There is also a piece rate and daily wage rate practicing among them. They respond that children chipped the stones for pocket money during holiday and Saturday instead of asking money for buying eatable things to their parents. Migrants contribute a large amount of labour in the quarry. They are settled inside the quarry with a house made by the employee and together they contribute money for the leased house. There is no power supply during field survey. The inside quarry road is poor but others it quite good.

Quarry 5. Tuithum Quarry

Tuithum quarry is located in the west part of Aizawl. The area of the quarry is comprised within the Luangmual locality area. The climatic condition is normally hot and not very hard to bear unlike Samtlang quarry. It is also situated beyond a river. The stone taking area is around 2 hectares. There are different owners open a quarry and stretching along the river side. There are around 40 males and 15 females working in the quarry. The stone chippers are women; like Mel-4 quarry they collect stones wherever is available and did not take charge of paying back the money to the quarry owner. Migrants are mostly living in a shed build by their owned inside the quarry. The quarry workers reach the working spot by waiting a truck which is going to the quarry which is to carry the stones in the quarry. The working spot is to turn from the main road and it takes a few hours to arrive. The quarry workers are coming from the nearest locality. Stone cutting is the main task for the employer. The work pattern is piece rate, daily rate and sub contract basis.

Quarry 6. Sakawrtuichhun quarry

Sakawrtuichhun quarry is located in the west part of Aizawl. The climatic conditions very hot as well. There are around 20 males and 10 females working in the quarry. It is situated in the Sakawrtuichhun locality. The area of extraction of stone is

about 1 hectare. The rocks are blasted by using gelatine and huge blocks of rocks are dressed and cut by using hammer and chisel. The road is quite good but slippery during rain and the workers are coming from Sakawrtuichhun locality. It is easier for them to generate income for the family. The system of work is piece rate and wage rate basis. There is about 20 minutes walk from the locality. They are mostly going through by walk. The working pattern is piece rate; daily rate and sub contract basis. Some of the quarry operates the quarry by them.

Quarry 7.Industrial Cross Centre Quarry

Industrial Cross Centre quarry is located in the west part of Aizawl. The area of the quarry is existed within the Luangmual locality. It is sited near to the Sakawrtuichhun quarry. The climatic condition is also very hot and sunny. They are always go by truck which is going to carry a stone in the quarry. The quarry workers are mostly coming from Sakawrtuichhun locality. There are around 20 males working in the quarry. The quarry workers break the rock by using explosive and before that they drilled the rock first and put the gelatine into the hole and the rocks are made for cubic and boulder. The loading itself is taken care for the quarry workers. The work is very tiresome and time consuming and it needs more energy and manpower. The working and living conditions are not so much good because there is no latest technology used by them. There is one swimming pool near below the quarry and children are gone to the quarry for recreation even in Saturday and holiday. Due to the desirable of swim in the swimming pool children are participated in the quarry to earn pocket money for renting the pool. According to the Factories Act 1948, children who does not attain the age of 14 years are not allowed to participate in any hazardous conditions. Children make a hole in the rocks and put explosive and then blasted. Children do not think clearly about the hazardous work assign to them but they are

flexible to run away from the sloppy mountain in times of need. The quarry workers give less amount of money but the children are happy to get the money.

Quarry 8. Phunchawng Quarry

Phunchawng quarry is located within Phunchawng locality. Their main task is to make cubic for finished product; breaking boulder and crusher machine worker are also there. There are around 45 males working in the quarry approximately. The climatic condition is also hot and very cold in winter. The quarry workers are mostly resides and staying in a leased house within the quarry. The workers spend the whole weekdays and left the quarry at the end of the week. The quarry area is spreading very long it takes about 6 hectare and almost exist upon the road and transit to the forest. The road is slippery during rain and the system of transportation is not easy. It takes about 10-15 minutes from the locality by truck and by walk it takes about more than half an hour because some quarries are very far and some are not very far from the locality. The owner of the quarry controls the quarry and sometimes they are given it to the contractor.

Quarry 9. Lawibual Quarry

Lawibual Quarry is located within the area of I.T.I (Industrial Training Institute) locality. It is situated in the East part of Aizawl. The quarry workers are mostly working from I.T.I. locality. There are around 45 males and 25 females working in the quarry approximately. We can reach within ½ an hour from the locality through by walk. The climatic condition is very hot and the area is about 3 hectares. The World Bank road passes through it and the quarry stretching along the side of the rocky mountain. The workers would not take the stones longer enough that the owner already taken compensation from the World Bank project. Someday one of the important resources of income for the quarry workers will be terminated. The

Geology and Mineral Resources Department refuse to use explosive because the road is very important nowadays and it is one of the most important road for travelling to the Southern side of Mizoram. Even if they use explosive illegally to enhance their production more than the 3rd Battalion M.A.P are accuse to the Geology and Mineral Resources Department as well. The Battalion are settled on the opposite bank of the quarry and they should certainly hear the sound of explosion of rocks from the further side. The quarry workers did not produce sufficient amount of rocks from the quarry by using manually. The crusher machine workers are also resides in the quarry.

Quarry 10.Zemabawk Quarry

Zemabawk quarry is located in the north part of Aizawl. It exist within the Zemabawk locality. The climatic condition is also very hot. It is around 2 kms from the locality. The modes of transportation are by walk, bus, tipper and truck which is to carry a stone to the quarry even by walk. There are around 60 males and 30 females working everyday in the quarry approximately. Migrants play an important role in the quarry. The operation area of the quarry is around 6 hectare but the small quarries are stretching wide beyond the road side. Sanitation and water facilities are very poor. The quarry workers are mostly hailed from the Zemabawk locality. They are using explosive to break the rocks. The work pattern is contract, sub contract and daily wage rate.

WRITE UP ON LABOUR & EMPLOYMENT DEPARTMENT

Introduction

Labour & Employment and Industrial Training Department consisted of three departmental organisations namely (1) Labour Administration (2) Employment Services (3) Craftsmen Training. Directorate is at the apex of these three

organisations. The organisations being a concurrent subject under the constitution of India their operational functions are mandated in separate sets of manuals called Labour Manual, national Employment services manual and Industrial Training Institute manual. Ministry of Labour & Employment. Government of India set up National Labour Institute, Central Institute for Research and Training In Employment Services and Advance Vocational Training Institute for developing the skills officers of the above organisations who carry out the mandatory instructions laid down in the manuals. Orientation Training Programmes are conducted one of those institutes on regular basis.

Achievement/activities of Labour & Employment Department

LABOUR ADMINISTRATION

A country or State can prosper only if proper care, security, protection and Welfare are given to its workforce. Various Acts and Rules have been implemented by the department with the above in view. They are under:

1. The Mizoram Payment of Wages Rules, 1992.
2. The Mizoram Trade Union Regulation, 1992.
3. The Mizoram Minimum Wages Rules, 1992.
4. The Mizoram Contract Labour (Regulation & Abolition) Rules, 2004.
5. The Mizoram Inter-State Migrant Workmen (Regulation of Employment conditions of services) Rules, 2005.
6. The Mizoram Building & Other Construction Workers (Regulation of employment & conditions of service) Rules, 2008.

7. The Mizoram Workmen's Compensation Rules, 2009.
8. The Mizoram Shops & Establishment Act, 2010
9. The Mizoram Shops & Establishment Rules, 2011.

Recent activities of the department to ensure the worker's welfare within the State may be listed below:

1) Implementation of Minimum Wages Act, 1948:

State Advisory Board representing workers, employers and independent persons was constituted as per the Minimum Wages Act, 1948 and The Mizoram Minimum Wages rules, 1992. Minimum daily rates on the state's sphere were recently revised w.e.f 1st April 2011 on the basis of the Advisory Board as follows:

Unskilled - Rs.170/-

Semi-skilled - Rs. 190/-

Skilled-II - Rs. 240/-

Skilled-I - Rs.300/-

2) Implementation of Trade Union Act, 1926:

The Mizoram Trade Union Regulations, 1992 have been framed under the said Act and 94 Trade Unions have been registered with the fees collected for registration amounting to Rs.470/-

3) Implementation of Contract Labour Act, 1970 and Inter State Migrant Act 1970:

The Mizoram contract Labour Rules, 2004 and the Mizoram Inter State Migrant Workmen Rules, 2005 have been framed under the said Acts and the present status of registration and licence issued is as under:

- i) No. of Employers/Contractor registered under Contract Labour Act, 1970: 12
 - ii) No. of Contract Labourers: 190
 - iii) No. of Employers/Contractors registered under Inter-State Migrant Workmen: 15
 - iv) No. of license issued under Inter-State Migrant Workmen Act, 1970: 15
 - v) No. of Inter State Migrant Workers in the state: 1524
 - vi) Total Amount of license fee collected as per the latest record: Rs.2982
- 4) Implementation of Bonded Labour Act:
- i) Vigilance committees were constituted at the District and Sub-Divisional level.
 - ii) Awareness Programmes on Child Labour was organise through the agency of centre of peace and development, Aizawl Rs.24, 210/- was given to the organizer as financial grant for the programme.
- 5) Workers Education: Workers Awareness Programmes on Social Security, Wages, Safety and Health were organized under Workers Education Programmes.

The programmes were organized at all 8 district headquarters and selected two locations by the Trade Unions under the sponsorship of Labour & Employment

Department. Total of financial grant given for the programme during 2007-2008 was Rs. 4, 80,000.00.

6) Implementation of the Building & Other Construction Workers (Regulation of Employment & Conditions of Services) Act, 1996:

The Mizoram Building and Other Construction Workers Welfare Board created in 2010 with the honourable Labour Minister as the chairman, to provide various facilities such as financial assistance, old age pension, education, medical and maternity benefit etc, to the workers in the unorganized sector. The fund for the welfare Board will come from the registration fee from the beneficiaries, contribution from the beneficiaries and 1% cess to be collected from all the employers i.e. Construction companies and Government Departments within the state, as per The Building and Other construction Workers Cess Act, 1996. A total amount of over Rs.4 crore has been so far been collected in this regard.

7) The Mizoram Shops & Establishments Act, 2010 and Rules, 2011 have been enforced by the Department of Labour, Employment & Industrial Training. The Enforcement of this Act will benefit those workers who are employed in others people shops & Establishments. The Owners of the Shops & Establishments will have to register themselves as per the Act, to registering authority assigned by the Government. Thus, the enforcement of this Act will benefit the poor workers and at the same time, it will generate huge revenue for the Government.

Geographical Profile of Mizoram

Mizoram is a small state lying approximately between 210.58' N to 240.35'N latitude and 920.15'E to 930.29'E longitude. The geographical area of the state is 21,081 sq.km that is about 0.64 percent of the total area of India. It has a strategic

location having international boundaries with Myanmar in the east and south, Bangladesh and of Tripura in the West. Further, the Cachar district of Assam and Manipur bounded the state in north. Mizoram has about 404 km length of international boundary with the Myanmar and 316 km with Bangladesh.

The topography of Mizoram consists predominantly of mountainous terrain of territory rocks. The mountain ranges run north to south direction in parallel series. These ranges are separated from one another by narrow and deep river valley with only a few and small patches of flat lands lying in between them. The terrain of Mizoram is young and so the geomorphic features do not show much diversity in the formation of the landforms. Most of the landforms observed are of erosive in nature.

The drainage system of the state consists of a number of small rivers and streams. Most of them are of ephemeral nature, depending on monsoon rains. Their volume and level fluctuate greatly in dry and rainy seasons. Most of the drainage lines originated in the central part of the state and flow towards either north or south influence by the north-south trending ridge. The main rivers of the state are Tlawng, Tuirial, Tuivawl, all flowing north-wards and Tiau, Chhimtuipui, Khawthlangtuipui all flowing south-wards.

Mizoram enjoys a pleasant climate, which is neither too hot nor too cold throughout the year. The summer temperature ranges from 15°C to 29°C, whereas it is 18°C to 27°C in autumn and 11°C to 25°C in winter. The average rainfall is almost 200cm per year, though it may come to 350 cm in northwest part of the state. Generally, it rains during May to September; July and August being the rainiest month. November to January is a period with minimum rainfall.

Population of Mizoram

The vast majority of the populations in Mizoram are Mizos (tribes) and they are belonging to the Mongoloid stock. From the record of the Population Census 2011, the state' population stood at 1,091,014 with 552339 males and 538675 females respectively with a density of 52 persons per sq.km. The sex ratio is 975 females per 1000 males. There are 8 administrative districts in the state namely Aizawl, Lunglei, Saiha, Lawngtlai, Champhai, Serchhip, Kolasib and Mamit Districts. Aizawl District has a largest population (37.03 percent of the total population) and Saiha District has the lowest (5.17 percent of the total population). Further, the majority of the population in the state are Christians. Christian's population accounted for 86.73 percent of the total population.

Mizoram has achieved 91.58 percent literacy in 2011 census. The third highest in India next to Lakshadweep. The male literacy (93.72 percent) is found to be higher than the female literacy (89.40 percent) in the state. Further, of the 8 districts, Aizawl has the highest literacy of 98.50 percent of the population; while Lawngtlai District has the lowest 67.16 percent.

Mines and Minerals

The present main mineral of Mizoram is a hard rock of Tertiary period formation. This is mainly utilised as a building material and for road construction work. However, several reports (both from Geological Survey of India and State Geology & Mineral Resources Department) revealed that the availability of minor mineral in different places. We can see different people working in the quarry at different places under hazardous conditions but their working condition varies different.

Economy of Mizoram

The economy of the state is mainly agricultural, with minimal industrial activities and a highly inflated and expanding tertiary sector. Public expenditure is the driving force of the state economy. However, the state is highly dependent on resource transfer from the central government and it generates a small amount of internal resources. With non-plan revenue expenditure year by year, the state government is facing acute financial mismatches between receipt and expenditure. Hence, the state government is resorting to heavy public borrowing to finance not only capital expenditure but also its revenue expenditure.

The per capita income of Mizoram stood at Rs.21, 327 at current price during 2003-2004. The share of agriculture and allied activities in the Net State Domestic Product (NSDP) is 21.12 percent at current price during 2003-2004. Meanwhile, the majority of the population's i.e. 54.9 percent are cultivators who are engaged in agricultural activities mostly by practising Jhum Cultivation.

Objectives

1. To study the working and living conditions of the quarry workers.
2. To assess the occupational hazards and health conditions of the quarry workers.
3. To examine the needs and problems of quarry workers.
4. To find out the adequacy of government/other agencies support for quarry workers.
5. To suggest suitable measures for social work intervention.

Chapterisation

1. Introduction
2. Review of Literature
3. Research Methodology
4. Social Characteristics of Quarry Labour in Mizoram
5. Economic Characteristics of Quarry Labour
6. Working and Living conditions
7. Health and Ecological Issues
8. Participation of agency
9. Conclusion and Suggestions
9. Appendix
 1. Focus Group Discussions (F.G.D)
 2. Case Studies
 3. Bibliography
 4. Interview Schedule
 5. Bio-Data

In this chapter attempts have been made on the review of literature has been arranged according to the studies related to the present study. It has been divided into 4 (four) parts, viz.

- A. Studies based on Quarry workers in different settings.
- B. Other types of quarry workers.
- C. Unorganised Labour in various settings and Labour Welfare Measures.
- D. Health related issues from different types of work.
- E. Theories on Labour.

A literature review is a comprehensive summary and critical appraisal of the literature that is relevant to your research topic. It presents the reader with what is already known in this field and identifies traditional and current controversies as well as weakness and gaps in the field (Whittaker, A. 2009, pp 22).

A. STUDIES BASED ON QUARRY WORKERS

Kindel, D.J. and Haygurst, E.R. (1926) conducted a study on X-Ray examination of sandstone quarry workers in Ohio. A totalling of 919 men were radiograph, all being stereoscopic exposures with the exception of a few of the newer men who had just entered these occupations. Each man was questioned about their various present situations regarding their health conditions as well. The most hazardous of all the occupations was found in the grindstone turning department. 77.6% of those who engage showed distinct evidences of silicosis, from the radiograph. Combining all the classifications of symptoms cough, shortness of breath, tuberculosis, chest pain etc are exists in the workers. Only 30% of the workers found positive in X-Ray. The great majority of cases appear after an exposure of 10 or more years. Silicosis in the investigation have showed that a diseases of slow inception, slow progress, and with hardly more than the usual relation to tuberculosis

which is to be found among industrial employees generally when examined on the job.

Stocks, P. (1961) studied on a study of cancer mortality in farming, quarrying, mining and other occupational in North Wales and Cheshire in Bangor. The study highlight that men who had been engaged in farming, quarrying and mining occupation would have higher death rates from stomach cancer than other men of the same ages. Lung cancer rates were lower amongst farm workers, the deficiency compared with other occupations being present and significant in all areas except Anglesey. The quarry and mining groups showed somewhat higher rates than the residual group with a significant excess in the Caernarvon-Merioneth area where igneous rock and slate is quarried.

Akerblom G. And Mjones L. Studies on exposure to workers in Swedish Quarrying (1970). They investigated 4 quarries with gamma radiation and exposure to radon as the inhalation of radon gas progeny. The gamma radiation was measured by handheld scintillometers. These instruments also register the cosmic radiation. The concentrations of natural radionuclide's in the quarried granite are more than twice as high as those for normal acid crystalline rocks, the annual effective doses to the workers at the quarries are below the recommended level of 1mSv even if the doses received from inhalation of radon is included. Many of the quarried rocks in Sweden have uranium, thorium and potassium concentrations that are higher than the proposed criteria for the exemption. The highest inhalation of dust can give a maximum dose less than 0.03mSv/year.

Chowdhury, A. (1974) writes on to crush the stone crushers. The study highlighted an attempted on the quarry workers of Gudaipur village South Delhi. The contractors (Gujars) employ the quarry worker was very grievous and misunderstood.

They toil the whole day with their children with low paid, flagrant violence of Labour Act and Minimum Wages. There was a conflict between the local and the immigrants. In the night time drunken Gujars entered the house and forcibly rape their wives. They threatened and attacked fleeing men, women and children with lethis and other weapon. There was a misuse of power in this area that their ration cards were taken away and refuse to give ration from the shopkeeper. At last, the Parliament knows and the killer was arrested by the police.

Guenel, P., Breum, N. O.,& Lynge, E. (1989) studied on exposure to silica dust in the Danish stone industry. In this study exposure to silica dust among Danish stone workers was assessed from data collected in 1948-1980. After 1970, the exposure level was given in milligrams per cubic meter and an exposure index (concentration of respirable dust divided by the threshold limit value for quartz) was calculated. The median index for the road and building material industry was higher for Bornholm than for other parts of Denmark. The content of crystalline silica in both the general environment and the personal samples was determined by X-ray diffraction. Measurements of respirable dust were carried out in nine stonecutting companies and in 11 road and building material companies. In the results of comparison of exposure levels associated with the use of granite and flint, cristoballite was detected in eight measurements from two road material industries and ranged between 2 and 11% of the respirable dust. Tridymite was not present in any of the measurement from Danish stone industry. In the comparison of exposure levels in the road material industry and in the stonecutting industry, the median of the respirable dust concentration was 125 particles/cm³ in the road material industry and 205 particles/cm³ in the stone cutting industry from the measurement of general environment. In the subset of personal sampling data, the respirable dust

concentration was higher in the road material industry than in the stone cutting industry. In comparison of exposure levels in different work processes, in the general environment crushing appeared to be the dustiest work operation. In the personal air sampling data the respirable dust concentration associated with crushing was approximately twice as high as the concentration associated with the other work operation, for which the median dust concentration was low $1.0\text{mg}/\text{m}^3$.

Saran, A.B. & Sandhwar, A.N. (1990) studies on problems of women workers in unorganised sectors, Brick Kilns, Quarries and Mines of Bihar and West Bengal. The study is based on the sample selected from 12 Brick Kilns and 29 quarries and Mines of Bihar. In West Bengal, 18 brick kilns and 35 quarries and Mines have been taken for the studies. 160 women workers from the brick kilns and 260 women workers from workers from the quarries and mines of Bihar have been studied. The data for this study were collected mainly through individual and group interviews. It elaborate the study of the problems of women working in the unorganise sector of Bihar and West Bengal is an attempt to understand as to how the decades of legal, economic and social welfare planning could not improve the conditions of this sections in Indian society. They also discussed in the socio-economic characteristics of the women workers, recruitment process prevailing in these sectors, working conditions and facilities provided, wage rate, payment of wages, contribution of these sectors to their economy, sexual exploitation and to highlight various problems of these workers in legal and constitutional perspective.

Sakakibara, H., Suzuki, H., Momoi, Y., and Yamada, S. (1993) studied on elbow joint disorders in relation to vibration exposure and age in stone quarry workers in Japan. Elbow joint disorders were studied in relation to vibration exposure and age74 male in 74 male stone quarry workers who operated mainly chipping hammer

and sometimes rick drills. In the analysis of all the subjects, including those aged 60 years age was significantly related to the range of motion in extension and to radiograph changes in both elbows. Among subjects under the age of 60 years duration of vibratory tool operation showed a significant dose effect relationship to the range of flexion and radiographic changes in the right elbow. The present result suggest that the operation of chipping hammers and rock drills contribute to elbow joint disorder or osteoarthritis, even when the effect of age is taken into account.

Gotkhare, V.B., Madhure, B.R and Zodpey, S.P. (1995) conducted a study on involvement of lung and lung function test in stone quarry workers in Pachgaon area of 26 kms east of Nagpur,80 workers were selected for conducting the study. A cross-sectional study was carried out to study the respiratory morbidity and lung function involvement in this group. The study found that 32.5% prevalence of respiratory morbidity in stone quarry workers, lung function impairment was significantly associated with age, duration of dust exposure, smoking status and presence of chronic obstructive airways on the basis of radiological appearance, no cases of silicosis was detected. It also points out that even low dust level exposure for longer duration can create in lung function involvement.

Athreya, V.B., Sujata, R. (1997) studied on organising the poor rural women: the experience of the quarry workers of Pudukkottai in Tamil Nadu. The vesting of quarries with groups of women, and the reasonably successful operation of quarries by these groups has had at least importance three important progressive dimensions. First, it improves the livelihood of the poorest people, the class of landless labourers in a semi arid tract. Secondly, it benefited Scheduled Caste household, victims of centuries of caste oppression. Thirdly, it empowered women in a male- dominated

patriarchal social milieu. Thus, the quarry initiative had tremendous significant in class, caste, gender terms.

From the report of Sawant, G.C. (1998) the quarry workers reduce hills to rubble but their own lives are in a shambles. Without potable water to drink, food to eat or a proper house to live in, migrate labourers working at stone quarries had been let down by contractors who has promised them the earth. Their cause is heard in the Parliament, Supreme Court and the United Nation. However it is snowed under aspersion of “financial irregularities”. The workers are now backing to square one. They have been used as pawns in this game of one-upmanship; the labourers withhold their identity while working in stone quarries amidst danger and lack of basic amenities. They get only their minimum wages on paper. They are still being treated as bonded labour by small contractors. The labourers are scared to be identified with their dissent. With unfair means, they collect money on their behalf which is never spent on their behalf. The laborers declare that several foreigners have come to meet the laborers to see their working conditions. These foreigners/visitors usually sympathized with the laborers and promise them aid, but the aid never reaches them, and their condition is still the same. The workers are naturally and may even admit at one time that there are partly to be blamed. They are angered and frustrated by the failed promises. These workers may even evoke hostility between themselves because of their frustration. Therefore, the problem of these workers piles up blocking the way for any development.

Marchetti, E. et.al (2000) studied on natural radioactivity exposure: risk assessment of workers in Italian quarries. The study was conducted on 20 quarries located in different Italian district, to estimate the radiation dose received by the employees due to the exposure to radon, radon progeny and gamma emission of

natural radionuclides. The measurements were performed both where materials are extracted and in the processing laboratories. A measurement protocol has been designed and the investigated quarries have been monitored by means of personal and environmental dosimeters. The study reveals that the processing operations of quarried materials are not directly connected to the risks associated to radon exposure.

Musa, R., Naing, L., Ahmad, Z. & Nordin, R. (2002) studied on respiratory symptoms and pulmonary function among male quarry workers in Kelantan, Malaysia. It reveals that the study population consisted of all workers employed at the Gov't owned quarry. (70 males & 2 females but females are not included in analysis because of non smoker). The study was conducted between April & May 1998. The subjects were interviewed by using a standard questionnaire which was based on the British Medical Research Council () questionnaire on respiratory symptoms. The relationship between dust exposure and lung function were investigated in a cross sectional study and also included spirometric test in the investigation. Respiratory symptoms commonly reported were shortness of breath (42.9 %), chest tightness (37.1%), morning phlegm (20.0%) and morning cough (10.8%). Respiratory symptoms were prevalence greater in current smokers. Age and duration of employment also had significant relationship with chest tightness. Both FEV and FVC of these workers were significantly reduced when compared to healthy population. Smoking status, age, and duration of employment were also associated with reduced pulmonary function ($p < 0.01$).

From the Report of Sharma, R. (2000) in Srirangapatna, the five Dalits workers and other twenty three workers in Kadathanala near Pandavapura in Karnataka's, Mandya District, will never be the same again. They lived in fear of the quarry owner and his men. Although unshackled from the 15 kg's iron chain that had

kept them fettered for 2 years, the workers were waiting for their new found freedom. One of the Dalit worker said that he had been waiting for the government to provide a job, but the only work he could manage was to crush stones. Five Dalits workers were rescued and released on June 22 by 60-odds activists of the Karnataka Rajya Raitha Sangha (KRRS). They had been subjected to such inhuman treatment (the clamps of the fetters had been welded in place) for allegedly failing to repay debt they owed their employer. Some of the workers in the other area which is 35 km from Mysore spent almost ten years crushing stones from dawn to dusk for a remuneration of Rs.55/-. The license for the quarry has expired in 1997 and 2 person from a welding shop in Mysore, were given in judicial custody. During this hard time, the workers would borrow money from the owners of the quarry, striving to repay their loans, but the outstanding sums never diminished. Though they were liable to leave the quarry after they repay their loans, the owner of the quarry would accuse the workers of leaving without returning their debts. Such kind of incidents usually happened and at one time, a quarry owner allegedly thrashed one of his workers, took him to Mysore and chained him. Similar treatment was meted out to the other workers. According to them, they were locked in a dingy shed near the quarry by night and let out to work or to walk down to their huts, situated 100 meters away, to eat a meal. They were made to work 6 days a week, from 7 am until dusk with the fetters on. They were fined Rs.100 if they turned up for work even a few minutes late. This amount was added to their ever swelling loan. Added to this, if they did not crush the stones to a near-perfect 4 inches x 3 inch size, they would not be paid for any part of the load. This punishment was, of course, given to the quarry workers too. The chains had prevented them even from wearing their underpants/underwear. They were not allowed to stay with their families. They were over controlled and harassed because of their wish to

leave the quarry. Other workers too were treated mercilessly, and the punishment was always swift. The quarry owner's men would gather information about labourer who ran away and would wait for them to appear at any of the 50 odd quarries in the area. They would then be bundled into a jeep, taken back to the quarry and beaten. Tales of torture of worker after hanging them upside down from trees; humiliation of women workers and clobbering of children found not working have also surfaced. It is alleged that children were made to work the whole day for Rs. 15. The workers were not allowed to speak to outsiders, not even to the drivers of Lorries that came to collect the stones. Nobody realized what was happening in the quarry. (Frontline Volume 17 – Issue 16, August 5 – 18, 2000)

According to the Report of the Peoples Democracy Weekly Magazine (2002) the Haryana State CITU has complained to National Human Rights Commission against the inhuman atrocities being perpetrated by the police and the district administration on the stone quarry workers and villagers in the Khanak-Tosham area of Bhiwani district in Haryana. In a letter to a Chairman of NHRC on Feb 25, the state CITU president Solanki listed various instances of such atrocities along with a backgrounder not on the entire issue. He sought the intervention on the Commission in this matter. The quarry workers and villagers have been opposing the illegal extortions regime being perpetrated by the armed musclemen of the contractors with active support of the local administration. The opposition of the workers and the villagers and their family members. Tosham town and its surrounding rural villages were virtually turned into a police cantonment with heavy police contingents deployed to foil the Satyagraha of the workers union on Feb 1. On the next day, a peaceful lathi-charge leaving hundreds of workers injured. Section 144 was clamped in these areas and continues till today. From the day onwards ruthless repression was

unleashed causing suffering to the people. Every house was ransacked, belongings were destroyed, public transport was stopped, water and power supply withheld, schools and colleges were closed. All kinds of meetings were banned and office of the workers union was forcibly taken over by contractor's henchmen with the support of police, several hundred, including women and children were indiscriminately arrested, beaten up and kept in illegal custody as part of a strategy to create a terror atmosphere by the police force. The activities in the entire stone mining areas of the district –the only source of living for ten thousand families-came to a grinding halt owing to brutalities and desperate lawlessness being indulged by the custodian of law and order in the state at the behest of the contractors. (Peoples Democracy Vol. I, No 09 March 03, 2002, weekly organ of the communist party of India Marxist)

Dogra, B. (2003), highlighted and reported about the stone quarry worker and miners as a neglected group in the society. There is a new policy need for the minor minerals. He points out that the spirit in which it is implemented under which the exploitation of minor minerals is handed over entirely to cooperatives of rural poor. All earnings should be distributed among the workers and the contractor system should be entirely eliminated from minor minerals and stone crushers. There is a denial of minimum wages. Deductions are also made for equipment in some cases. The rate of accident is high in several places. Generally such cases are hush up and compensation from the payment is not given or very inadequate compensation is given. The incidence of child labour and women labour is high at several places.

Palvianien, J. & Leskinen, H. (2004) studied on user research challenges in harsh environments: A case study in rock crushing industry in Finland. The target of this study is the cone crusher and their users focussing on the needs of the operators. Contextual Design (CD), a well specified user centred design method was also

applied. It was considered necessary because they have various levels of education to operate the task. There is a need for earplugs because of high noise levels. The noise and dust in the crushing process causes irregular vibration.

Ulm, K., Gerein, P., Eigenthaler, J., Schmidt, S., & Ehnes, H. (2004) studied on silica, silicosis and lung cancer: results from the cohort study in the stone quarry industry in Germany. They examined that workers compensated for silicosis outside the mining industry are at an increased risk of developing lung cancer. In the meta-analysis, no data from Germany are involved. Four hundred and forty workers were enrolled in the study. A cohort study among workers compensated for silicosis between 1988 and 2000 from the stone and quarry industry has been initiated. The cohort was followed up until the end of 2001 and all workers' descriptions were assessed. During the follow-up, 144 workers died, compared with 74.35 expected cases based on the mortality rates of the general population from Germany, leading to a standard mortality ratio (SMR) of 1.94 (95% CI 1.63-2.28). Lung cancer was the cause of death in 16 cases (SMR 2.40; 95% CI 1.37-3.90). All workers had a peak exposure above 0.15 mg/m^3 , the current threshold value. The cumulative exposure was above 2 mg/m^3 years and the average exposure was 0.10 mg/m^3 or larger. No association between the exposure and the risk of developing lung cancer could be observed. Workers from the stone and quarry industry compensated for silicosis are at an increased risk of developing lung cancer. In order to reduce that risk, the exposure has to be lowered, with a peak exposure below 0.15 mg/m^3 and an average exposure below 0.10 mg/m^3 .

According to State Government figures, permanent closure of Rajasthan's mines and quarries will render 700,000 people jobless. Facing unemployment and the resultant poverty, thousands of quarry workers in Rajasthan protest against recent Supreme Court judgments that order the closure of 600 stone quarries in the state on

ecological and health grounds. The SC ruled that mining damages the desert region's mountains, besides seriously endangering the health of workers involved in quarrying the world famous Rajasthan marble. "Our business is closing down. After the court orders, the work will become less," says Narayan Ram, a quarry worker. Not only will the miners lose their jobs, those involved in other aspects of the business will also be affected. "Rickshaw-pullers, cart-pullers and others concerned with (the mines) will become unemployed. There are about 400,000 people who will be rendered jobless," he adds. The state government itself admits that permanent closure of its mines and quarries would amount to 700,000 job losses and loss of revenue for the state. The move has fuelled anger amongst locals already plagued by massive unemployment, made worse by recurring drought in the region. Prahlad Adhikari, a labor union leader, has appealed to workers to temporarily back down from their protest. According to him, talks are on to revive the mining industry, after addressing the Supreme Court's concerns. "The concerned people will sit and talk it over. The problem will be solved soon and the labourers will get back their source of income," he says. However, social activists contend that the impoverished and uneducated laborers are ignorant about the serious health hazards posed by constant exposure to fine marble dust. "The villagers are not aware of the consequences of (working in) these quarries that do not comply with the pollution rules. Had they been aware, they would not have protested," says Tribhuvan Rawat, regional officer of the state pollution control board.

Environmentalists allege that mine-owners pay little heed to pollution control and health and safety standards as lax enforcement mechanisms make it easy for them to bypass federal laws. They say many workers and their families, who live in shanties close to the mines, have developed serious respiratory disorders and it is best

to shut the mines down permanently. This apex court order will affect hundreds of small-scale industries not only in Rajasthan but also in Haryana and Punjab, which depend on stones and minerals from the desert. Rajasthan has a range of mineral deposits including zinc, lead, cadmium, marble and other precious and semi-precious stones. (Archive – Info change Livelihood Source: ANI May 31, 2004)

Hinde, A., & Edgar, M. (2005) conducted a study on death on a strange isle: the mortality of the stone workers of Purbeck in the nineteenth century. The study was analyses the mortality of a group of rural workers in an extractive industry. The analysis uses database created by nominal record linkage of the census enumerator's books and the Church of England baptism. All the relevant statistics of females, males, life and birth etc. are taken for the study. The stone quarries have a heavier mortality levels than the rest of the population of Purberk. Closer inspection reveals that their high mortality was confined to males, and was almost entirely due to especially high mortality among boys aged less than five years. In contrast to the experience of coal and other metal miners, adult male mortality among stone workers was no higher than that among the general population. The excess mortality among boys in Purbeck from diseases of the lungs might have been responsible.

Mathur, M.L. (2005) studied on pattern and predictors of mortality in sandstone quarry workers in Jodhpur. The study of silicosis was conducted in 1992-1994, which included a sample of 458 sandstone quarry workers. Houses of all workers were visited and the workers status was recorded. Standardized mortality ratio (for all cause of death) was calculated. Cox proportional hazard model was applied to study the association of different variables with mortality. The study shows that sandstone quarry workers died at a younger age. In absence of certified causes of death, these predictors suggest that silicosis, COPD, lung cancer, and tuberculosis

might be underlying causes of higher mortality. This study underlines the need for adopting measures among workers for the prevention from exposure to fine dust.

Madhavan, P. & Raj, S. conducted a study on Budhpura 'Ground Zero' sandstone quarrying in India (2005). The authors have spoken with workers, quarry owners, as well as with the government officials with the quarrying industry. The data was collected by field research are complemented by information derived from the desk study. The study highlighted that India is a leading exporter of natural stones after Italy and China. The quarry workers obtain a leased licence from the government for duration of 20 years approximately. The power of Panchayati Samiti lies entirely in the hands of the dominant minority group. Budhpura village depend on agriculture, nowadays still nearly 70% of the population is involved in this sector and the land use for quarrying is increasing. The economy is expanding and the corruption increases as well. Technological upgrading is taking place, to break down the hardest of stones. Labourers are exploited in a number of ways; job insecurity makes them the hardest working conditions. Workers are paid according to the type of work and there is no safety equipments is provided to them. They cannot claim or even compensate the time of sickness, accidents and deaths. Labourers are forced to take advanced money for the cessation period (July-September) and they are automatically bonded in the work. Alcoholism is also another way of increasing bonded labour because they supplied in a subsidised rate. Children are mostly engage in quarrying due lack of schooling facilities in that area and they are habituated in playing around the quarry sites especially for the migrant people and they are not integrating to the population. There is no trade union or organisations in the area because of vast majority of the population are migrants. The wages pattern is very low and there is no marked holiday system in the village. The health conditions is very poor such as malaria,

silicosis etc. are prevalence, the dump and waste disposal easily get polluted the environment biodiversity and scarcity of drinking water for human and livestock. If a quarry is no longer economically profitable, the owner abandons the quarry like without any reclamation or restoration carried out. There is no specific legislation in India, which covers the requirements of environmental protection during the closure of time.

Yadav, S.P., Mathur, M.L., and Dixit, A.K. (2006) conducted a study on knowledge and attitude towards tuberculosis among sandstone quarry workers in different parts of Rajasthan, Jodhpur. Nineteen sandstone quarry workers with a sample of 376 quarry workers were interviewed in the study during October to December 2002. The study reveals that extensive health education directed towards bringing a change in attitudes among sandstone quarry workers is needed to create awareness and remove myths about tuberculosis in such group of people in the community. The stigma associated with the disease often leads to seeking delayed treatment and poor adherence to therapy.

Singh, K., Chowdhury, G.R., and Purohit, G. (2006) studied on an assessment of impact of high particulate concentration on peak expiratory flow rate of lungs of sandstone quarry workers in Jodhpur, Rajasthan. The study was conducted on a sample of 319 quarry workers. The workers were engaged in different type of activities such as drilling, loading and dressing. The different working conditions had different concentrations of RSPM, leading to different exposure levels in workers. It reveals that exposure duration and exposure concentrations were the main factors responsible for damage to the respiratory tracts of the workers. The particles were deposited at various areas of the respiratory system and reduced the peak flow rate. It

also revealed that most of the workers suffered from silicosis if the exposure duration was more than 20 years.

Aliyu, A.A., and Shehu, A.U. (2006) studied a total of seventy four-workers employed at the two quarry industries in Kaduna State of Nigeria. The study was conducted from May 2004-September 2004. In each of the sites they used structured, closed ended, interviewer administered through questionnaires were used to collect data on socio-demographic characteristics, occupational profile, occupational health and safety measures, occupational hazards and PEAK flow measurement using MINI-WRIGHT peak flow meter (Clement Clark International Ltd. England). There were no child workers in the quarry. It reveals that stone quarrying is a male dominated occupation. The work profile showed that loading stones (31.1%), breaking stones (31.1%) and stone grinding (14.9%), others (17 %) respectively exposed the workers to the highest risks of occupational hazards. Their age ranged from 15-50 yrs. Majority of the workers were in the age group of 25-29 yrs (37.8%). Most of the workers had injuries/cuts from stones 68.9%, respiratory symptoms (nasal discharge 52.3%), and eye irritation 14.9 %. A worker had traumatic amputation of Right thumb. PEF values of most (55.5%) of the worker were abnormal. Most workers are at serious risk of ill-health and injuries/accidents because of the conditions they encounter in their workplaces. All the quarry sites has no prevention/safety measures for the workforce; nor recreational facilities. At the end of the interview, all the 2 sites were physically inspected to ascertain the occupational hazards that the workers were exposed, and the available protective devices/ safety measures against these hazards.

Chattopadhyay, B.P., Gangopadhyay, P.K., Bandopadhyay, T.S., and Alam, A. (2006) studied on comparison of Pulmonary function Test Abnormalities between stone crushing dust exposed and non-exposed Agricultural workers in West

Bengal. 272 stone crushing workers and 123 non exposed workers were studied. The non-exposed group was selected from people living more than 20 km away from the study site without any exposure to stone dust and with more or less the same socio-economic status as that of the exposed groups using stratified sampling method; tested and validated a standard questionnaire under field conditions. The workers were analysed in terms of occupational and personal histories, radiological findings, and pulmonary function test (PFT) results including slow vital capacity (SVC), forced vital capacity (FVC) and peak expiratory flow rate (PEFR). Different lung volumes were analysed with regard to sex, smoking habit, work status, age and work duration. Contrary to their expectations, the incidences of suspected (2.94%) and definite (1.84%) pneumoconiosis were very low and the result of some PFT such as those for FVC and FEV1%, in the exposed group were better than those in the non-exposed group, although a gradual decline in performance in PFT was observed with age and work duration. There was a higher prevalence of restrictive impairment among the exposed group and a higher prevalence of obstructive impairment in the non-exposed group. Unexpected results came because of possible reasons of undetectable concentrations of free silica in the stone dust work environment. Climate in the work environment non-exposed agricultural workers that could cause pulmonary impairment.

Dutt, K.L. (2006) conducted a study on gender livelihoods in small mines and quarries in India: Living on the edge. The study was collecting data from the field and intensive library research, report writing and presentation. The study points out that livelihood in small mines and quarries in India are a repository of concentrated poverty and extreme forms of exploitation of the workers, both men and women. Employment is done through contractor or thekadar. Migrant people are very ignored,

and much of the work remains manual the working and living conditions is very poor. The casual labourers are recruited on a short term basis and are not covered by labour legislation unlike permanent workers. Debt bondage very familiar in this area so that the advance money was paid forcibly to the quarry workers and they are extremely vulnerable. Children are working in the quarries and mines, which is prohibited by the law. There is a need of preferable policy and implications for the workers to protect the rights and safeguard of the workers to reduce their problems.

Dutt, K.L. (2006) studied on livelihood issues and concerns of women and men in small mines and quarries of south Asia. The study high lightened on women performed a large number of workers in mine and quarries and do most of the work. There is a low level of technology and simple tools were used. A common feature in labour organisation in small mines and quarries is sub-contracting. Women are never recruited as long term workers. Natural disaster or environmental hazards also encourage a large number of displaced rural landless to join the mines and quarries. There is extreme exploitation of men and women. Due to piece rate women and men have differential wages because women were lifting boxes very slower. The working and living conditions are very miserable and bonded labour is exist in the area.

Elavarasi, R. (2006) studied Socio-Economic and Health Conditions of Women Quarry Workers at Perambalur District, Tamil Nadu. She reported that the female quarry workers engaged in this work at early age due to economic problem. Female child labour is also prevalent; the quarry women workers are engaged in stone cutting and crushing unit. Child marriage is prevalent among the community. More than half of the respondents earn monthly income of Rs. 1401-1700, nearly one fourth of the respondents earn monthly income of Rs. (1000-1400). Half of the respondents monthly income is Rs. 5001 and above. In every family, husband, wife and children

are employed in the quarry and the quarry is family employment. They live above the poverty line and, work in various places; hence they are found to be mobile. They live in their own small hut constructed by them in Purampokku land (near the quarry). They do not have their own land. Some houses are constructed and built by the government under rehabilitated bonded labor project. They do not have toilet and drainage facility, and are living under in sanitary and unhealthy conditions. The vast majority of the respondents have meagre electric facility, one fan and one light only. Half of the respondents have debts below Rs. 5000, nearly one fourth of the respondents have debts in 5001-10000. They need awareness on budgeting. They do not have habit of savings.

Most of the quarry workers borrow in advance from the owner of commission, agent or relative; otherwise they may not be able to go for the work. The working conditions depend upon the amount of advance they receive. They have to work for a certain period of six months or one year in the quarry and repay the advance monthly terms. Basic facility, drinking water facility is insufficient and they have to go long distances to fetch the water. They work 10 hours a day with low wages facing lots of strain, stress and body pain, diseases and also minor accidents. Amongst the female quarry workers, becomes menstrual period irregular due to lack of nutrition and they rarely consult doctor for their own purpose. One fourth of the respondents have sickness during menstruation period, along with complains of body pain, leg pain and stomach pain causing absence from work during this period. It is to be noted, however, that except for a few of the respondents, there is no evidence of sexual harassment by the employer. The workers are not aware of family planning methods. Education brings about a higher status for women in the society. Most of the workers feel that their social life is affected due to their illiteracy. Vast majority of the workers

are not aware of gov't schemes such as minimum wages, etc, while small proportion of the workers know about the gov't programmed through NGO's working for the quarry (R.Elavarasi, M.Phil, thesis submitted to the Madras University 2006).

Stone Quarry Worker Rehabilitation, Rajasthan : Gramin Vigyan Vikas Samity (GVVS), Jodhpur, Rajasthan sought PPI's support for a unique scheme to assist bonded quarry workers in gaining freedom from lifelong debts to quarry owners. The workers were given loans on easy terms to purchase their tools so that they could mine their own quarries. The project also led to pressure on the government to implement and enforce safety regulations. Officials and workers were educated on matters concerning workers' rights and health issues. (India together, INDIA Thu. 08 Nov. 2007).

From the report of Tom Heap BBC News Bangalore, Real Cost of India's Cheap Stone, the global building boon and the fashion for smart interior has created huge demand for natural stone: In the past few years this has been fed to by a booming export trade from countries where rock is plentiful and labour is cheap. India is among the most rapidly growing sources of granite, state & sandstone. But now questions are being asked about the cost to the environment and the human toll for workers. Highly polished kitchen worktops and gleaming stone cladding in the washroom were once the preserve of the very rich, but now, thanks to the exploitation of new sources, the price is plummeting. In the U.K., natural stone has been vigorously endorsed on gardening and interior design television programmed, the Resulting appetite increasing granite imports from India to Britain eight-fold in the past five years.

Investigation of the poor safety into how the stone was being produced focused on Bangalore in the Southern Indian State of Karnataka. The first visited was

the north of the city near Mount Shivaganga . The workers there were completely without protection for their hands, feet or eyes, and spend their days splitting blocks with hammer and chisel. Despite the tough work, low pay and health and safety standards illegal in the West, there were little sense of misery or desperation. There pay is around (\$ 3) a day. Most were once farmers who had been driven from their land by drought. In the quarry, chipping away the stones was a man who had lost one hand in a quarry blasting accident who still works knocking off the rough edges. There was more evidence of management there and the inquiries about pay and conditions resulted in few answers. In the South of Bangalore in a granite quarry old women and children were breaking rocks; all were nestled under a windbreak in a dusty bowl. It emerged that the father had taken a loan at the beginning of the year from the quarry's owner and had to work until it was paid off. This is what is known as bonded labor and leaves the family tied to the job. Despite the harsh condition, the family showed great dignity and resilience. They did not like living in a quarry but they had to eat. Leo Saldhana of the Local Environment Support Group said that quarry owners were taking advantage of people's desperation by employing children and paying low wages and also warned that many new holes were being illegally dug in forest parks. They saw one mine amid the jungle where giants blocks marked for export were a waiting to leave. Mr. Saldhana also said that people have found it easy to just walk into the forest and start mining. It really means that the government had failed in regulating...and senior bureaucrats have colluded to just look the other way when these had been happening for their last five of six years. They also tried to get a response to those accusations of corruption from the government but a mixture of refusal and confusion thwarted the plans. Quarry work cannot be done without child labour and environmental destruction. But dealers who source from across the

country; so, consumer pressure will not eliminate the abuses but greater awareness encourages the business to clean up its act (International Version by Tom Heap BBC News Bangalore 2007).

Mayton, A.G., Jobes, C.C., Miller, R.E. (2007) studied on comparison of whole body vibration exposure on older and newer haulage trucks at an aggregate stone quarry operation in U.S Eastern mid-Atlantic crushed stone operation. The data was collected on four older and two newer haulage trucks by National Institute for Occupational Safety and Health (NIOSH) researchers. It points out that exposure to whole body vibration (WBV) and the postural requirements of the job have been as important risk factors in the development of musculoskeletal disorders of the back among workers exposed to a vibratory environment. The results of overall WBV was less, the newer trucks had a somewhat higher number of jarring incidents than the older trucks as it evidenced by greater variability in and higher mean VDV_z value.

Waite, L. (2007) how is labouring enabled through the body? A case study of manual workers in rural India. The fieldwork for the research took place in 2000-2001 and consisted of an in-depth exploration of 22 case study households who seasonally migrate to the brick kiln and quarry work in Sonav. Qualitative technique (observation and interviews) took place in the worksite, in family huts and in and around the village. He has been concerned to deepen our understanding of how seemingly vulnerable and malnourished bodies are enabled to labour. Their working lives are characterised by long arduous days in spaces of intense physicality. The study explores a number of features including work experiences, food intakes, habitual learning, psychological realms and cultural beliefs and practices. The role of food intakes in bodily maintenance is found to be considerable. Hard work can increase food intakes due to the desirability of replacing expended energy with calorie intake

but arduous labour can also repress appetite due to stress and acquired illness. The ability to work is critically affected by habitual learning. This term encapsulates the bodys learnt and incarnated skills through prolonged exposure to working activities.

Singh, S.K., Chowdhary, G.R., Chhangani, V.D., and Purohit, G. (2007) studied on quantification of reduction in forced vital capacity of sand stone quarry workers in Jodhpur. The study was conducted on 455 males quarry workers and assessed the reduction in forced vital capacity of lungs of sand stone quarry workers exposed to high respirable suspended particulate concentration. The sandstone quarry workers are engaged in different type of activities like drilling, loading, and dressing. The results indicated that as the exposure duration increases the forced vital capacity of lungs decreases and the same times if exposure duration is same but the concentration of particulate matter increases then again the forced vital capacity of lungs decreases. Therefore the decrease in the forced vital capacity of lungs depends upon the exposure duration and particulate concentration. It also revealed that most of the workers are suffering from silicosis if the exposure duration is more than 15 years.

Joshi, M. (2007) studies on Social assessment on rural labour in small scale and mining: A case study from Uttarakhand. She highlighted about the livelihood of the women labourers. Housing, non accessibility of basic minimum services, increase pressure on reserve forests area. She finds that most women and child labourers are working in the mines and informal or unorganised sectors where companies and contractors easily escaped moitorig have poor checks on them in all the sphers whether in implementing of labour rules and regulations, mine safety rules, environment protection or waste management of all which directly impact women and children working in the mines. Problems such as poor sanitation, drinking water and high incidence of malaria, typhoid, malnutrition etc. are found in Gaula. Women

labourer suffered include respiratory problems, arthritis, and reproductive systems too.

Dutt, K.L. (2008) conducted a study on Digging to survive: women's livelihoods in South Asia's small mines and quarries. The study highlighted according to 2001 census women comprise around 14 percent of all full fledge workers in India in the mining and quarrying sector. It is common for shelters to be no more than small and low temporary huts with plastic sheets for roofing. There is usually no clean and safe accessible drinking water supply, no electricity, no health services and no educational facilities. A common feature of labour organisation in small mines and quarries is sub-contracting, piece rated, daily wages. Most quarries either shut down or reduce production during the monsoon months. It was noticeable that women do most of the work, they help digging pits, panning, washing and selection using mercury. They also do the marketing as they seem to be preferred by buyers. They face direct and indirect means of oppression including physical exploitation and its effects the food insecurity to their children. There exist numerous problems including a high degree of ill-health such as respiratory problems, silicosis, tuberculosis, arthritis, poor vision and deafness to reproductive tract problems and environmental risks. They toil under long hours of work and the average life span of the quarry worker is not more than 50 years. Bondage labour is practice in the quarry which debtors enter into an agreement. They have limited opportunities in other non-farm activities due to their low level of skills. There is immediate need to eliminate gender bias and harassment and accept women's multiple and productive roles in the economy.

SWEDWATCH, SOMO, IHLO & Finn Watch (2008) conducted a study on improving working conditions at Chinese stone companies. The study highlighted that

natural stone is a major industry in China. The research identified serious problems in the area of health and safety. The most uncommon injuries are cuts and bruises to the hands as well as crushed fingers, among those moving heavy slabs and stones. The production workers are paid on a piece rate basis whereas auxiliary workers, such as guards and packers, usually earn a fixed daily wage. A few companies provide written employment contracts, but others do not. Overtime is also a regular feature at many companies and therefore average working weeks could range between 56 and 77 hours. There have been no signs of discrimination in employment of forced labour beyond compulsory. There is a need for safety training, legal training, and setting up workers complaint system and health and safety measures and health records should be kept properly. Suppliers should provide adequate protection mask to prevent from silicosis those who engaged in different type of polluted activities and hearing protection in the noisy working place. The Chinese suppliers should ask relevant Chinese governmental institutions such as Environmental Protection and various Labour Dept. to provide them with detailed documentation about the inspections conducted at the workplaces. Supplier should consider increasing wages at the time of overwork and quality meals for the workers. Employment contract should clearly specify working days and days of rest. To facilitate the establishment of worker's committees or local trade union branches, which can engage in collective bargaining with the management?

Tribhuwan, R.D., & Patil, J. (2009) studies on stone quarry workers social insecurity and developmental issues. The study was conducted on Moshi and Yewalewadi in Haveli blocks of Pune. Interview schedule was designed to gather information from the respondents among 150 quarry workers through primary and secondary data. A pilot study was conducted in order to develop questions in the

schedule. Case studies of some patients, observation method and photographs were also used to validate the data. Qualitative and quantitative both methods were employed to analyse the data. The study found the fact that poverty, illiteracy and lack of awareness about health leads to undernourishment among the stone quarry worker women. High incidences of respiratory disorder among stone quarry workers are due to dust particles released by stone-crushers. Incidence of digestive disorders among stone-quarry workers due to unavailability of pure, safe and clean drinking water.

Duraising, V. (2009) studies on the conditions of quarry workers at Vagaikulam area in Thoothukudai District. He selected 50 male stone quarry workers. Survey method is used in his studies. The study found that majority of the workers belongs to the age group of 20-40 years. 48 percent of the quarry workers have been working below 10 years and maximum of 52 percent. Majority of the workers working for more than eight hours per day. Overtime shift work is very common. Seven workers had discontinued their job because of their sickness. All the workers were suffering from chronic cough and heart pain disease. (40%) of the annual income is between Rs. 15,000-20,000/- Their main problem is low wages, next is accident, disease problem, no job security and hazard work are various problems met by the quarry workers.

Ogbogu, O.C., Ohakwe, J., and Foltescu, V. (2009) conducted a study on occurrence of respiratory and skin problems among manual stone-quarrying workers in Nigeria. A sample size of 202 quarry workers and 220 non quarry workers were selected and administered through questionnaire. The elemental analysis and silica content of parent rock material and dust sample were carried out at quarry sites. Exposure to these metals and silica are known to cause pneumoconiosis. The test proportion shows that there is an association between dust inhalation and the

occurrence of respiratory diseases symptoms and skin dermatoses. In Nigeria where manual stone quarrying is a means of earning a living, especially for people in rural areas. There is a need for public health enlightenment of the workers in the manual stone quarrying communities in Nigeria.

Sunitha, N., Nandini, N., & Naik, D.P. (2010), studies on economic environment and health status of stone quarry workers. They defines that the study area lies within the Bangalore Metropolitan region and proposed to the developed as satellite towns along Bangalore Mysore National highway. To study the population growth, population projection is made using the census data 1971-81-91 and 2001. To project the population they are using arithmetical method, Geometrical method and Incremental methods. There is a positive growth of population with each successive decade and the density/Km²ha increased from 216(1971) to 326 persons/Km² (1991) and the existing density is 375 persons/km². The socio-economic survey was conducted in 12 villages located at various distances and in different directions. The survey was carried out randomly by various parameters under socio-economic components like sex, population, literacy, occupation, religion etc. The survey was conducted through questionnaires, while surveying the questions were asked to 194 quarrying workers and 116 non- quarry workers about their age, sex, health condition, income level, medical facilities etc. The male population accounts for 52.09% and female 47.90%. SC population is around 32% and ST population around 1.6%. The male population (77.83%) has dominated in the quarries and crushers over the female population (22.16%). More than 79.89% of the quarry workers are immigrants and the local population in quarrying involved 20.10%. The average age of the workers is around 32-36 years. The literacy status of the quarry workers and non-quarry workers are 65.46% and 53.44% irrespectively. There is poor in college education. People

working as supervisors, transport system and heavy machineries are literate. Most of the workers are permanently working the less are on temporary basis. The average income is 1500/month. Common diseases among them are headache, nausea, abdominal symptoms, body pains, respiratory diseases, skin allergies, deafness, eye irritation, cardiac disease and lung cancer. These diseases are mainly due to dust and noise pollution.

Talib, M. (2010) studies on writing labour stone quarry workers in Delhi on 1987. The workers selected for the study is situated in the village of Pul Pehlad located on the southern outskirts of Delhi nearly 30 kms. The workers settlement is a dusty and desolate place, largely inhabited by migrant labourers who work for living in the mines and are sheltered in a makeshift assortment of hutments. The workers consciousness was marked by distinctions of caste, region and linguistic tradition that acted as a centrifuge dispersing workers into individuals wholly abandoned to the pressure of their marginalised situations. A quarry worker discarded the indispensability for learning in the school on grounds that the ancestors did not attend school and yet were not entirely illiterate. Workers constructed their dwellings out of the material detritus of the wider society's organized economy. The workers voices are generally limited to the sphere of work, particularly its conditions and the employer-employee contract. Outside the workers sphere of wage work and the formal organisations representing their issues, workers critical consciousness, its articulations, and their practical engagements are routinely dispersed an largely unaccounted. They are lost both to the memory of the workers and to the gaze of the observer.

Yadav, S.P., Anand, P.K., and Singh, H. (2011) studied on awareness and practices about silicosis among the sandstone quarry workers in desert ecology of

Jodhpur, Rajasthan, and India. The study was conducted in 49 sandstone quarries during 2007-2008 on 376 sandstone quarry workers following random sampling method. Almost all the workers were not using any preventive measures for the silica inhalations through respiration due to lack of awareness about silicosis. Continuous effort is needed to make them aware about causation, sign and symptoms, preventive measures and management of diseases to improve the healthy life span of the workers because they are being low socio-economic group they are neglected in several ways by the society and governments.

Onder, M., Onder, S., Mutlu, A. (2012) studied on determination of noise induced hearing loss in mining and applications of hierarchical log linear modelling in Turkey. A quarry and stone crushing-plant was selected to generate site-specific data and the hearing test center applied hearing test to the 23 workers. According to the results part of the workers had a hearing loss. The hierarchical log linear analysis method was implemented to categorised data, thus the probabilities might affect NIHL was investigated. The most risky occupation group was the drivers, and additionally, these workers were mostly exposed to 70-79dB(A) noise level. It also determines that 4-11 years of experienced crusher workers have high probability of NIHL because of high exposure to 90-99dB (A) noise level.

B. OTHER TYPE OF QUARRY WORKERS

Koskela, R.S., Klockars, M., Jarvinen, E., Kolari, P.J., Rossi, A. (1987) conducted a study on cancer mortality of granite workers from three different regions of Finland. In the study a method of retrospective cohort study was undertaken to investigate the cancer mortality of granite workers. The study comprises of 1026 workers in hired between 1940 and 1971. The number of person-year was 20 165, and the number of deaths 235. During the total follow-up they were observed 46 tumours

and 44.9 were expected. They also observed an excess occurring during the follow-up period of 25-29 years. Out of the 46 tumours, 22 were lung cancers and 15 were gastrointestinal cancers, nine of which were cancers of the stomach. Mortality from cancer was excessive for workers with at least 15 years since entry into granite work (latency) (21 observed and 9.5 expected), being highest during the follow-up period of 25-29 years (observed 8, expected 2.1). The results show that granite exposure per se may be an etiologic factor in the initiation and promotion of malignant neoplasm.

China, S.E. (1989) studied on a study on the usage of respirators among granite quarry workers in Singapore. In the study attempts have been made on a total of 201 granite quarry workers in 5 selected granite quarries by using a standard questionnaire of driller, crusher attendants, drivers, mechanics & others. The overall prevalence of usage of correct respirators was 45.8%. 10.4% of the workers was found to be using the wrong respiratory protective devices. Majority of the workers were Chinese (88.1%). The usage of respirators was higher among the crusher attendants and drillers as compared to drivers and mechanics. The most reasons for not wearing a respirator is due to breathing difficulty.

Crummy, F., Carl, I., Cameron, C.H.S., and Heaney, L.G. (2004) conducted a case study on a possible case of pneumoconiosis in a limestone quarry worker. A case study was conducted on a 43 year-old man. It reveals that a man had presented with a wheeze and shortness of breath, occupational history of working in a limestone quarry. Pulmonary function testing revealed a mixed obstructive/restrictive defect and the chest X-ray revealed nodular shadowing throughout both lung fields. Subsequent thoroscopic lung biopsy was performed and histology of nodules revealed a foreign body granulomatous reaction with numerous fluorescent particles seen under polarized light. There was no evidence of interstitial fibrosis. The results show that

these particles contained calcium, aluminium and silicon and had a composition consistent with limestone. The cases demonstrate a possible unusual reaction to inorganic dust particles without resultant fibrosis.

Attfield, M.D., and Costello, J. (2004) studied on Quantitative exposure-response for silica dust and lung cancer in Vermont granite workers in West Virginia. The studies were based on job tenure surrogate, with the potential for misclassification and inability to evaluate quantitative exposure-response. They used the data collected from 1924-1977 and analysed in conjunction with mortality data to examine quantitative exposure-response for silica, lung cancer, and other lung diseases. A person year was analysed undertaken by cumulative exposure group, including lagged and unlagged tabulations. Poisson models were fitted to untransformed and log transformed exposure. The results indicated that a clear relationship of lung cancer, tuberculosis, pneumoconiosis, non-malignant lung disease, and kidney cancer with cumulative exposure. An exposure to 0.05 mg/m³ from age 20-64 was associated with a lifetime excess risk of lung cancer for white males of 27/1,000. The results found that the workers exposed almost exclusively to silica and no other major occupational confounding exposure indicate a clear exposure-response for lung cancer.

Unalacak, M. et.al (2004) conducted a study on smoking prevalence, behaviour and nicotine addiction among coal workers in Zonguldak, Turkey. The study reveals that coal dust exposure and concomitant cigarette smoking contribute to increase prevalence of pulmonary interstitial fibrosis, chronic obstructive pulmonary diseases and other pulmonary diseases. The coal workers of 389 underground coal workers were selected for the study. A detailed smoking history of 56 questions was completed in each subject. Chest X-rays and pulmonary function tests were performed

to evaluate patients related diseases and complication. Sixty-nine never smokers (17.7%), 62 ex-smokers (15.9%) and 258 current smokers (66.3%). The most common reasons for starting smoking was smoking interest (50%) and friends influence (15.5%). The most frequent reason stated for successful smoking cessation was experience of smoking-related symptoms or development of a medical condition (51%). It also reveals that the most important reason given by current smokers for smoking cessation attempts was increased chance of developing lung cancer, pneumoconiosis and other diseases (22.9%). Nicotine addiction was assessed by Fagerstrom test. mild (0-3 points), moderate (4-6) and severe (7 or more) addiction ratios were found to be 39.1%, 44.2% and 16.7% respectively. Ex-smokers had the highest prevalence of large and small airway obstruction on spirometry.

Olusegun, O., Adeniyi, A., and Adeola, G.T. (2009) studies on impact of Granite quarrying on the health of workers and nearby residents in Abeokuta Ogun State, Nigeria. Suspended Particulate Matter (SPM) was employed to monitor the level of particulate matter (PM10) within and around five quarry sites selected for this study. The data collected from hospital records of quarry workers portrayed their health profile while the prevalent health problems of the nearby residents were elicited from a questionnaire survey conducted in two selected neighbouring communities of quarries. Data was analysed with the aid of frequency, mean, analysis of variance (ANOVA) and Least significant difference (LSD) using Statistical Packages for Social Sciences (SPSS). Both psychological and health problems suffered by nearby residents include shock (46.0%), nasal infection (29.2%), and asthma (4.6%). The quarry workers predominantly from cough (26.0%), catarrh (20.0%) and sinusitis (15.0%). Although, the residents of neighbouring communities are aware of risks associated with living near quarry sites, their general low socio-economic status made

them incapable of taking any decisive measure towards relocation elsewhere. They also likely to have approval for quarry operation should mandate environmental impact assessment and ensure strict implementation of outlined mitigation measures so as to guarantee environmental sustainability.

From the report of the Indian committee of Netherlands (2010) about mining effects children, women, adivasis and dalits. The study reveals that more than one million children worldwide are involved in mining from the estimation of ILO. There is a very poor quality of schools and still they are illiterate in Rajasthan because of teacher absenteeism. They are prone to illness and faced increased morbidity. Dalits often worse effected and they do not receive any compensation with cash money in Maharashtra and there is discrimination in Adivasis as well who constitute most of the work. The women who join the quarries labour force is because of low family income to be able to repay debt, or to replace their husbands who are bedridden or passed away. Silicosis the occupational diseases leaves many widow women at a young age and risk to work in the quarry. Women are paid less than men and only earn Rs.40 a day and they are the most exploited group in the mining and quarrying sector.

C. STUDIES BASED ON UNORGANIZED WORKERS

Raju. (1989) *National Commission on Labor (1966-69)* noted that “Gaps in Labor Statistics exist in regard to employees in the unorganized sector, e.g., in small shops, commercial establishments and small scale industries. The matter should be examined by the Central Government in consultation with the state govt. with a view to evolve remedies”. It also suggested, “Detailed surveys about conditions of work of different categories of unorganized labour should be undertaken for formulating suitable ameliorative measures”.

Karunanidhi, G. (1996) studied on child labour in India, a study towards policy intervention. An age group of 8-14 years of 500 pledged children from Vellore and 1000 children from Tirunelveli District of beedi workers was selected for the study by using multistage sampling method. The study reveals that their parents acquire skills at an early age to supplement their income to meet their basic needs. This job is associated with the backward classes of the society, getting advance loan to their parents and extracted from the children with low wages for want of money. They lack personal hygiene since they are busily in engaged in the work all the time without bathing regularly. The health problem like mild cough and tuberculosis also exist. The target of beedi rolls was fixed by the contractor. Over 50 percent parents are alcoholic; girls' children are more than boys due to flexible and accommodative than boys. Their parents seems to be unmindful even if they have complain and misbehaviour from the contractor.

Unorganised Labour: The term unorganized labour has been defined as those workers who have not been able to organize themselves in pursuit of their common interest due to certain constraints like casual nature of employment, ignorance and illiteracy, small and scattered size of establishment, etc. (Annual Report 2002-2003) The concept of informal sector was first used in a study on Ghana and then in the report of the ILO/UNDP employment mission to Kenya. Later, in 1970, the concept has gained considerable currency in the literature on development policy in particular. The informal sector also came to be known as 'unorganized' or 'traditional' or 'household' or 'peasant' or 'unenumerated' sector because of its diversified definitions in the dichotomous model of the modern economy.

The concept of informal sector can be defined either in terms of registration/license or in terms of employment, size, location, etc. Keith Heart uses the

term, 'unorganized sector', 'unenumerated sector', 'self – employed individuals'. The informal sector would include all unregistered commercial Enterprises and all non commercial enterprises that had no formal structure in terms of organization and operation. Dore defines the informal sector 'as the road side and empty tin to send the exhaust pipe of the civil servant.'

Prakash, L.T.O. (2004) conducted a study on Plight of women and girl children engaged in beedi making, cases from Tirunelveli district. The study reveals that children and women rolls beedi in unhygienic and polluting atmosphere, its effects the mental, physical and social development. Children are subjected to molestation and sexual harassment by the owner, compelled to roll a prescribe number of beedi within a day and if they fail they continue the work till night. They are insisted to roll beedis to pay dowry, and assuring them to a handsome husband provided they must earn more money for dowry. The natures of corporal punishment in the school discourage the children and prefer that rolling beedis and it is rather easier than undergoing punishment. There is no time for recreation it would lead them in a state of emotional balance. Women are more prone to exploitation by the sub contractor, provided with poor and adequate raw material and blame themselves with low quality. Husband assumes that earning income for the family is responsible by the women.

Saktivel, S., Joddar, P. (2006) studied on unorganised sector workforce in India, trends, patterns and social security coverage. They adopted two approaches of residual and direct for estimating the unorganised sector. It points out that nearly 92 percent of unorganised workers, with virtually the entire farm sector falling under the informal category. The study uses the last four quinquennial rounds of employment-unemployment of national sample survey. The study also examines the growth and

structure of formal and informal sector workforce by one-digit industry across major Indian states. In the non-farm sectors of income, the share of informal sector gradually declines. In the agricultural sector, irrespective of economic class, the share of unorganised segment of workforce remains flat. The analysis also reveals that the coverage of social security schemes has been largely against economically and socially vulnerable sections.

Sharma, S., Jashwal, S. (2007) are studied on enhancing physical and psychological well being of migrants labourers. They highlighted the measures and features for the migrants in India like the migrants should be consulates in host region with appropriate health personal services, should include in the health policies, those who hiring the migrants for labour should ensure the needs and problems faced by them. To provide training/educational programme for migrants to access medical help. It should be recognised migrants trade unions, organisations and support groups. They should also help mobilise their resources to help the fellow beings in crisis. It should also be conducted on migrant's health family welfare and community issues. Education of people against racism should be include in the formal educational curriculum. Social Workers can help in sensitize authorities and public opinions.

Singh, D.P. (2007) studies on women workers in brick kilns in Haryana during 1999-2001 on 54 selected brick kiln randomly out of the 547 units located in the five district of Hissar division. She describe the women in brick kiln industry are indebted, unprotected and exploited. They do arduous work for long hours generally in unhygienic conditions. They are deprived of good living and working conditions. There were no effective social security provisions for them. The owners do not implement labour welfare legislation very effectively. These workers have to perform multiple roles. The life of these women workers is very tough.

Kamalakannan, K. (2007) studies on women construction workers in Tamil Nadu. She has collected samples of 50 respondents. The primary data was collected from women construction workers in Thoothukudu through interview method. The study reveals that 32 workers are married, 18 were in the age group of 21-25 years, 17 has studied upto 8 standard. 72 percent of the workers were belonging to community other than forward. The size of the family is 20 workers are range from 4-6 household members. The monthly income of 26 workers are less than Rs.1000/-. The reason for working in this type of job is due to poor. 21 workers are living in a distance between less than 6 km from the workspot. Among them 33 workers are working 8 hours per day. She also discussed about since women workers unskilled they are subjected to economic exploitation with low and discriminatory wages.

Anandarajakumar, P. (2009) studied on a micro study of weavers and weaving in Chinnalpatti. The study points out that as per the 1995-96 Handloom census there are 34.86 lakh in India out of which 4.13 lakh handlooms are in Tamil Nadu which provide employment to 6.08 lakh worker. In the study 50 respondents were selected, all the development and welfare schemes meant for weavers are implemented through these societies by the Governments. Out of the total 70 percent of them were in the age group of 35-50 years, the handloom weavers normally decline when they cross 50 years due to eye sight problems. As the profession of weaving become more and more complicated in a globalized atmosphere with the advent of power loom sector it poses a serious threat to survival of families engaged in weaving profession to meet both and end. An average income of earned by majority 88 percent earned below Rs.4000. The working and living conditions are pathetic ,in some parts they are forced to sell their kidneys to wipe out their debts because

bondage system prevails in this area. The weavers are working around 12 hours a day and they faced health problems like body pain, ulcer, heart diseases etc.

Duraisingh, V. (2009) studied on a study on the conditions of Quarry workers at Vagaikulam Area in Thoothukudi District. Only 50 males were selected for the study using survey method. There are about seven such unorganised stone quarries situated in this area. The stone quarries in this area are a major source of employment in this area. Working conditions is mostly done by manually and there is less use of technology. Low wages, accident and other health problems are the main problem face by the labours. Majority are in the age group of 20-40 years, 40 percent of the workers earned an income range between Rs.15000-20000. Maximum 52 percent of the labourers have been working for more than 10 years and unfortunately 14 percent workers had discontinued their job because of their sickness.

Jasmine, R.E. (2009) conducted a study on problems of women domestic workers in Tirunelveli city, 124 women domestic workers were selected for the study by using purposive sampling method. The study points out that a large number of housewives are going out for jobs under unhygienic conditions. They belong to lower stratum of the society and they necessary to meet or supplement their family income. The problem they faced is multi-faced and they toil from under or non payment of wages, lack of social security, heavy workload and indebtedness to moneylenders, sexual exploitation and other occupational health diseases like back pain, skin diseases, anaemia, ulcer, rheumatic etc. In fact, they are not recognised as works.

Franco, E. (2009) conducted a study on problem faced by brick kiln workers of southern districts of Tamil Nadu, 150 respondents were selected for the study by using stratified random sampling method. The study reveals that brick kiln workers

have faced various problems like inadequate wages, no job security, excessive physical work, indebtedness, health hazards, and excessive hours of work, inadequate working condition, breathing problem, bondage, and transportation. The study ensures that the only way to put an end to this problem is ensuring minimum wages to the brick kiln workers.

Gurusamy, S. (2009) studied on plight of agricultural labour, the study highlighted that about 70 percent of Indian agricultural labourers are engaged in agricultural and allied activities. The agricultural labourers are hard workers; they faced various problems throughout their life. Their earning is very low with long hours to toil under hot and intermittent rainfall, and their employment avenue is affected to a large extent. During monsoon, if there is heavy rainfall everything in the life of rural labourers is very limited. They don't have any guarantee for full employment in the land. They have employment opportunities only during season and during off-season; they have face the problem of unemployment and under-employment. Poverty and indebtedness is the common feature of Indian agricultural labourers. Problems of child labour bonded labour, wage disparity among male and female are also found in this type of employment. They need to facilitate labour access to health, education, nutrition, skill, capacity building for income generation.

John, S.M., and Grace, A.M. (2009) conducted a study on women labourers in unorganised sector in Theni District with a sample of 200 women workers working in various industries located in different areas. The study points out that women worker are still very highly vulnerable to exploitation. They worked under very poor working and living condition, they paid lower and marginal wages. They have to work for long hours even forced to work in the night without protection. They are deprived of adequate social security and welfare measures; sexual harassment is also prevalent in

this employment. Women workers also need to be educated and aware about their rights and legislative provisions.

Kannan, S., and Padrakali, A. (2009) conducted a study on a study of cargo handling workers in Thoothukudi Port Trust. The study was based on the survey method by selecting 120 cargo handling labourers for the sample. Majority of the labourers are in the age group of 40-50 years, 51 percent are up to high school level, 52 percent labourers earning a monthly salary of Rs.11000-12000. The study reveals that cargo handling is an accident prone job, it's a laborious job, they work very hard, and the economic conditions of the workers are not up to satisfactory level. Their needs must be fulfilling by offering more labour welfare measures.

Ranjan, S.N. (2009) conducted a study on a study on hawkers in Tiruchendur, 125 samples were selected for the study by using interview schedule. The study reveals that hawkers are an illegal activity in some parts of the cities in India. The Supreme Court did not allowed to be hawkers in public places like parks, gardens, markets, educational institutions, hospitals, administrative offices and railway section. Males are more hawking than females, they are mostly stay far away from their business area. The working environment is not very favourable and they are working a very long hours a day. Due to non-stability of income psychological problems also happens and faced disrespect from the public because of low income. They are facing so many health problems like headache, fever, urinary problems etc. Children are involve in the morning and evening hours apart from their study timings to enhance their income. The irregular demand of their products creates loss in their business.

Kumar, A.S. (2009) conducted a study on the plight of salt workers in salt industries in Thoothukudi District. A sample of 100 respondents is selected for the

study by using survey method and structural interview method. The study reveals that employment in salt industries is a heavy and difficult task and cannot continue with this occupation in the long run. It is difficult to meet their basic because of the oversize in the family with their meagre income. The poor economic condition stands as an obstacle in educating their children. The salt workers are paid a small amount of bonus only to few people. Large majority of the workers are suffers from occupational diseases like back pain, skin diseases, eye problem and urinary infection. Few of them getting housing facilities are inadequate and they are not enjoying medical facilities .The wages depend on the experience and nature of their work. They are very vulnerable and exploited by salt industry workers. Saving problems occurred due to their minimum wages.

Shobana, J. (2009) conducted a study on a study on palmyrah tappers in Thoothukudi District. The study highlighted that tapping is both a difficult job, a young and healthy tappers climb usually 40-50 times a day. The processed and converted into jiggery involved considerable human labour. The price of the jaggery is invariably and determined by the traders who they are forced to sell with unwanted prices. Accidents rates are high among the tappers some of them sustain serious injuries which may results in bed-ridden or worse death. Physical heaths of the Pylmarah tappers are very deplorable due to living in shanty places. A large size of family income leads to low level of per capita income but they are not worried because of their traditional thinking. Measure should be taken for the tappers are failed and unfulfilled by the Government.

Nelasco, S., and Kumar, A.S. (2009) studied on organised Israeli model for organising Indian agriculture. The study highlighted that in Israel the efficient use of the factors of production has increased productivity in the agricultural sector. A

bilateral agreement on cooperation in the field of agriculture was signed in December 1993 during the visit to India of Israel's Minister of Agriculture. A large number of experts from both sides have visited each other's institutions to exchange information and undertake specific projects for transfer of knowhow and technology. The private sector in India has shown interest in accessing Israeli technologies in the agriculture sector. Approximately 170 collaboration agreements between India and Israeli companies have been signed in areas such as drip irrigation, greenhouse technology, floriculture and horticulture. Israel has opened its Embassy in New Delhi in February 1992 and India has opened its Embassy in Tel Aviv on 15 May, 1992. Since there is considerable growth of relationship in almost every area. More such occasions can be developed for the promotion of Indian Agriculture.

Prabakaran, S.W.P. (2009) conducted a study on exploitation of child labour in hotel industry in Tirunelveli District of Tamilnadu. A samples of 475 children from 95 hotels were selected by using simple random sampling method. The study reveals that they are working for 12-14 hours a day which is legally an offence. The employer assigns more type of work and the work load is very heavy for them to survive. They are expected to extra work without in return of money by the employer personal task. The income is very poor and deplorable compare to their workload and punished them even if they do not perform their work as expected. The other reason is that their parents pledged the children to take advance money from the owner and bonded automatically. The worst sin of sexual exploitation is prevalent so that the children are forced for by their master into homosexuality and it leads to a greater social problem in the society.

Nelasco, S., and Arputharaj, A.N. (2009) studies on challenges faced by unorganised child workers. The study highlighted that there are more than 52 million

child workers in the world. The Child labour Act 1933 prohibits employment of children below 14 years of age. Poverty is the seed-bed of child labour due to the supply of demand for supplement of income for the family is very high and economic insecurity leads to ban for schooling. Most of the children are less fortunate and are compelled to work in unhygienic and conditions which are hazardous to their well-being. They are unorganised and are not be banned neither they are able to be brought under any category of organisation. Efforts have been made to eradicate this problem by using a strong and separate vigilance by the government.

Jebanesan, M.J., and Elias, P. (2009) conducted a study on concept, conventions and cases in the unorganised labour issues. The study highlighted that the global labour force has grown massively in recent decades and it is likely to increase tremendously in future as well. Of the late there has been a concern about the plight of the unorganised labour in the informal sector. The working group on labour for the ninth five year plan asserted that the government would focus more attention on unorganised labour. However, the workforce is being pushed into an insecure, unsafe, and unprotected low-quality, low paying g labour intensive unorganised sector and is being subjected to non-formal, on standard employment practices. The state has a need to help of professional social workers or through non-governmental organisation need to create awareness about the rights of workers in the unorganised sector.

Shankar, R. (2009) attempted a study on neo-unorganised sector and social security in India. The study summarizes that unorganised worker include all workers of the unorganised sector as well as the casual and contract which are common in vulnerability (Haensenne).The coverage of social security schemes has been extremely sparse among the economically and socially vulnerable sections. The workers needs to be registered, issuing identity card, record-keeping agency by the

local panchayat in the rural areas as well as the local council in the rural areas. Knowledge has become the key source and collective that brings together an array of knowledge workers and applies their specialism to a common end-product.

Uthayasuriyan, K. (2009) studied on social security in the unorganised sector. The study highlighted that the well designed social security system for the workers in the unorganised sector will help in improving productivity, contribute to the harmonious labour relations and thus to socio-economic development. It is very essential to create a legislative and administrative framework for significant penetration of social security cover in the unorganised sector. The work is sub-contract to home based workers which depends on demand from the market; the informal sector is fluid, its form and numbers changing. Illegal migrant women workers are even more vulnerable since they cannot afford to be visible.

Raja, B.W.D (2009) studied on a sine qua non for educating the unorganised workers. The study points out that the unorganised workers has not improved since independence, and faced unprotected work with no guarantee of employment. They work for low wages without medical benefit. Labour policy should necessarily have provisions for the welfare and working and living conditions of unorganised labour not only in the rural sector but also in the urban areas. An increasing number of works are shifting to the metropolitan cities and small and medium towns in search of better employment opportunities. The workers are not protected, legal regulations of employment and wages are almost non-existent and it is extremely difficult to enforce the rules where they exist and need to be educated.

Rathiha, R., and Gnanadhas, M.E. (2009) conducted a study on status of women in cashew processing industries in Kanyakumari. The study points out that the

female workers are living in poor-socio economic condition leading to a sub-standard life. The working and living conditions are very miserable to meet the basic need. Due to low level of income they borrowed money from the money lenders, to meet the contingencies such as medical expenses, wedding and funeral, savings and investment possibilities are low. They faced health problems like uterus diseases because of sitting in the same position with long hours.

Xavier, S.J., and Jerome, V.B.A. (2009) studied on women domestic workers in the unorganised sector at Tiruchirapalli. The study reveals that domestic workers face a wide range of grave abuses and labour exploitation, including physical and sexual abuse, forced confinement, non-payment of wages, denial of food and health care and excessive working hours with no rest day. The women should not be affected with both economical and emotional. Migration of women labour force had placed them in the cities, towns and urban areas. Though the law is silent before the informal sectors, the proper strategies have to be framed in protecting women force, as well as their social securities.

Kalabarani, S.P., and Ramakrishnan, M. (2009) studied on inclusive growth and the status of construction workers. The study reveals that the workers are below the poverty line and the level of education is very and unable to meet both ends. The family situation, poverty and hunger force them to take up this work. Only masons can only join the trade unions, they are working in hazardous condition and the health problems are easily received. There is no social security provided by them and the medical expenses are met by borrowing.

Rajalingam, N., and Mookiah, S. (2009) studied on female workers in beedi industry in Tirunelveli. A sample of 300 respondents were selected for the study by

using three stage random sampling method. The study reveals that female workers work for long hours and for most of the days of a week, yet they receive low wages, leading to low annual income. Discrimination exist in fixing the wages among the men women and children. Most of the household are poor indicating a fair degree of disguised unemployment. The life expectancy of the employees is reduced by around 6 years. These workers require and need to improve the standard of living of household; drudgery of the women folk deserves policy support to mitigate it.

Subramaniam, K. (2009) conducted a study on a study on private security guards in Tirunelveli District in Tamilnadu. The study reveals that the security guards are working for long hours in a day and it is very hard to take a leave even a single day. They are oppressed by their employer mentally and physically. For them it is astonishing there are no specific legislative and welfare measures to safeguard their interests for the security guards. The terms and conditions related to employment are based on very ordinary contract, which leads to continuous oppression and dismissal. The survival and livelihood chances is very less because of the low level of income with uniform non-existent power create false notion about them belonging to formal sector of labour category but they are belong to the unorganised sector.

Sudalaiyandi, S. (2009) studied on labour in an unorganised sector of Lacquer ware industry in Ambasamundram taluk. The study highlighted that a change in seasonal employment leads to fluctuation in income and also leads in debtness to moneylenders and poverty happens in this type of employment. Mostly the workers are work for long hours with piece rated and enjoying social security schemes like insurance, provident fund etc. are very far from them. They are physically and mentally weak and faced occupational health problems like eye diseases, diahorrea, indigestion, tissue damage, piles complaint, body pain. Their income do not allowed

them to spend on medicines and they are compelled to live their life with prolong illness and mental torture because of ill-health. Female workers are not free from sexual harassment by co-workers, supervisors and employers.

Venkatachalam, C. (2009) studied on the organisation in an unorganised (construction) industry from Salem, Tamilnadu. A sample of 155 respondents was selected for the study by using interview method. The study reveals that majority (68.0%) working without any break for a considerable period of time. More than half (60%) earns upto rupees two thousand and more. Majority (84.0%) largely depend on this sector, most of them do not get any kinds of motivation from their supervisors. Construction industry is providing the jobs for in numerous workers despite of considerable amount of constraints. Mostly the labourers of construction industry migrate from villages and are living in urban slums and some of them find the descent jobs also to live comfortably. There is a significant relationship between new techniques and machines introduced; the workers are positively getting the motivation and morale to deliver their best for the organisation.

Nelasco, S., and Kumar, A.S. (2009) studied on organised Israeli model for organising Indian agriculture. The study highlighted that in Israel the efficient use of the factors of production has increased productivity in the agricultural sector. A bilateral agreement on cooperation in the field of agriculture was signed in December 1993 during the visit to India of Israel's Minister of Agriculture. A large number of experts from both sides have visited each other's institutions to exchange information and undertake specific projects for transfer of knowhow and technology. The private sector in India has shown interest in accessing Israeli technologies in the agriculture sector. Approximately 170 collaboration agreements between India and Israeli companies have been signed in areas such as drip irrigation, greenhouse technology,

floriculture and horticulture. Israel has opened its Embassy in New Delhi in February 1992 and India has opened its Embassy in Tel Aviv on 15 May, 1992. Since there is considerable growth of relationship in almost every area. More such occasions can be developed for the promotion of Indian Agriculture.

Valenzuela, A. (2010) studies on day labourers as entrepreneurs. He studies about the day labourers serve as viable alternatives to wage employment that pays poorly and requires legal documentation. But to characterise day labour as a no option job ignores that many day labourers who toil in this occupation for reason of autonomy, wages and choice. He highlighted that in the Southwestern United States men are mostly Latino immigrants and unauthorised from the bulk of day labourers. Their transaction is not illegal, though some municipalities have attempted to ban their solicitation of work in public settings. During 1880 and 1990, immigrants were more likely to be self-employed than the natives. The entrepreneur growths are shopless like street vendors, domestic workers, home-based workers and day labourers.

Salve, W.N. (2010) discussed about the labour rights and labour standards for migrants labour in India. He indicates the decent work is a broad concept which is related to social and economic goals of development. Migrant's workers from one place to another get seasonal or temporary or part time work in different sectors. Migrants workers are not organised under any trade union and their labour standards are not protected by the government as trade unions and they were also illiterate, ignorant and belonging to backward community. They do not get minimum wages stipulated under the Minimum Wages Act. The bargaining power of these migrants' workers is thus weaker than workers in the unorganised sectors. The implementation of labour laws is more in affective. Therefore, migrants and workers in the unorganised sectors struggling for their labour rights to implement the provisions of

various labour laws as per the international standard act. The principal of 'equal pay for equal work' is not also strictly adhered to the fixation of wages rates for contract basis male and female seasonal migrants under the Equal Remuneration Act of 1976. Migrants workers are not aware of their rights or labour rights like right to equality, right to work, right to secure work, a living wage and a decent standard of life, security schemes, health, right to form association etc.

D. STUDIES BASED ON HEALTH RELATED ISSUES ON DIFFERENT TYPES OF WORKERS

Hohlfeld, I.B. et.al (2000) conducted a study on occupational lung cancer risk for men in Germany. Occupational exposure such as crystalline silica, diesel engine exhaust, polycyclic hydrocarbon & man-made mineral fibres are strongly suspected to increase lung cancer risk. Two case-control studies in Germany conducted between 1988 and 1996 were pooled for a joint analysis. A total of 3489 male cases and 3541 male population controls, frequency matched for age and region, were included in the study. Both cases and controls were interviewed face to face by trained interviewers with respect to their occupational exposure, residential history, smoking and other risks factors. The increase of lung cancer risk was found in industry & occupation, crystalline silica of 819 cases and 551 controls.

Saiyed, H.N., and Tiwari, R.R. (2004) studied on the Occupational Health Research in India. It reveals that among all the occupations that which prevalence some of the occupational lung diseases carried out by National Institute of Occupational Health. In the results stone quarry has a silicosis prevalence of 21% and stone crushing 12% respectively. They said that there is no availability of overall statistics incidence/prevalence of occupational disease and injuries for the country. Leigh et al have estimated an annual incidence of occupational diseases between

924,700 and 1902,300 and 121,000. Based on the survey of agriculture injury incidence study by Mohan and Patel 1992 in Northern India, they estimated annual incidence of 17 million injuries per year, (2 million moderate to serious) and 553,000 deaths per year in agricultural alone. The major occupational diseases/morbidity of concern in India is silicosis (the most dreadful killer of quarry workers), musculoskeletal injuries, coal workers pneumoconiosis, chronic obstructive lung diseases, asbestos, byssinosis, pesticides poisoning and noise induced hearing loss.

Kurihara, N., and Wada, O. (2004) studied on silicosis and smoking strongly increases lung cancer risk in silica-exposed workers in Japan. The study reveals that the effects of silicosis with smoking are additive, multiplicative or another. The results show that cigarette-smoking increased the risk of lung cancer in silicotic patients and that the lung cancer risk in smokers with silicosis was rather high. Therefore, silicotic patient should be strongly recommended to stop smoking in order to prevent lung cancer.

4. Bovenzi, M., Vedova, A.D., Nataletti, P., Alessandrini, B., Poian, T. (2005) conducted a study on work-related disorder of the upper limb in female workers using orbital sanders in Italy. All female workers underwent medical interview and a complete physical investigation through personal work, and medical history of each worker. Data analysis was performed through Statistical software Stata 8.2 (Stata Corporation 2003). In the cross sectional study, an excess risk for neurological and musculoskeletal disorder of the upper limb was found in a group of female workers exposed to hand-transmitted industry, while no significant association was found between vascular disorders (Reynaud's phenomenon) and vibration.

Ishitake, T., and Ando, H. (2005) conducted a study on significance of finger coldness in hand-arm vibration syndrome in Japan. The study was conducted on 35

male patients confirmed to HAVS as occupational diseases. Their mean age was 62 years (SD 5) and all were chain-saw operators exposed to vibration for an average of 25 years. Their annual health examination included the history of their daily habits (smoking, drinking, and therapeutic exercise), report of subjective symptoms such as coldness numbness and tingling in the fingers, and a physical examination; laboratory tests consisted of skin temperature measurement, pain and vibration perception under conditions of cold provocation. They are also using a frequency used method of cold provocation, immersion of the left hand up to the wrist in water of 10°C for 10 min. In the finding of the results, finger coldness was classified into 3 groups according to its severity: mild group (n=8), moderate group (n=17) and severe group (n=10). There was no significant difference in age or occupational background between the groups. There is a significant association was found between finger coldness and prevalence of Raynaud's phenomenon ($p < 0.001$, χ^2 -test). The mean skin temperature was significantly lower with the severity of finger coldness (ANOVA, $p < 0.05$). In the cold provocation test, there was no significant difference between skin temperature and coldness at 5 min and 10 min after immersion. No significant difference was observed in the relationship between finger coldness and vibrotactile threshold before, during or after the cold provocation test. The severity of coldness in the fingers is significantly related to skin temperature. The severity of finger coldness reflects the extent of peripheral circulatory vasoconstriction. Coldness in the fingers may be a good warning of potential problems in peripheral circulatory function

YU, I.T.S. et. al (2006) conducted a study on lung cancer mortality among silicotic workers in Hong Kong, the study attempts on all workers with silicosis in Hong Kong diagnosed during the period of 1981-1998 were followed up till the end of 1999 to ascertain their vital status and causes of death. Standardized mortality ratio

(SMR) for lung cancer and other major causes of death were calculated. Axelson's indirect method was used to adjust for smoking affect. Multiple Cox regression models were carried out to examine the exposure-response relationship between silica dust and lung cancer. About 10%(86)of all 853 deaths were from lung cancer, giving SMR of 1.69(95%confidence interval (CI)1.35-2.09).There is no exposure-response relationship was detected between silica dust or severity of silicosis and lung cancer death.

Onuu, M.U., and Tawo, A.N. (2006) studied on Industrial noise in quarries and neighbouring communities in Nigeria. The study involved wide-range acoustical and social surveys in five quarries and two neighbouring communities. Measurement of noise level were made using the precision sound level meter (Bruel & Kjaer)Type 2203 with octave band filter(B&K)Type 1613.A total of 1084 questionnaire were distributed and response rates of 85% and 88% respectively were recorded. The study highlighted that industrial noise pollution is a serious environmental problem in these quarries and neighbouring communities where noise far exceeds recommended levels. Serious efforts should be made by both management and government to see that people work and live in such an environment free from hazardous noise levels.

Rao, N.M., Takiar, R., and Sharma, Y.K. (2006) studied on Maximal expiratory flow volume values evaluation among female quartz grinders in Ahmedabad. The MEFV values were measured among 106 female quartz grinders using SP-10 computerised spirometer and predicted and percentage of predicted values were derived. The study reveals that there is significant repercussions on MEFV values in silica dust exposed quartz grinders, pronounced higher among silicotuberculosis, combined R+O type of abnormal workers and in above 45 years

age group. The MEFV values indicated that the site of obstruction is in both in smaller and larger groups.

Riofli, A., Princivale, A., Romeo, L., Caramaschi, P., Perbellini, L. (2007) studied on functional disorders of blood circulation in hand fingers and exposure to hand-arm vibration regarding thermometric response to cold test in black African subjects compared with Caucasians in Italy. An overall sample of 48 workers was examined in order to study their blood circulation in hand fingers: a control group of 12 healthy Caucasian workers never exposed before to hand- arm vibration; 12 Caucasian workers exposed for several years to vibrating tools and affected by occupational Raynaud's phenomenon; 12 healthy black African workers exposed to hand-arm vibration for almost 3 years; and 12 healthy black African workers never exposed to hand arm- vibration. Computerized skin thermometry was performed and thermometric curves were analyzed according to thermometric interpretation criteria such as the area- over-curve (AOC), the fifth minute of recovery/baseline temperature ratio (5REC/BT) and the temperature at the tenth minute recovery after cold test. Thermometric parameters in Caucasian subjects confirmed the basis of the literature in controls (basal finger temperature higher than 32⁰C and complete recovery to the initial temperature after the cold test) and also in patients with Raynaud's phenomenon (basal temperature often lower control subjects and slow recovery of finger temperature after cold test). Statistically difference was found between healthy Caucasians and healthy black subjects in all the tested; healthy black subjects showed values of AOC and 10 REC suggesting almost constantly lower finger temperature during the thermometry test. Black people, both exposed and non-exposed to hand-arm vibration showed thermometric parameters suggesting poor blood microcirculation, which seems even poorer than in Caucasian people complaining

Raynaud's phenomenon. The mean age of checked workers was 34.5 years for the overall groups (SD7.7-range 21-52).The controls show there is no significant difference in age between the two ethnic subgroups; workers exposed to hand-arm vibration and subdivided in the two ethnic groups showed no significant age difference either. Exposed subjects were significantly older than non- exposed; history of work with vibrating tools in the exposed groups was significantly longer in Caucasians than in black Africans. Caucasian workers exposed to vibrating tools reported Raynaud's phenomenon, black Africans instead were clinically healthy, despite frequent discomfort due to cold hands during the winter season, much colder in Northern Italy than in their countries of origin.

Kadi, F.D., Nawrot,T.S., Hoet,P.H., and Nemery,B. (2007) studied on respiratory function and bronchial responsiveness among industrial workers exposed to different classes of occupational agents in Algeria. They group a total of 546 male subjects of whom 114 were exposed to welding fumes, 106 to solvents, 107 to mineral dust, 97 to organic dust and 123 without known exposure to airway irritants. A questionnaire was administered and spirometry and bronchial responsiveness to histamine were assessed by one observer, in the morning before work to prevent effects of acute exposure.SAS software version 8.1(SAS Institute Inc. Cary, NC)for statistical analysis. The mean (SD)age of the participants was 39.3 (7.8)years, with a mean duration of employment of 13.8(6.6) years. Both before and after adjustment for smoking status, forced expiratory volume in 1 second(FEV1,expressed as % predicted) was lower in welders-4.0%(95%confidence interval(CI),-6.3 to -1.8;p=0.01)and workers exposed to solvents-5.6%(CI:-7.9to -3.3;p=0.0009)than in control subjects. Furthermore, solvent workers had an odds ratio of3.43(95%CI:1.09-11.6;p=0.037)for bronchial hyper responsiveness compared with the reference group.

The higher prevalence of bronchial hyper responsiveness in solvent workers adds to the growing body of evidence of adverse respiratory effects of occupational solvent exposure. The results point to the necessity of preventive measures in solvent workers to avoid these adverse.

Ugwu, E.I., Agwu, K.O., and Ogbu, H.M. (2008) studied on assessment of radioactivity content of quarry dust in Abakaliki, Nigeria. The dust samples were collected by suspending in a well cleaned metallic plate below the crusher for about 20 minutes, in order to enhance some dust particles. It aimed at measuring the concentration of radionuclides in the dust. It is recommended that all workers in quarry plants in this area should use face mask and possibly thermo luminescent dose meters (TLDs) to protect themselves from the dangers of radioactive contamination, apart from crystalline silica, which is a common constituent of the dust that may also cause problems human respiratory systems.

Tekemura, Y. et.al (2008) studied on effects of mask fitness and worker education on the prevention of occupational dust exposure in Oksyama Japan. In the study 178 workers from 15 factories subject to dust exposure participated in the study were interviewed to obtain relevant personal information and underwent both a mask leakage and a pulmonary function test. Though the pulmonary function was almost normal, the percent vital capacity (%VC) tended to be lower depending on the mask leakage. Mask education, which was very easy and took only a short time, dramatically decreased average mask leakage from 32.1% to 10.5% ($p < 0.001$). Educating workers to wear masks properly might prevent the worsening of pulmonary function in response to dust exposure. Appropriate mask fitness by education could be useful in preventing the development of pneumoconiosis. The study also highlights that since pneumoconiosis is preventable

diseases, more effort is required to prevent workers from inhalation of excessive dust by providing practical knowledge of proper mask-wearing techniques.

Satibanez, M. et.al (2010) conducted a study on occupational exposures and risks of pancreatic cancer in Eastern Spain. The study was conducted on a multicenter hospital-base-control, including 161 incident cases of EPC(59.6% men,94 with histological confirmation, of whole 80% had ductal adenocarcinoma) through questionnaire. A higher risk of EPC was associate with having work as Miners, shotfirers, stone cutters and carvers.

Madungwe, E., Mukonzvi, T. (2011) studied on assessment of distribution and composition of quarry mine dust: Case of Pomona stone quarries, Harare, Data was collected through observations, personal communications, experiments, soil and dust sampling and analyses. Stratified random sampling and simple random were used for selecting sample points. Phase 1 was conducted during the plant shut down; phase 2 was carried out during full plant operations. Within the quarry production process, crushing stage was the most dust emitting stage. The quarry dust contain higher levels of $\text{SiO}_2(0.752\text{mg}/\text{cm}^3)$ which were 7 times higher than the recommended $0.1\text{mg}/\text{cm}^3(\text{NSSA})$. Soils were slightly acidic-alkaline and the t-test result at 95% confidence interval showed no significant difference between from site A and B. The results showed that quarry dust from Pomona had no significant effects on soil but possible health impacts on the receiving community.

E. THEORIES ON LABOUR

Marx, K. (1844), on Enstranged Labour on Economic and Philosophical Manuscripts of 1844. He describe about the labour as a means of life, means for the physical subsistence to worker, object of labour as object of labour. Therefore the

worker becomes as a servant of his object, first in that he receives an object of labour, i.e., in that he receives work and secondly, in that he receives means of subsistence.

Brooks, M. (2002), on International Marxist tendency, he points out that Marx had realised that there are two divisions of labour within a capitalistic economy, one in the marketplace and the other within the firm. Capitalism is an unplanned, anarchic, system. It is not chaos. There are forces at work to establish the 'proportional division of labour' that must exist in any society. These forces work in anarchy and through anarchy.

Samuels, W.J. (2006) studies on the labour theory of value as a theory of value: on the one hand the theory of value in general and the labour theory of value (as well as the marginal utility theory of value) in particular are metaphysical exercises seeking either an ultimate basis (governing principle) of price or a mode of discourse with which explicate certain problems or arguments. As such the labour theory of value is non-operational and unconfirmable. He also highlights both the changing wage and profit rates, and the influences of changing distribution on demand, have been deemed to compromise Marx's labour theory of value.

Han, L. (2010), points out Marxism and Ecology: Marx's Theory of Labour Process. He rises about the twofold definitions of Marx's labour process as well as the two kinds of derived evaluations. Marx's nature concept mainly refers to the nature, which enters into human practical fields as objects and use-values of economic and technical activities and has the 'feature of non-ontology'. He argues that Marxist methodology on environmental issues can neither be 'natural-centrism' nor 'technology optimism' or extreme 'anthropocentrism'; instead, it should be materialistic

dialectic theory which has abandoned the inherent confrontation between and achieved the dialectical unity of them.

Research gaps/lacunae's

1. There are no tribal studies in quarry work in India.
2. Child quarry workers.
3. Working conditions of quarry workers in hilly areas.

Statement of the Problem

In the quarry there is an increasing trend of people joining labour force due to poor economic circumstances to generate additional income for their family; also, they seek work outside the home to improve the socio-economic condition of life. The working and living conditions of quarry workers are not improved due to their ignorance and lower wages. Therefore, socio-economic and health conditions of quarry workers remains low. They are working in unsafe and hazardous condition; they are exposed to silica dust of different concentrations. They are exposed to natural disaster. They face injuries and minor accidents, they spend large amount of their own money for first aid and other expenses (the quarry owners are rarely providing any compensation and financial support for compensation). They don't have time to take care of the family members and the income of the quarry worker is insufficient to meet both ends needs. They do not have sufficient or enough time to involve in the social activities of the community too. They lack gov't and other agencies to support for their welfare, like insurance scheme, workmen's compensation etc. Quarry work in Mizoram involves heavy physical manual hard work either in the hot sun or during rains. Therefore they are experience chest pain, back pain etc. They are found to be always stress and strain due to their socio-economic condition. The quarry workers lack encouragement and guidance. There is no Trade Union or Association to fight for their rights and problems. Till now, no research studies have been undertaken in socio-economic and health condition of quarry workers in Aizawl District. In this context, the research scholar undertakes the present study. The quarry workers are working under contract labour and they are belonging to uorganised workers. It is estimated that there are more than 12,000 (approximately) quarry workers in

Mizoram. Government of Mizoram did not take any steps for improving the conditions of quarry workers. This is a neglected area of labour.

Objectives

1. To study the working and living conditions of the quarry workers.
2. To assess the occupational hazards and health conditions of the quarry workers.
3. To examine the needs and problems of quarry workers.
4. To find out the adequacy of government/other agencies support for quarry workers.
5. To suggest suitable measures for social work intervention.

Research Methodology

Research Design

Descriptive design was used to study the conditions of the Stone Quarry Workers in Aizawl District. Mizoram

Sampling

The Research Scholar selected males and females quarry workers in the sample, comprising of 300 workers in 10 selected quarries. Census Sampling Method was adopted.

Tools of Data Collection

Both the primary and the secondary source of data are used in this study. The interview scheduled method was adopted for collecting the data from quarry workers. The Primary sources of data are the quarry workers working in the Aizawl District.

The secondary sources of data were collected from Labour and Employment Dept. District Census Office, Geology and Mining Dept. More information's are taken from Books, Journal, Magazines, and Web Sites etc. The data was collected by structured interviewed through stratified random sampling method. Pilot study was conducted through unstructured interviewed method.

Method of study

The study was covered the selected ten areas of the quarry in Aizawl City. Survey method was adopted. The study combined qualitative and quantitative methods. Interview Schedule, key informant interviews, Focus Group Discussion and Case study was used for collection of primary data. The study also utilised various published and unpublished data as secondary sources of information.

Data Processing and Analysis

The data was analyzed with the help of computer and Statistical Packages for Social Sciences (SPSS). Simple proportion, mean, chi square, correlations, percentages, averages and multivariate analytical, tools was used to analyse the data.

Concepts:

1. Quarry: Quarry is a site characterized by rocks and stone wherein excavation of stone is done by drilling, crushing or chipping with the use of man power and for machinery.
2. Quarry worker: An individual or a unit of a family involved in drilling, crushing, chipping of stones and operating crushing machine, or any other work that may require either manual or technical labour.
3. Quarry work shall be understood on the basis of its occupational characteristics and reality in Aizawl and shall be confined to stone quarry work only and not excavation of minerals etc.

Chapterisation

1. Introduction
2. Review of Literature
3. Research Methodology
4. Characteristics of Quarry Labour in Mizoram
5. Economic Characteristics of Quarry Labour
6. Working and Living conditions
- 7 Health and Ecological Issues
8. Social Life and Participation of Agency
9. Conclusion and Suggestions
9. Appendix

Focus Group Discussions (F.G.D)

Case Studies

Bibliography

Interview Schedule

Bio-Data

Rationale of the Problem

1. They do not receive grant in aid for their welfare.
2. They often face minor accidents and injuries and they spend their own money; they do not get medical reimbursement.
3. There is no first aid centre near the quarry.

4. They are living in backward condition; their income is meagre, hence there is difficulty in managing the family sufficiently.
5. They are found to be ignorant and they suffer from inferiority complex.
6. They work in unsafe hazardous condition and hence there is widespread depression.

Significance of the Study

The quarry workers employed at different places (as per the nature of work) are exposed to health hazards. The pilot study has exposed the plight of quarry workers working in treacherous circumstances under unsafe and unhealthy working conditions. Moreover, they work under contract or on daily basis as stated. Particularly they face social and economic problems along with physical problems like body pain, minor accidents, injuries, eye problems. The study depicts the actual living conditions of quarry workers in Aizawl District.

Limitations of the study

The stone quarry work is a tough work and the quarry workers are very stress during the work. That makes the quarry workers sometimes not easily to interact by the researcher during the data collection. During the work the quarry workers climb up to the hill or mountain which cannot be able to move on by the researcher. Also the quarry workers breaking the stone for cubic stone and boulder under the mountain. Time is limit by the researcher. It needs patience to wait until the lunch period when they are getting down or leaving their work to rest in the shelter or at the work spot. The researcher sits with the quarry workers while working at the work spot which was able to join. It is prone to face injuries so that the small particles may always splash in the body parts. In the shelter the

quarry workers are rush to had their lunch and they are not responding the researcher sincerely due to wanting of return back to the work spot and continue to work. Time is very precious for the quarry workers to earn more income so that spending a lot of time for the researcher is not allowed by the quarry workers. The interviewed was not satisfied in some area for in depth questions for the studies especially by the male quarry workers. The quarries are situated and located at the rocky mountain with a rough and shaft area where there is no proper road and very hard to connected them by the researcher. It is dangerous to go to their working place by the researcher because stones and other kinds of small branches of trees and mud etc. may be fall down anytime from upwards side. Accident is also prone by the researcher as well. Even when the researcher asking the questions through interview scheduled the quarry workers did not listen properly and the quarry workers are feeling bored in the meantime. If the researcher tries to asking about their problems the quarry workers and keep smiling or laughing while answering the questions and replies that no idea from their point of view. It is very hard to process in depth studies in dealing or finding out their real problems and needs in some areas. Data collected under the scorching sunlight and while even rain makes the researcher needs more strenuous effort. Transportation is not easy as such it requires reaching by walk in most of the quarries because the quarries are not located just near the main roadside. The quarries are very dry and dusty and pollution can easily affected the health conditions. Data based on the quarry workers are not available in the government offices, agencies etc.

Pilot Study

The researcher has visited two quarries (Tuithum & Lawibual) for the pilot study during February 2008 and the report is as follows.

1. **Tuithum Quarry:** There are 12 quarries located in Tuithum. The quarry selected for the pilot study is located near Saizahawla Boarding School Tanhril. The researcher visited the area on the 6th of Feb 2008 and asked the workers about their problems and needs. There are seventy persons are working in that area and this population includes migrant workers also; they are found to be from Myanmar.

The pilot study also revealed that their working procedure is such that half of their earning is paid to the quarry owner. For example; if the worker extracts 50 pieces of cubic feet stones in a day which he sells at Rs.12 /- per piece; it is Rs.600, half of the amount is given to the owner. Their wages depend on the working capacity of the workers. Female work is mostly chipping stones, and one tin of chipped stone (rora) is Rs.8 /-. To break a giant stone, they drill a hole first and put explosives into the hole which blast automatically. Then the big stones are moved down and turned into the size of cubic feet, and the pieces which are too small for making one cubic feet of stone are taken by the female workers which they split into smaller pieces. The chippings are mostly done by the women and the men's work is drilling holes, splitting and other heavy work like loading. Some of the workers stayed in the nearby locality while others stayed in the quarry itself for their own convenience. Two landslides have occurred but fortunately the workers/labourers were able to run away to the safety places. Most of the male workers have chronic back pain because of the laborious work. For clearing up the land they use or hire excavators at Rs. 1500-1800 per hour. They also pay the rent of the land at Rs.1200 every month.

It was observed that in the quarry they have formed an association which is functioning smoothly. The association has been undergoing some changes and they are making efforts to strengthen it. Their main need is a proper road because the way to the quarry is very slippery during rainy season, and it is very dangerous for the truck drivers who drive with trucks that are heavily. Even if they face accidents or minor injuries, they pay for their own medical relief. And if somebody dies, they collect money from the workers in the name of the association which is spent for the funeral and used for consolation of the bereaved family.

2. *Lawibual Quarry*: The researcher paid a visit to the Lawibual Quarry on 7th Feb'2008. It is located at I.T.I (Industrial Training Institute) locality. In the quarry there are 8 main quarries. It is perceived that there are more than 50 workers labouring per day. The migrant labourers are mostly from Jharkhand and Burma; and they settled near the quarry. The quarry is very dangerous for the workers because they have to ascend the steep and high hills to drill stones. Hence, the workers are prone to face accidents because the drilled stone usually tumbles down to the road. The big stones are made into cubic feet and random size locally called 'boulder'. The stone chips are crushed by crusher machine as well as some with hands. It is also observed that hand splitting is more preferable than machine-crushed rocks/stones for construction of buildings.

Their main problem as reported by them is the World Bank road Project which crosses through the quarry; and therefore, they can no longer take the stones as they like. Their working process is such that they pay half of their earning/ wage to the land-owner. The main need expressed by them is that gov't should pay better interest to them. They have no better expectation for their well-being and no trade union or association has been formed in this whole quarry. Most of the women are in the

crushing unit and sell one tin of chipped stones at Rs.6 per tin while some sell it at Rs.10. Half of the amount they earn is given to the owner of the quarry. The culture of every quarry is quite similar in different parts of the city.

Area of future research:-

1. Psychological aspects of quarry workers.
2. Migrant nature of quarry labours.
3. Economic conditions of quarry workers.
4. Legal aspects of quarry workers.
5. Quarry workers conditions.

In this chapter attempts have been made on the social characteristics of the stone quarry workers in Aizawl. It includes the age and gender, educational level, marital status including age at marriage, size of the family, other quarry workers in the family, no of children and school going children, maximum level on educational qualification of the son and daughter, their participation in the social and religious activities and the spatial mobility of the quarry workers are all specifically clarified and elaborate with tables.

Majority (85.54%) of the working population in Mizoram are working under the unorganised sector (Economic & Political Weekly May 27, 2006; p 2110). Quarry work is commonly known to Mizo people since the earlier times and they are under the brackets of unorganised sector. Their problems are also many. They are part of the ignorant group and become more helpless from the government. Quarry work was started in Mizoram from the British period i.e., 1875 towards the 19th century. The use of stone crusher in quarry was started since Mizoram is upgraded to union territories i.e., 1972. It is interesting to note that the quarry workers are migrants and non-migrants. Migrant's people are also involved in this type of work. The migrant's quarry workers are influx in Mizoram since 1975 and they are performed to work in the quarry to earn for their livelihood. Migrant quarry workers are settled mostly at the leased houses or the nearest locality from the working spot. They mostly come from the state of Assam, Jharkhand, Nepal, and Burma etc. Many of them live with their family. The working and living conditions are very deplorable and hence their conditions is very low. They cannot get sufficient income to meet their basic requirements of both ends and needs; these results in indebtedness happen among the quarry workers.

Since the target populations of the present study were stone quarry workers belonging to the quarry workers who work in stone quarries at Aizawl District. All the above- mentioned stone quarry workers have been working as stone-chippers, stone-breakers, boulder loaders, bomber, stone crushing unit etc.

Age group of quarry workers is very important and crucial factor for the promotion of attitudes, interests, likes and dislikes as well as for the responsibility of a person. It could be determined in the way they look, as in appearance, as well as the quality of the functioning of the body and mental capabilities. Gender refers to the roles and responsibilities of men and women that are created in the families, societies and cultures. It is significant to note that in the quarry there are different ages of both sexes, male and female, are varying from younger to the older persons. There is no fixed age as such to work in the quarry. Article 24 of the Constitution of India states: No child below the age of 14 years shall be employed to work in any factory or mine or engaged in any other hazardous employment.

Table No.1
Age & Gender

Sl.No	Age		Respondents gender		Total
			Male	Female	
1	15-17	N	6	2	8
		%	(2.5)	(3.2)	(2.7)
2	18-30	N	150	19	169
		%	(63.0)	(30.6)	(56.3)
3	31-40	N	49	24	73
		%	(20.6)	(38.7)	(24.3)
4	41-50	N	25	10	35
		%	(10.5)	(16.1)	(11.7)
5	51-60	N	5	5	10
		%	(2.1)	(8.1)	(3.3)
6	60 years an	N	3	2	5
	above %		(1.3)	(3.2)	(1.7)
			238	62	300
	Total		100	100	100

Mean: 31.22 Male: 30 Female: 35.87 Std. Dev: 10.687

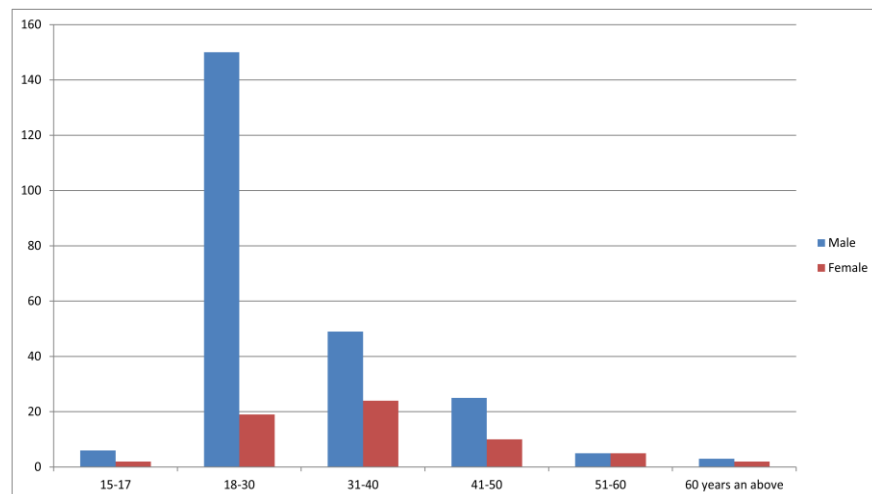
From table No.1 it was found that the male and female quarry workers start working at the age of 15 years. It is significant to note that the overall majority

(56.3%) of the quarry workers are between the age group of 18-30 years. It is similar with the findings of Robin D.Tribhuwan and Jayshree Patil (2009) on the book 'Stone Quarry Workers Social Insecurity and Developmental Issues' in Moshi and Yewalewadi in Haveli Blocks of Pune district of Maharashtra (p. 107) majority (52%) of the quarry workers range from the ages between of 18-30 years. In the case of male quarry workers the vast majority (63.0%) of the quarry workers are between the age group of 18-30 years. In the case of female quarry workers more than one third of the quarry workers (38.7%) are age range from the age group of 31-40 years. In the case of male quarry workers there is a steady decline of participation in the age group of 31-40 years of the quarry workers than the female quarry workers. However, the demand of the young adult male was rising in the quarry or the employer. The overall mean age of the quarry workers are 31.22 years and a standard deviation of 10.687 years. The mean age of male quarry workers is 30.00 years and the mean age of female quarry workers are 35.87 years. The mean average of the quarry workers is 30 years. The male quarry workers are more in number than female quarry workers since a worker has to work very hard at the quarry ; it needs more physical strength, manpower energy for extraction, loading, sieving etc. of stones. As per the research conducted by Robin D.Tribhuwan and Jayshree Patil (2009, p.106) on the book 'Stone Quarry Workers Social Insecurity and Developmental Issues' in Moshi and Yewalewadi in Haveli Blocks of Pune district in Maharashtra and Mohammed Talib on Writing Labour Stone Quarry Workers in Delhi, (2010, p.250 appendix) males are more in number than females. The challenges faced by the old age female quarry workers are described in case study No. 1. The challenges faced by child quarry workers are discussed in Case study No.5.

It is important to note that male and female quarry workers are working from various age groups from younger to older persons and the mean age is 30 years. Male quarry workers are more than female quarry workers. Working at quarry is a strenuous work, generally more numbers of male performing the work. It is found that the primary works are performed by the males like dressing, cutting, loading of cubic stones from earth to truck etc. Men are more reliable than women to work and earn for their livelihood in the quarry. However, females also work in quarries to support their family. Female mostly work lighter jobs like chipping of stones. It is likely to participate an older person was that to filling up their free time and for refreshing. It is found that children are also involved in the quarry work. It is observed that a quarry produces a good income for the quarry workers. Females who are employed in the quarry are related to working with their parents, family and their children.

Figure No. 1

Age and gender



The above diagram shows the age and gender of the stone quarry workers.

Education is an all round development, it is very important for the development of a person's standard of living and understandings. It can change the ways of thoughts, ideas, beliefs, attitudes, values and moral etc. according to their qualification. The quarry workers are not highly educated, it also has been examined that quarry workers do not require high educational qualification. Educational level of the quarry workers have been narrated in the particular job they hold to work in the quarry. Mizoram has achieved 91.58 percent literacy in 2011 census. The third highest in India next to Lakshadweep. As per the 2011 statistics the literacy level in Aizawl is 98.50% (ref: 2011 census data).

Table No.2
Educational Level

Sl.No	Category	Respondents gender		Female	Total
			Male		
1	Below Primary	N	28	1	29
		%	(11.8)	(1.6)	(9.7)
2	Primary	N	36	22	58
		%	(15.1)	(35.5)	(19.3)
3	Middle	N	75	18	93
		%	(31.5)	(29.0)	(31)
4	High School	N	89	20	109
		%	(37.4)	(32.3)	(36.3)
5	Higher Secondary	N	8	0	8
		%	(3.4)	(0.0)	(2.7)
6	Graduate	N	2	1	3
		%	(0.8)	(1.6)	(1)
		Total	238	62	300
			100	100	100

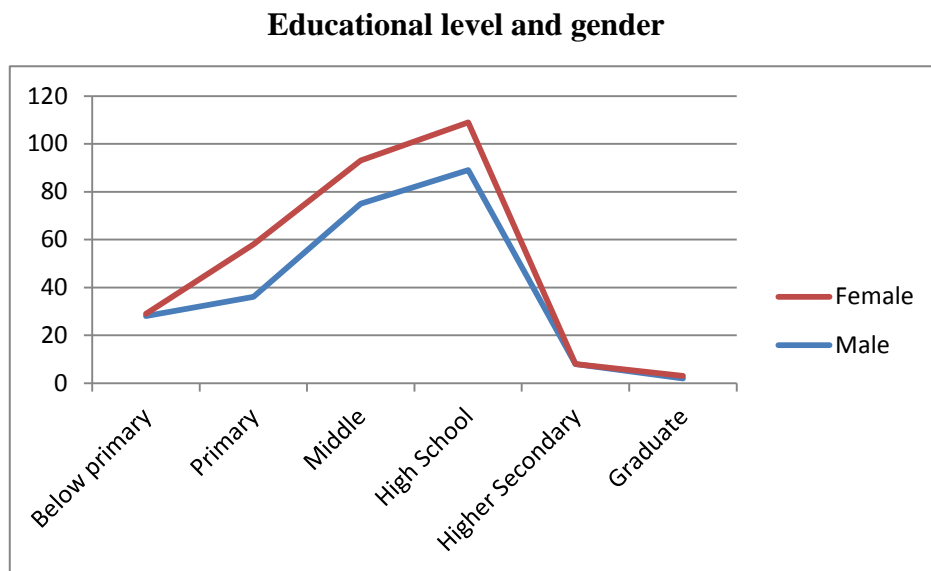
Table No.2 clearly shows that the general educational standard of the quarry workers is not very low. It was found that more than one third (36.3%) of the quarry

workers literacy status of the male and female quarry workers falls in the high school level. In the present study, a very low percentage (9.7%) of the quarry workers are below the primary level, ie, they have no formal education, (19.3%) quarry workers have completed their primary level, (31%) quarry workers are in the middle school level and (2.7%) quarry workers are in higher secondary school. The percentage of college education is low. Compared to males and females, the highest (37.4%) of the quarry workers have completed their high school in the cases of males and females; the highest (35.5%) quarry workers are in the primary level. It is significant to note that from the findings there is a little bit more concentration of education in male rather than female workers. From the report of 2011 census the combination of literate persons in Aizawl District the literacy rate of male is higher (99.01%) than female (98.00%). As compared to 2001 Mizoram census education statistics, in Aizawl the highest percentage falls in the category below primary level (ref: Statistical Abstract of Mizoram: 2011, p.11). It is surprising to note that the educational levels of majority quarry workers are at middle level which is comparatively higher to the literacy level in the national level. As per the research conducted by Robin D.Tribhuwan and Jayshree Patil (2009, p.116) on the book 'Stone Quarry Workers Social Insecurity and Developmental Issues' in Moshi and Yewalewadi in Haveli Blocks of Pune district in Maharashtra, vast majority (68%) of the stone quarry workers are illiterates.

The overall highest percentage of educational level of the quarry workers falls on high school level and the next is middle and primary level. Joining quarry work at the high school level is more, since they are normally at the adolescent period at this stage and they mostly feel not much interested in their studies and are very fond of trying to do new things. Due to this literacy, the quarry workers have some knowledge about to reading and writing. Graduate level is not much participatory

among the quarry workers. The reason being that quarry work does not need higher qualification. The study revealed that all the quarry workers except few are illiterates and hence it is found that the literacy rate of the quarry workers is high compared to other states in India.

Figure No.2



The above graph shows the educational level and gender of the stone quarry workers.

In a society there is a different status in which both men and women have roles to play. In the quarries different types of marital status are working every day.

Table No. 3 (A)
Marital status

Sl.No	Status	Categories		Total
		Male	Female	
1	Married N	129	44	173
	%	(54.2)	(71.0)	(57.6)
2	Unmarried N	102	10	112
	%	(42.9)	(16.1)	(37.3)
3	Divorce N	2	4	6
	%	(0.8)	(6.5)	(2.0)
4	Separated N	3	0	3
	%	(1.3)	(0)	(1.0)
5	Widow N	0	4	4
	%	(0)	(6.5)	(1.3)
6	Widower N	2	0	2
	%	(0.8)	(0)	(0.6)
Total		238	62	300
		100	100	100

The stone quarry workers continue to remain in the labour market after they are married. It was found that from table No.3 (A) out of 300 quarry workers majority (57.6%) of the quarry workers get married, in that the married female quarry workers get higher percentage (71.0%) than the male quarry workers (54.2%). In fact, the reasons for female quarry workers are more to supplement the income of their husband. More than one third (37.3%) of the stone quarry workers falls under the category of unmarried, in that male quarry workers are more than females quarry workers, due to this, the pattern of quarry work is easy to enter to generate income for their family at a very young age. Out of 300 quarry workers only 4 (1.3%) quarry worker are widows, 3 (1.0%) quarry worker are separated and 2 (0.6%) of quarry worker are widower. As per the study conducted by A.A. Aliyu and A.U.Shehu (Nigerian Medical Practitioner Vol. 50 No 2, 2006, p.43) on the title ‘Occupational

Hazards and Safety Measures Among Stone Quarry Workers in Northern Nigerian’ vast majority (73.0%) of the stone quarry workers are married. Another research conducted by Robin D.Tribhuwan and Jayshree Patil (2009, p.110) on the book ‘Stone Quarry Workers Social Insecurity and Developmental Issues’ in Moshi and Yewalewadi in Haveli Blocks of Pune district in Maharashtra, vast majority (92%) of the stone quarry workers are married.

Marriage is the first and foremost thing for making a family in the society. But early marriage may have a negative impact to the children. There is a specific age at which a person is allowed to marry, either as a right to subject to parental or other forms of consent. Age and other requirements vary between countries, but generally set at the age of 18, although most jurisdictions allow marriage at slightly younger ages with parental and/or judicial approval, or in case of pregnancy. As per the Child Marriage Restraint Act of 1929, the age of Marriage for female is 18 years and male is 21 years of age.

Table No.3 (B)

Age at Marriage

N=188

Sl.No	Age Category	Respondents age of marriage		Partner Age	
1	15-20 age	80	42.5	103	54.8
2	21-25 age	71	37.8	59	31.4
3	26-30 age	27	14.4	19	10.1
4	31 and above	10	5.3	7	3.7
	Total	188	100	188	100

Table No.3 (B) indicates the married ages of the quarry workers and their partners. Out the 300 quarry workers more than one third (37.3%) did not get married. Among the 188 respondents who already got a partner as we compare to quarry

workers age of marriage and partner age, the highest percentage 42.5% and 54.8% of the respondents age and partner age respectively falls together at the age category of 15-20 years of age. Only a small proportion of respondent's age (5.3%) and partner age (3.7%) falls under the category of 31years and above. Marriage without proper planning and also improper thinking of sources of regular income are very popular in the society. Early marriage is prominent among them, this proposes the quarry workers to work in the quarry which is easy to enter and earn money for their livelihood. Quarry work generates income easily and it is very important for them to meet their needs. Getting married with improper income leads to poverty and other social problems because marriage is the first social institution. The child needs proper care since before he/she is born; mother needs health and nutrition to support the unborn baby. Women are the most disadvantageous people in this type of work. Men are at the risk of chronic body pain, ulcer etc. which happens due to early age of joining quarry work.

In the present study, married quarry workers lead a major role in participating at the quarry work. They are more or less likely to concentrate in generating income for their family due to easy entry as well as for the adolescent period, and they are not having other regular sources of income. Quarry works generate casual nature of employment for the people to earn their livelihood. Marriage is not a bar for quarry work. Both sexes are employed; it is found that unmarried and school dropouts are also working in the quarries. Early employment in quarry work in Mizoram leads to early marriage. Both married and unmarried enter into quarry work. After marriage they continue to work as a quarry worker. Marriage is not a hindrance to work in the quarry.

Family is the most important primary group in society. Of all the social organisations, large or small, family is one of the greatest sociological significance. In the Mizo society independent family is not practiced much and normally large sizes of the family are associated with father and mother, sisters and brothers, son-in-law and daughter in law, nephew and niece, uncle and aunt, as well as grandfather and grandmother. Joint family is quite common among the Mizo family. Since the population of Mizo tribe is low the inhabitants of Mizoram wants to retain their population strength. In view of this, large size families are found among the Mizo tribes. As per the 2011 census in Mizoram the highest household (29.89%) belongs to 6-8 number of household in the family (2011 census data).

Table No.4

Size of the family

Sl.No	Category	Frequency	Percent
1	Below 2	37	12.3
2	3-4 members	134	44.7
3	5-7 members	122	40.7
4	7 an above members	7	2.3
	Total	300	100

Mean: 4.25

Std.Deviation: 1.537

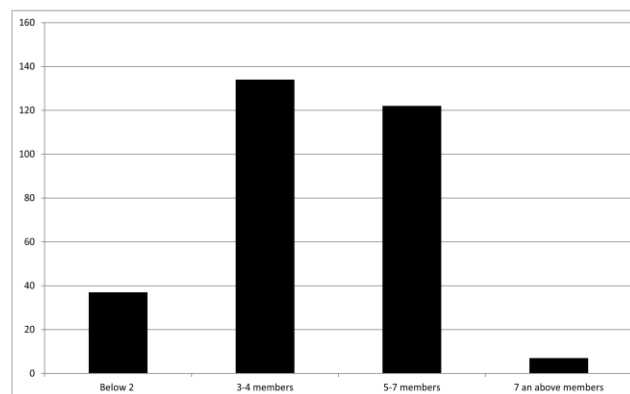
Table no.4 reveals that out of the 300 quarry workers more than one third (44.7%) of the quarry workers have 3-4 members living in their family. The size of the family here also refers to both migrant quarry workers and non-migrant quarry workers. As we compare to the study conducted by Robin D. Tribhuwan and Jayshree Patil (2009, p. 115) on the book 'Stone Quarry workers Social Insecurity and Developmental Issues', more than one third (44%) of the Beldars family size is 1-4

members in the family. It is significant to note that in the present study vast majority (57%) of the quarry workers are 1-4 members in the family. There are more quarry workers living in the 1-4 members in the family at the present study than the previous research .It is found that only a few (2.3%) of the quarry workers have 7 and above members living in the family. It is significant to note that vast majority (87.7%) of the quarry workers belong to a large size family. Normally, sizes of the Mizo families are above 4 which is a large size family. Since Mizo are not willing to adopted family planning the family size is large. The family sizes of the quarry workers are huge in size. The mean sizes of the family are 4.

The studies conclude the fact that being Mizo's as tribes the quarry workers in Mizoram belong to large size family.

Figure No. 3

Size of the family



The above diagram shows the size of the family of the quarry workers.

The geographical landscape of rocky mountain is suitable for extraction of stones for building materials and therefore quarry work is common in the Mizo society. Quarry work is connected with the Mizo family since the earlier times. It is a good source of income for the quarry workers. It is observed that the quarry workers are working with their relatives like sons, daughters, wife, husband and other relatives. Quarry work is a very important source for the quarry workers.

Table No .5

No. of quarry workers in a family

Sl.no	Numbers	Frequency	Percent
1	No quarry workers in the family other than the respondents	198	66
2	1 worker	78	26
3	2 worker	16	5.3
4	3worker	8	2.7
	Total	300	100

Many of the quarry workers are not singly to earn income from the quarry from their family. They are living with other quarry workers in the family. Table No. 5 reveals that about two third (66%) of the quarry workers have no other quarry workers engaged in the family. It means that the respondents are singly working from the family. The other members who are not working in the quarry are found to hold other job like, driver, agriculturist, handyman, beautician, manual labour, government offices, workshop etc. More than one third (34%) of the quarry workers are living together with other quarry workers in their family. 26% quarry workers are living with one other quarry workers in the family. As entry in the quarry is easier than the other types of job, henceforth the unemployed people in Mizoram opt to work in the quarries. Their uncles, brother, sisters, husband or wives etc. work in the quarry. Followed by 5.3% quarry workers are living with another two quarry workers in the

family. The remaining 2.7% quarry workers are living with three other quarry workers engaged in the family and quarry work is the main task for income of the family. The mother, father, son and daughter are working together in the quarry. 44% of the quarry workers use the quarry work as their family employment. It is found that a maximum of 4 quarry workers are found to be in the family; for these families quarry work is a family occupation. In Mizoram quarrying activities is also done by people working under the government as part time job or during holidays. As per the study conducted by A.R.Saran and A.N.Sandhwar, (1990, p. 99) on the book 'Problems of Women workers in unorganised sector (Brick Kilns, quarries and mines of Bihar and West Bengal)' the highest 47 quarry workers has 2 other family member engaging in the stone quarry work in Bihar. The holders of the quarry workers who engage their family members engaged in the quarry work is more than the present study in this category.

The study highlights the fact that quarry work is a family occupation and maximum of 4 quarry workers are found to be in a family.

The present study highlights about the number of children in the quarry worker's family only. Generally, the quarry workers are living not only with their own children but also with other children of their relatives.

Table No. 6

No of children in the family (N=136)

Sl.No	No.	Frequency	Percent
1	1 children	44	32.4
2	2 children	51	37.5
3	3 children	29	21.3
4	4 children	11	8.1
5	5 children	1	0.7
	Total	136	100

It was observed that the nephews and nieces of quarry workers and other relatives also live with them. It is also significant to note that children of unmarried mothers and widows also stay with them. Therefore, the family is large and the number of children in the family indicates all children living in the family. Table No.6 clearly shows that out of the 136 quarry workers living with children in the family more than one third (37.5%) have 2 children, a smallest proportion (0.7%) only have 5 children living within a family. From the present study, the children are regarded as children below the age of 14 years. As stated earlier quarry work is a family occupation, therefore, children are also involved in quarry work (ref: Table No.5). In some places children work in the quarry digging explosive holes and chipping stones to assist their parents during holidays and after school. They are children who spend their money for buying cigarettes, pans, eatable stuffs etc. Children are found to be an additional hand for generating income for the family. Out of the 300 respondent's majority (54.7%) of the quarry workers do not live with children in the family. As per

the study conducted by Robin D. Tribhuwan and Jayshree Patil (2009, p. 150) on the book 'Stone Quarry workers Social Insecurity and Developmental Issues', there are 284 children in the study from different caste. As we compare to the present study, children are more in number than the present study.

Therefore, it may be concluded that there is a possibility of child abuse among the quarry workers children in Mizoram as this is supported by the high rate of child abuse in Mizoram (ref: Mizoram.blogspot.in/ Tuesday May 2012). The present study highlights the involvement of children in hazardous work at quarry in Mizoram.

The Right of Children to Free & Compulsory Education Act came into force from April 1, 2010. According to the Right to Education (R.T.E) Act,2009 under the Article 21 A of the Indian Constitution, every child between the Age group of 6-14 years will be provided 8 years of elementary education in an age appropriate classroom in the vicinity of his/her neighbourhood. Sarva Shiksha Abhiyan Scheme is very successful in Mizoram State. It is advantageous for the quarry workers to send their children in these schools free of cost. Formal education in Mizoram started with the arrival of Christian Missionaries. It was the Christian Missionaries who abridged Mizo language into writing. In doing so, they adopted Roman Script in 1894. For more than half of the 20th century, i.e. from 1895-1952, the Church through Honorary Inspector of schools look after Elementary Education.

Table No.7 (A)
Child Schooling N=136

Sl.No	Schooling	Frequency	Percent
1	Not schooling	55	40.4
2	Schooling	81	59.6
	Total	136	100

Table No. 7 (A) reveals that Out of the 136 quarry workers who are living with children, majority (59.6%) of the quarry workers have child schooling children. More than one third (40.4%) have children who don't go to school due to that they are either dropout, uneligible age or finished their school level or another different reasons (refer Table no.7 (B)). As we compare to the study conducted by Robin D. Tribhuwan and Jayshree Patil (2009, p. 151) on the book 'Stone Quarry workers Social Insecurity and Developmental Issues' majority (58.09%) of the quarry workers have not school going children and 41.90% of the quarry workers have school going

children. It is significant to note that the percentage of school going children is higher in the present study. Except a small percentage (2%) send their children to English medium school, majority of the quarry workers children attend Government School which is funded by the SSA (Sarva Shiksha Abhiyan) due to less income and limited or insufficient time to devote for their children's education. In the SSA school they give free textbooks, mid day meal and free uniform. As such the quarry workers prefer to send their children to SSA school; one of the reasons known to be is the close proximity of the SSA school. Though the quarry workers who send their children to private English medium school spending about Rs.500 per month as school fees. More than one third (46.3%) of the quarry workers do not have children in the family due to they are unmarried and married workers who have no sons and daughters in the family. From the report of Vanglaini Newspaper, 25 Jan 2013 that Mizoram Building and Other Construction Workers Board distribute and funded to 3,226 to labour children for their education at Rs.1500/children.

Table No.7 (B)

Reasons for child not schooling (N=55)

Sl.No	Reasons	Frequency	Percent
1	Not eligible age (0-3 years)	35	63.6
2	Poverty	9	16.4
3	Due to work	7	12.7
4	Not interested	4	7.3
	Total	55	100

Table No.7 (B) reveals that nearly two third (63.6%) of the quarry workers children are not sent to school due to the reason that the child is under the age of 4 years. Less than seventh (16.4%) of the quarry workers children the reason for not sending their children to school is due to low income; for a while they attend school

but are terminated when they finish their middle school stage. The expenses for education in the future are not possible for the quarry workers. Another (12.7%) reasons is due to work, the parents of these children need to work for the family's daily needs and let the children stay in the house to do household work. They also join casual labour, helper, handyman etc. and the remaining (7.3%) reasons the children are not sent to school is due to that they are not interested and due to scholastic problem.

Table No.7 (C)

School dropout

Sl.No	Dropout	Frequency	Percent
1	Not dropout	70	74.5
2	Dropout	24	25.5
	Total	94	100

Table No.7(C) states that more than one fourth (25.5%) of the quarry workers children are dropouts. The reasons for school dropout is that the child practices illegal substances like alcohol, dendrite, correcting fluid etc. in the school and get expelled by the school authority. The other reason is that the child wants to join casual labour instead of studying because he/she is not interested in his/her lessons. Poverty makes the child dropout from the school. Schooling is very expensive nowadays especially when they attain high school standard. The child is sent to become a domestic worker, helper in the construction of housing, automobiles repairing workshop, tea stall, tailoring etc. This is evident from the study among the quarry workers who are having sons practising illegal substances like drug and alcohol living in their family. As per the study conducted by Mohammed Talib on Writing Labour Stone Quarry Workers

in Delhi, (2010, p.254 appendix), he found that there are 23 school dropouts from the study. It is quite similar with the present study.

Children education is very important for the upliftment and development of the person and for the society. It is a whole learning process of not only acquiring knowledge but also to a deeper level, for a person to discover more about himself as well as which he is living in. Good education also probes and analyses the process of learning that is unique in every one of us.

Table No. 7 (D)

Maximum level on educational qualification of son & daughter

Sl.No	Maximum level	Son		Daughter	
		Frequency	Percent	Frequency	Percent
1	Uneligible age for formal schooling	35	24.3	18	16.7
2	Primary	51	35.4	39	36.1
3	Middle	28	19.4	26	24.1
4	High School	19	13.2	16	14.8
5	10+2	5	3.5	3	2.8
6	Graduate	4	2.8	4	3.7
7	Not attended	2	1.4	2	1.9
	Total	144	100	108	100

Note: Maximum educational level of a child of each worker was considered.

Table No.7 (D) indicates that many quarry workers are conscious about the education of their child. Mostly they send their children to school at the native locality and everyday they get mid day meal in the school. It eases everyday pocket money for their children and having lunch in the noon time. In the case of son, the highest (35.4%) of the quarry workers children went to primary school. In the cases a daughter, the highest (36.1%) went to primary school. Both gender males and females are not different in the educational level. Though the quarry workers son and daughter left school because of scholastic problem and due to poverty. The percentage from

high school upto graduate level is very poor. The uneligible age here refers to those who are not eligible to attend regular school, e.g. 0-3 years. However, as infants they go to Anganwadi. The smallest proportion 1.4% and 1.9% of the quarry workers son and daughter respectively does not attend to school due to ignorance and not interestedness. Quarry workers children attend in the local Anganwadi centres but sometimes parents do not bring their children regularly since they have a very limited time to spare for their children.

Quarry workers send their children to both government and private English medium school. It is observed that with the very low level of income most quarry workers children go to primary and middle Government schools under the Sarva Shiksha Abhiyan Scheme in their own locality. It eases the quarry workers to spend money for their child's education. Besides this, there are children who do not continue to join school due to poverty, much needed work and due to scholastic problems. There are children who dropout their regular school due to poverty and the family demand is very high among their children to enhance income for their family. Their parents eagerly let the children to join labour in various occupations like, domestic worker, helper in constructing of housing, electric wiring, automobiles repairing workshops, tea stall, hardware store etc. Some children are expelled from schools due to misbehaviour and practising illegal activities like alcohol, smoking, missing classes etc. in the school. Quarry workers children attended the anganwadi before they join the school in practical.

It was found that quarry workers are concerned about their children's education. Generally, the quarry workers families are unable to pursue higher educational because of their insufficient income. Quarry workers who have the knowledge about the importance of education do not allow their children to join

labour by force. Quarry workers who have more children and earn meagre income do not give much interest about higher education. The higher the education the amount needs to be spent is more and more. School dropout is found to be common among the quarry workers children. Anganwadi is found useful for quarry workers children to promote the child bearing for the school life. Aspirations about the children from their parents are very low among the quarry workers of children both attending the school in government and private school.

SPATIAL MOBILITY:

Migration is thought to be the consequence of unequal development wherein people from 'backward' regions move to 'developed' region. Industries mostly situated in urban areas require steady supply of labour which induces migration from the adjoining villages. The causes of migration can be a push factor or a pull factor. Migration plays a significant role in the extraction of stones and labour force participation of quarry in Mizoram. Migrant's workers are hired for manual labour in unorganised labour. Mizoram is a peaceful state and the work culture is different from other parts of the country, migrant labour can easily generate income in an unorganised sector. As per the 2001 data on inter-state migration in Mizoram based on last residence (0-9) ; 22,599 from other states, 31739 out migrants,8436 from other countries,704 net in migrants, the migration rate is (0.1) and the growth rate from 1991-2001 is 28.82 (ref: 2001 migration status).

Table No. 8 (A)

Migrant Status

Sl.No	Status
1	Inside Mizoram
N	12
%	(12.1)
2	Outside Mizoram
	India
N	49
%	(49.5)
3	Abroad
N	38
%	(38.4)
Total	99
	100

Table No.8 (B)

Year of Migration of the quarry worker N= 99

Sl.no	Year	Frequency	Percent
1	1970's	1	1.0
2	1980's	6	6.1
3	1990's	11	11.1
4	2000's	81	81.8
	Total	99	100

Table No.8 (C)

Reasons for Migration N= 99

Sl.No	Reasons	Frequency	Percent
1	Economic reasons	97	98.0
2	Family concerns	2	2.0
	Total	99	100

Table No.8 (A) reveals that migrants play an important factor contributing to the production of stones from the quarry and they migrate from different parts within and outside India. They account one third (33%) out of the 300 respondents among the stone quarry workers. Among the migrated, the highest (49.5%) quarry workers are influxes from outside Mizoram/India, 38.4% of the quarry workers are from abroad (Myanmar/Nepal), more than tenth (12.1%) of the quarry workers are from inside Mizoram. Out of the 300 respondents vast majority (67%) are native of Aizawl area. Migrants come from Myanmar, Nepal, Jharkhand, Assam, West Bengal, Manipur, Ranchi and Bihar. Migrant quarry workers who do not bring their family mostly go home once or twice a year. Fortunately, those migrants who are living with their family send their children in the school located at the quarry locality, everyday they get mid day meal in the school. Spending money for their children in the school

is very low. The lone migrants send their remittances to their family. The migrants are settled mostly with their friends in the working place in a rented house or leased house near the quarry site which is a very common practice, they live with their family or independently too. It is also found that the lone migrants are staying in the lease houses (houses built by the quarry owner). The quarry owner or the contractors are very dependable to the migrants so that they are very reliable in their work to earn productions of stones. Moreover, electricity, water supply, shortage of sanitation and toilet facility is very poor by the migrants because most of them are living in a leased house with improper facilities and manage their living conditions with what they have earned.

Table No.8 (B) clearly depicts that the duration of migrants to work in the quarries are different from one person to another among the migrants. Out of the 99 migrated respondents the highest (81.8%) of the migrants quarry workers migrate during the year 2000 onwards, 11.1% of the quarry workers migrate during the period of 1990's, 6.1% quarry workers migrated during the 1980's and (1.0%) quarry workers during 1970's. It is found that there is an increasing trend of adjoining labour participation during the millennium. The construction and development work also have greater interests from this period as well. Quarry work here does not require higher skills and educational level so that it is very easy to enter for both the migrants and non migrants. Harassment, exploitation, discrimination according to race, sex, caste and other tortured by the contractor or the owner of the quarry does not happen among the migrants.

Table No.8 (C) reveals that the main concerned (98.0%) of the migrated quarry workers for the reasons of migration is economic reasons and a few (2.0%) of the migrated quarry workers reasons for migration is family concerns. Better

economic opportunities attract the labourers to move from one place to another. This is true for both international as well as national. Helen I Safa has remarked, 'migration is normally viewed as an economic phenomenon' (Mittal, A.C., Sharma, S.P. (2002), p 52). The push factor compels the people to leave the place. Poverty of the rural people pushes the people out to cities where better economic opportunities are available. Family concern is due to the fact that there is no other family member to earn for the livelihood and that they do not want to stay longer in the native place. In India, according to the estimate of the planning commission, over one third of the rural population is below the poverty line. Moreover, due to population explosion, less cultivable land is available to them. The plight of the landless labour, small and marginal farmers is miserable. As per the research conducted by Mohammed Talib on Writing Labour Stone Quarry Workers in Delhi, (2010, p.251 appendix), (26.73%) of the stone quarry workers are migrants. As we compare to the present study just about one third (33%) of the quarry workers are migrants among the stone quarry workers in Aizawl. The issues related to migrant quarry workers are described in focus group discussion No. one (1) and three (3). The challenges faced by migrants quarry workers are discussed in Case study No.2.

The vast majority (67%) of the quarry workers in Mizoram are non- migrants. Mizoram is a peaceful state and there are many people migrated from different parts of India due to the push and pull factors. They come to work for labour in search of different kinds of jobs. In the case of Myanmar's they are influxes by political suppression and economic reasons of which they migrate to Mizoram. It is mandatory that all the migrants in Mizoram today need Inner Line Permit (I.L.P) to settle and to work in Mizoram. The period of millennium has a greater impact/influence on the

labour migration in Mizoram. There is an increasing employment opportunities in Mizoram, and their main reasons are economic problems.

Table No.8 (D)
Demographic Characteristics and Working Conditions of Stone Quarry Workers: Pearson's R

Demographic Characteristic	Indices of Working Conditions				
	Working Hours	Working Condition Index	Accident Index	Working Environment Index	Work Perception Index
Age Group	-0.11	0.00	0.02	0.05	0.02
Gender	-0.30**	0.06	-0.04	-0.03	0.08
Education Status	-0.07	0.19**	0.03	0.01	0.08
Size of the Family	-0.10	0.08	-0.02	0.05	0.00
Migration Status	0.03	-0.21**	-0.10	0.05	-0.16**

Source: Computed

* * P < 0.01 * P < 0.05

The relationship between the demographic characteristics such as age group, gender, educational status, size of family and migration status and indices of working conditions namely working hours, working conditions index, accident index work perception index correlations of Karl's Pearson's coefficient of correlations was written, the results are written in tables. Age group size of family has no significant relationship with the indices of working conditions even at 5% level. However gender educational status and migration status have significant relationship with at least 1 index of working conditions. Gender has negative effects on working hours it means women quarry workers have significantly working less hours than their male counterparts. Educational status has positive effects on working conditions of the quarry workers; it means the higher the level of education, the better the working conditions of the quarry worker. Migration status has negative effects on working condition index and work perception index. It means the migrants have poor working

conditions compare to the non migrants. Likewise, migration status has negative relationship with the work perception index, which is comprehensive index of the working conditions.



Migrant Quarry Workers at Lawipu Quarry



Mizo Quarry worker breaking the stones

The personal income in quarry work refers to all the wages, salaries, profits, interest's payments, rents and other forms of earnings received in a given period. The income is related to the standard of living by the quarry workers. The quarry workers income depends on the work done by person and influences of the living conditions of the family. According to the Mizoram Minimum Wages Rules, 1992, minimum daily rates on the state sphere was recently revised w.e.f 1st April 2011 on basis of the adviced of the Advisory Board as follows: 1) Unskilled:Rs.170/- 2) Semi-skilled: Rs.190/- 3) Skilled-II: Rs.240/- 4) Skilled-I: Rs.300/-. The Rules is maintained and functioned by the Labour and Employment Department, Aizawl (ref: Labour & Employment Dept. Aizawl). As per the 2011 May notification, a household with an annual earnings of more than Rs.27, 000/- will stand excluded from the B.P.L family (ref: indianbpl.blogspot.com).

Table No. 9 (A)

Personal income

Sl.No	Income in Rs.	Respondents gender		Total
		Male	Female	
1	Rs.1000-3000 N %	79 (33.2)	34 (54.8)	113 (37.6)
2	Rs.3001-6000 N %	142 (59.7)	26 (41.9)	168 (56.0)
3	Rs.6001-9000 N %	10 (4.2)	1 (1.6)	11 (3.6)
4	Rs. 9001 and above N %	7 (2.9)	1 (1.6)	8 (2.6)
	Total	238	62	300
		100	100	100

Mean: 3500.33

Std. Dev: 1651 E3

Table No. 9 (A) indicates the monthly personal income of the quarry workers. It reveals that out of the 300 respondents' majority (56.0%) of quarry workers

personal income falls under the income group of Rs.3001-Rs.6000. The mean personal income of the quarry workers is Rs.3500/- per month. In the male cases, majority (59.7%) of quarry workers falls under the income group of Rs.3001-Rs.6000 and in the female cases majority (54.8%) of quarry workers are under the income group of Rs.1000-Rs.3000. It is significant to note that as compared to males and females there is so much difference in the income level due to the demand of man power, supply of labour in the quarry than the female labour. Most of the female quarry workers are chipping stones under contract and they get paid only one third the amount they earn from the chipped stones i.e. 1 metre of manual chipped stone is Rs.1000/- and they are given Rs. 300/metre to the contractor or the quarry owner. One tin is measuring a capacity of about 16-18 litres and 50 tin chipped stones are 1 metre. In some areas, female quarry workers are free to chipped stones in the quarry as they wish or maybe due to the local quarry or else their relative's quarries or known people without giving money from the chipped stones. They are asked to chip stones in the quarry by the contractors. Sometimes it happens that they do not sell their chipped stones every day. The quarry workers do not have enough chipped stones for the customer who wants to buy at that particular time. They collect scattered stones in the quarry and chip in their own temporary sheds covered with silpaulline for the whole day. There are a few male quarry workers which are not covered by the Minimum Wages Rules, 1992 due to the unskilled entry into the task. These especially are migrants; and are not skilled in any kind of work. Rs.150/- is the entry wages per day for the breaking stones for boulder, collecting the stones and keeping in one place for breaking, loading etc. Generally, the males work according to the stones they cut for cubic and sell it to the customers. They work mostly under contract basis. The contractor gets half the amount from per double cubic of stones; i.e. double cubic

stones are Rs.28/-.The male quarry workers whose work is only breaking the stones into boulder also get half the amount from 1 metre/boulder, i.e. Rs. 300/-metre. Males mostly enter into the work as unskilled, semi-skilled and skilled labour. There are quarry workers who are already skilled in manual work. These may shift from one place to another for better opportunities. A small proportion of the quarry workers 3.6% and 2.6% falls under the category of Rs.6001-Rs.9000 and Rs.9001 and above respectively. Those who get higher income are the skilled quarry workers and they can do multi-task in the quarry. As per the study conducted by Sunitha, N, Nandini, N, Naik D.P.on ‘Economic Environment and Health Status of Stone Quarry Workers’ in Bangalore on An International Quarterly Journal of Ethno and Social Sciences (vol.2, 3&4 pp 27-33, 2010), majority (59.8%) of the quarry workers income falls under the category of Rs.1000/- -- Rs. 2000/-. The monthly income of these quarry workers get lower amount than the present study.

Table no. 9 (B)

Respondent’s family income (monthly)

Sl.No	Income in Rs.	Family Income	
		Frequency	Percent
1	upto 3000	66	22
2	3001-5000	74	24.7
3	5001-7000	56	18.7
4	7001-9000	36	12
5	9001-11000	29	9.7
6	11001-13000	9	3
7	13001-15000	10	3.3
8	Above 15000	20	6.7
	Total	300	100

Mean: 7248.33

Std. Dev: 6.695 E3

Table No. 9 (B) shows the gross family income contribution from other sources of the family member of the quarry workers. The total family income of the quarry workers range from Rs.3000- Rs.15000. Out of the 300 respondents who got the highest gross income is nearly one fourth(24.7%) of the quarry workers have a total family income of Rs.3001-Rs.5000 per month. The mean family income is Rs.7248.The lowest (3%) of quarry workers falls on the category of Rs.11001-Rs.13000per month. The low level of the combination of the gross income of the family shows that there is very less participation of workforce among the other members of the family or else there are only a few members ability to contribute for enhancing the family to hold a job. The large families make more income than small families. Thus, large families contribute more towards the daily needs of the family as compared to the small families. As per the study carried out by Elavarasi, R. 2006 p. 48 on ‘Socio-Economic and Health Conditions of Women Quarry Workers at Perambalur District’ (unpublished M.Phil dissertation), majority (50.0%) of the women quarry workers total family income falls on the category of Rs.4001-Rs.5000/-. As we compare with the present study only a sizeable proportion (46.7%) of the stone quarry workers in Aizawl family income falls on the category of Rs.3000/- -- Rs.5000/-.

Table No. 9 (C)

Pattern of household consumption expenditure

Income class	Food	Clothing	Housing	Medical	Transport	Others	Total
Upto 3000	70.23	3.01	8.13	3.64	4.53	10.47	100
3000-5000	70.79	3.74	7.89	2.83	4.61	10.14	100
5000-7000	69.42	5.7	7.11	3.38	5.08	9.32	100
7000-9000	67.52	6.84	6	3.06	5.64	10.95	100
9000-11000	63.22	8.13	5.36	2.76	5.28	15.25	100
11000-13000	66.62	9.1	5.94	4.35	5.8	8.18	100
13000-15000	64.95	7.55	6.36	2.81	6.63	11.7	100
above 15000	65.64	10.44	4.63	3.81	6.38	9.72	100
Total	67.82	6.36	6.57	3.16	5.32	10.77	100

Table No. 9 (C) describes that the household consumption of expenditure from family monthly income. From the total monthly family income 67.82% of the income is spent for food; the next is others (10.77%) like children's education, intoxicants like pan, tobacco, telecommunication, church offering etc., 6.57% for housing, 6.36% for clothing, 5.32% for transportation and the lowest 3.16% for medical expenses. From the expenses by the quarry workers, more than half of the income used for food which shows that food is the basic necessities of their daily life. But their medical expenses show the ignorance of their health conditions and even though there are minor health problems, they are not trying to consult doctors until and unless it becomes severe.

The income range is varied differently according to the nature and hours of work spend per day or per week. The workers generally live simple ways of life and cannot attain higher standard of living according to their income. The female workers especially add or supplement their income from other sources, since their work is mild and usually chip stones. Their low income cannot provide sufficient daily needs. The increase in price of commodities for everyday needs dethrone the quarry workers of better living conditions.

The gross family income of the quarry workers is not high. It was also observed that even though the other members in the quarry workers family do job to enhance income, it is irregular and less. When the family income increases the livelihood becomes more comfortable than before, increase in the labour force participation supplement the income and it can minimise the wariness of the family. Those who are living in marginalised community hardly pursue or maintain the standard of living for the family. More than two third of their family income is used for food. Quarry workers rarely used family income for medical expenses.

With the advent of increasing prices of food items and other commodities, it is very hard for the quarry workers to manage with a meagre amount. The increase in demand of each household makes the income more insufficient and it also depends upon the sizes of the family.

Table No. 10 (A)

Opinion on insufficiency of income

Sl.No	Category	Frequency	Percent
1	Not sufficient	142	47.3
2	Sufficient Income	158	52.7
	Total	300	100

Table No. 10 (B)

(N=142)

Reasons for perceiving income not sufficient

Sl.No	Reasons	Frequency	Percent
1	Single earner	13	9.2
2	Very less income	38	26.8
3	Needs are many	40	28.2
4	Unable to save money	7	4.9
5	No specific reason	44	30.0
	Total	142	100

Table No.10 (A) reveals that majority (52.7%) of the quarry workers have opined that their monthly income is sufficient, whereas the lowest (47.3%) of the quarry workers opine that their monthly income is not sufficient. The reasons for insufficiency of monthly income are described in Table No.10 (B).

Table No.10 (B) reveals that among the quarry workers who has the opinion that their income is insufficient, out of the 142 quarry workers who have insufficient income less than one third (30.0%) of the quarry workers replied that there is no specific reason. This is due to the fact that there are many reasons and that they

cannot easily express or point out their specific reasons. More than one fourth (28.2%) of the quarry workers response that their needs are plenty and more than one forth (26.8%) quarry workers give their reasons as less income. As the quarry workers family size is also large (ref: Table No.4) like others, the family needs are increasing day by day and they need to spend their income in different purposes to survive. The income is very less to meet the basic requirement for the betterment of their family and the limitation of income could not reach them to meet both their ends and needs. Less than tenth (9.2%) of the quarry workers response that they are single earners and the least (4.9%) of the quarry workers are unable to save money properly. It should be noted that income from other sources is not regular and is limited. Normally, the only husband who is the sole earner for the family has faced problem due to inadequate income which makes the family life miserable and pitiable. The very small income from the quarry is needed to use for daily requisites and it is very hard to save even a small amount of money.

Table No. 10 (C)

Management of income (N=142)

Sl.No	Categories	Frequency	Percent
1	Borrows & repay	49	34.5
2	Simple living	48	33.8
3	Both	2	1.4
4	No specific ideas	43	30.3
	Total	142	100

It is interesting to know how the quarry workers manage to survive with insufficient family income. Table No.10 (C) describes that out of the 142 respondents more than one third (34.5%) of the quarry workers manage their income by borrowing and repaying. It clearly shows that the low income and the high demand of their family compels the quarry workers to lend money to other persons wherever is

possible within the community. The quarry workers repay back the money when they get their wages or else whenever possible without any kind of interest and again they borrow money in times of need. One third (33.8%) of the quarry workers manages income by simple living whereas a negligible proportion (1.4%) manage income by both simple living by borrowing and repaying. It is a common practice of the quarry workers to borrow and repay. The quarry workers standard of living is very simple due to the less income and could not attain a well mannered human life within the family. Less than one third (30.3%) of the quarry workers have no specific ideas regarding the management of income. They do not think hardly or deep enough. It was observed that they also maintain their family life normally.

The quarry workers generally earn a very meagre amount to meet the demand of their family. Normally, the income cannot reach both their ends and needs. With a meagre amount of income and large family, the rise of needs in day to day life makes it difficult for them to save money for further needs and the insufficient income makes the quarry workers more insecure and vulnerable to the society. They can manage their income by means of borrowing and repaying whenever they can. The quarry workers in Mizoram adopt a simple living. Even though the quarry workers lack the knowledge of management of family income, they seem to get through with life, without proper planning.

The earner and the dependents of the family member show the quarry workers standard of living. The earning members are very important to enhance income and for the family. But in the mean time when the dependents are more in number in every household of the quarry workers, it may be a burdensome for their livelihood.

Table No. 11 (A)

Earners in the family

Sl. No	No. of earner	Frequency	Percent
1	1 earner	112	37.3
2	2 earner	120	40.0
3	3 earner	47	15.7
4	4 earner	16	5.3
5	5 earner	1	0.3
6	6 earner	4	1.3
	Total	300	100.0

Mean: 1.95

Std.Deviation: .994

Table No. 11 (B)

Dependents in the family

Sl.No	Dependents	Frequency	Percent
	No dependents	33	11.0
2	1	48	16.0
3	2	84	28.0
4	3	90	30.0
5	4	32	10.7
6	5	13	4.3
	Total	300	100.0

Mean: 2.26

Std. Deviations: 1.286

Table No. 11 (A) shows the number of earners in the quarry workers family. It was found that more than one third (40%) of the quarry workers have 2 earners living in the family. A negligible proportion (0.3%) has 5 earners living in the family. Besides the quarry work, the family members have involve in different types of job; petty trade, casual labour, driver, handyman, hawker, agricultural workers, livestock, gov't servant, home based work

like tailoring etc. are the common known sources of income for the members of the family. They enhance the income but it is meagre for their livelihood. As per the study conducted by A.R.Saran and A.N.Sandhwar, (1990, p. 97) on the book 'Problems of Women workers in unorganised sector 'Brick Kilns, quarries and mines of Bihar and West Bengal', 50 quarry workers in Bihar has 3 earning family members in the family. There are more earners in this category than the present study.

Table No. 11 (B) shows that the number of household dependents in the family. It was found that less than one third (30.0%) of the quarry workers has 3 dependents living within the family. Only a few (4.3%) has 5 dependents living within in the family. As we compared the above tables, it seems that the quarry workers standard of living is low and there is unemployment problem still prevalent among the stone quarry workers family members.

Due to the larger number of dependents than the number of earner the quarry worker family standard of living is low. The mean earner is around 2 members and the mean dependents are around 3 members in the family.

Due to the insufficient income and dissatisfaction of job in the quarry, sometimes the quarry workers are prompted to take advance wages from the employer according to the needs and problem faced by them. The employers do not charge any kind of interest from the quarry workers. The quarry workers do not feel that they are in the financial bond from the employer. Discrimination or exploitation happens due to the advance wages from the side of the employer. In fact, the form of advance payment builds a positive relationship between the employer and the employee.

Table No. 12 (A)

Take advance wages from the employer

Sl.No	Category	Frequency	Percent
1	Not taking advance	265	88.3
2	Take Advance	35	11.7
	Total	300	100

Table No. 12 (B)

Reasons for taking advance wages (N=35)

Sl.No	Reasons	Frequency	Percent
1	Family needs	13	37.1
2	Personal use	13	37.1
3	Buying medicine	9	25.7
	Total	35	100

Table No.12 (A) reveals that vast majority (88.3%) of the quarry workers do not take advance wages from the employer. It is evident that those who do not take advance wages from the employer may borrow money from their friends and relatives whenever in times of need. It is a common practice to borrow money in the quarry work. There is a quarry worker who may feel shy and timid to ask money from the employer. It is reported that more than tenth (11.7%) of the quarry workers had taken advance wages from the employer. The reasons for taking advance wages in the

quarry are different with regards to each one of them. It will describe in Table No.12 (B) as given above. As per the study carried out by Elavarasi, R. 2006 p. 64 on ‘Socio-Economic and Health Conditions of Women Quarry Workers at Perambalur District’ (unpublished M.Phil dissertation), vast majority (73.3%) of the women quarry workers borrow advance money from the employer. As we compare with the present study the advance borrower from the employer is lower among the stone quarry worker in Aizawl.

Table No.12 (B) describes the reasons for taking advance wages on the part of (37.1%) quarry workers from the employers are family needs and for personal use. Family needs may be in different ways. Quarry workers need some money for their children especially when the school season starts. Another reason is due to inadequate money for household needs for buying food and tiny things which cannot be expressed easily by the quarry workers. Quarry workers do not remember exactly the reasons of advance. Personal uses are mainly for buying alcohol and other tobacco related products or else for buying clothes for the Christmas season. One fourth (25.7%) of the quarry workers take advance wages for buying medicines, when they fall sick and when there is illness in the family.

The quarry workers often take advance wages from the employer whenever they are facing family, personal and health problems. It shows that somehow, there is a good relationship between the quarry workers and the employer. In other parts of India, it is very popular that the employer compels the labourers to take wages in advance. They are automatically financially bonded and the working conditions of the labourers become more deplorable and deprived. But in Aizawl, the quarry workers do not face such torture from the employers.

Borrowing money is always prevalent among the quarry workers. The advance money is used for certain purpose like housing, medical and other family needs etc. It is very hard to save money for the quarry workers due to the insufficient income to meet the needs of the family.

Table No. 13 (A)

Sources of borrowing/loan

Sl.No	Source	Frequency	Percent
1	No borrow	287	95.7
2	Rural Bank	2	0.7
3	Private money lender	10	3.3
4	U.C.O Bank	1	0.3
	Total	300	100

Table No. 13 (B)

Reasons of borrowing/loan (N=13)

Sl.No	Reasons	Frequency	Percent
1	Housing	2	15.4
2	Personal use	1	7.7
3	Family needs	6	46.2
4	Medical	3	23.1
5	Piggery	1	7.7
	Total	13	100

Table No. 13 (C)

Repayment of loans (N=13)

Sl.No	Remarks	Frequency	Percent
1	Repaid	10	76.9
2	Not Repaid	3	23.1
	Total	13	100

Table No.13 (D)

Amount borrow N= 13

Sl.No	Amount in Rs.	Frequency	Percent
1	200	1	7.7
2	500	2	15.4
3	1000	2	15.4
4	2000	2	15.4
5	7500	1	7.7
6	10000	2	15.4
7	26000	1	7.7
8	45000	1	7.7
9	3 lakhs	1	7.7
	Total	13	100

Table No.13 (A) reveals that vast majority (95.7%) of the stone quarry workers did not borrow any of kind of money from financial institutions. Only a few (3.3%) of the quarry workers have borrowed money from private money lender, 0.7% of quarry workers borrow from Rural Bank, 0.3% of quarry borrow from U.C.O (United Commercial Bank) Bank. It is easier to communicate with private money lenders by the quarry workers. Sometimes, the quarry workers urgently need to borrow money; they have limited time to access to other financial institutions, instead they access to the private moneylender within such a limited period. As we compare to the study conducted by Robin D. Tribhuwan and Jayshree Patil (2009, p. 139) on the book ‘Stone Quarry workers Social Insecurity and Developmental Issues’, 40% of the stone quarry workers borrow money from the moneylender.

Table No. 13 (B) reveals the reasons of borrowing money by the quarry workers. Out of the 13 respondents more than one third (46.2%) of the quarry workers borrow money for family needs, less than one forth (23.1%) quarry workers for medical needs, less than sixth (15.4%) of quarry workers for housing and less than tenth (7.7%) of quarry workers for personal use and piggery. Needs in household

goods like buying furniture, utensils, gas connection etc. makes the quarry workers to compel borrowing money. Sometimes quarry workers as well as their children are facing health problems like, sickness, cold etc. and need money for buying medicines. According to the low level of economic conditions, building a house from their income is difficult for the quarry workers without borrowing loan from the bank. Personal use is borrowed from the money lender for buying clothes, shoes etc. Piggery is very important for saving money. Nowadays within six to seven months pig can sold in a valuable price. As per the research conducted by Mohammed Talib on 'Writing Labour Stone Quarry Workers in Delhi', (2010, p.254 appendix), 43.84% of the stone quarry workers are spending their borrowed money for medical expenses. As we compare to the present study, the reasons for borrowing money for medical expenses is lower among the stone quarry workers in Aizawl.

Table No. 13 (C) reveals that vast majority (76.9%) of the quarry workers repaid completely the amount they borrowed and less than one forth (23.1%) of the quarry workers do not repay the borrowed money. It is reported that they have to repay soon.

Table No. 13 (D) states that the amount of the money borrowed by the quarry workers is different from one person to another. A small amount of money was borrowed for the purpose of their own personal use and the bigger amount from Rs. 7500/- upto 3 lakhs is used for family purposes (ref: Table No.12 (C)). As per the study carried out by Elavarasi, R. 2006 p. 57 on 'Socio-Economic and Health Conditions of Women Quarry Workers at Perambalur District' (unpublished M.Phil dissertation), vast majority (76.7%) of the women quarry workers were in debt of below Rs.5000/- -- Rs.10000/-.As we compare to the present study, the borrower in

this category of Rs.5000/- -- Rs.10000/- is lesser among the stone quarry workers in Aizawl, but higher (22.4%) in the category of Rs.10000/- and above.

Quarry workers borrow money from various financial institutions like, Rural Bank, Private moneylender, etc. The reasons and the amount borrowed varying from one person to another according to the needs and problems faced by them. It was evident that quarry workers also borrowed money from their friends and relatives for a short period and they repaid as soon as possible when they got wages. In the olden days labourers are said to be 'born in debt, live in debt and die in debt'. But in Mizo context, all quarry workers are belonging to low middle income group and they have a good standard of living.

A quarry worker does not make much notion about the potential of saving accounts in the near future. They do not have keen interest about savings even if they have money to save. Moreover, they need to spend daily wages for everyday purposes for their livelihood. Personal savings in India increased to 200037.20 INR Billion in 2012 from 18329.01 INR Billion in 2011. Indian household savings averaged 2778.25 INR Billion in all time high of 20037.20 INR Billion in June of 2012 and recorded low of 6.34 INR Billion in June of 1952 (ref: www.tradingeconomics.com). The quarry workers need the knowledge of savings in different financial institution as much as they can for their security.

Table No.14 (A)

Respondent's savings account

Sl.No	Category	Frequency	Percent
1	Not saving	268	89.3
2	Saving	32	10.7
	Total	300	100

Table No. 14 (B)

Place of savings (N=32)

Sl.No	Place	Frequency	Percent
1	Rural Bank	12	18.8
2	S.B.I	21	65.6
3	Post Office	3	9.4
4	Apex bank	1	3.1
5	Bajaj Allianz	1	3.1
	Total	32	100

Table No.14 (C)

Amount Savings (N=32)

Sl.No	Amount in Rs.	Frequency	Percent
1	Rs.500 to 1000	13	40.6
2	Rs.1000 to 15000	9	28.1
3	Rs.15000 an above	10	31.3
4	Total	32	100

Table No.14 (A) shows that vast majority (89.3%) of the quarry workers have no saving account in real sense. Among the 300 stone quarry workers, only 10.7% of them have saving accounts. The quarry workers are aware of the savings schemes in the bank but they need to spend their income for everyday needs, and this makes the workers difficult to access towards savings. Even if their income is more, the demand to spend for other purposes increases. The places of saving account is analysed below. As per the study carried out by Elavarasi, R. 2006 p. 60 on 'Socio-Economic and Health Conditions of Women Quarry Workers at Perambalur District' (unpublished M.Phil dissertation), more than one forth (23.%) of the women quarry workers has savings in S.H.G (Self-Help Group).

Table No. 14 (B) reveals the places of savings where the quarry workers have. Out of the 32 stone quarry workers who save money, vast majority (65.6%) save money in the State Bank of India. More than seventh (18.8%) of the quarry workers have saving account in Rural Bank. Less than tenth (9.4%) of the quarry workers save in Post Office. A small proportion (3.1%) of the stone quarry workers has a saving account both in Apex Bank and Bajaj Allianz respectively. State Bank of India is commonly known to all persons that it gives an easy interact into it. It clearly shows that it is good for the quarry workers to have knowledge about savings for their future. But still ignorance is prevalent among them. It is evident that the quarry workers save certain amount of money at home instead of saving in other financial institution and spend it for buying assets like refrigerator, television, etc. It was also reported that they had no time for transactions at the bank and some of the quarry workers misplaced their pass book as well.

Table No. 14 (C) reveals that the quarry workers amount of saving is not very high in number. A sizeable proportions (40.6%) save an amount of Rs.500/- --

Rs.1000/- and 31.3% of the stone quarry workers save an amount of Rs.15000/- and above while the remaining more than one forth (28.1%) of the stone quarry workers save an amount of Rs.15000/- and above. The insufficiency of income of the quarry workers makes it very difficult to spare money. Normally, everyday income is used for their daily needs even for those who get higher wages; this gives them less amount to save. There are some stone quarry workers who are having 1 lakh, 2 lakhs and more which are included in the category of above Rs.15000/-. There is a limited time for the quarry workers to move and access the money to the bank or somewhere else. Another reason is that they do not give so much effort to save their money.

Only a small number have saving account and the amount they saved was not very high as well. Generally, the quarry workers work for everyday needs. Moreover, the pattern of getting the wages makes the quarry workers less interested to have saving account. It clearly shows that there is economic insecurity among the stone quarry workers. It is significant to note that the stone quarry workers has the habit of savings; however the percentage of savings is low and money was saved for certain purposes such as housing, in times of sickness, children's education etc.

Quarry workers need good housing to protect from heat, sunlight, rain, and for those who do not have their own house have to pay rents according to the amount fixed by the owner of the house. The quarry workers need provision for housing scheme without spending much from their income.

Table No. 15

Rent paid for the house (N=148)

Sl.No	Amount paid	Frequency	Percent
1	Below Rs. 500	74	50
2	Rs. 500 - 1000	62	41.0
3	Rs. 1000-1500	12	8.1
	Total	148	100

Table No.15 shows that rents are paid below Rs.500/- upto Rs.1500/-. Out of the 300 respondent's majority (50.7%) of the stone quarry workers are living in their own houses. Out of the 148 respondents who pay rent every month majority (50%) of the stone quarry workers pay below Rs.500/-per month, less than tenth (8.1%) of the stone quarry workers pay between Rs.1000/- -- Rs.1500/-per month. All the migrants from outside Mizoram are staying in rented houses, either at lease houses near the quarry site or within the surrounding working place locality. It was observed that the type of the houses they settled in are usually houses built of bamboo with straw roof and raw mud floor, Assam type house (tiled and wood). There are migrants living in a tent leased houses exist too. It is common among the migrants staying with friends and contributes monthly expenses for the house rent. Many of the migrants construct temporary houses by themselves with prior permission from the quarry owner at the work spot. They need extra amount of money for their rented houses. The quarry workers may suffer with a low income they get from the quarry work that their daily requisites are hard to manage for them. From the above table the rent paid is likely not

so high but it brings stress for the quarry worker since they are bond to pay for the fixed amount for every month. Some migrated people live in leased houses near the quarry sites and contribute with their friends, for them paying rent is not a problem.

Quarry workers for those who do not have their own house must need to pay rent for house every month. Since their income is less, they can hardly save money to build a house and henceforth they need housing schemes for the unorganised workers to build houses for them. For those who migrate temporarily need a shelter to settle easily and save their income.

The quarry workers also have movable or immovable assets of their own. Immovable assets like agricultural land can give certain income to their family. Plots are usually inherited from their parents. They also have movable assets like Television, Washing Machine, Sewing Machine, Refrigerator etc. These movable assets are either received from their relatives or have been purchased.

Table No. 16 (A)

Movable Assets

Sl.No	Assets	Frequency	Percent
1	TV/VCD	132	44.0
2	Washing Machine	44	14.7
3	Sewing Machine	16	5.3
4	Automobile (Two wheeler/Four Wheeler)	13	4.3
5	Any Other	10	3.3
6	Refrigerator	4	1.3

Table No. 16 (B)

Immovable Assets

Sl.No	Assets	Frequency	Percent
1	Housing Plot/Land	61	20.3
2	Agricultural Land Cottage	27	9.0
3	Industry/Production	0	0.0

Table No.16 (A) shows that among the quarry workers who have movable assets, more than one third (44.0%) of the quarry workers have Television and only a few have V.C.D player. As of today, with the advance of technology, television sets can be purchased at a cheaper rate in the market. Less than fifth (14.7%) of the stone quarry workers have Washing Machine. Less than tenth (5.3%) of the quarry workers have sewing machine, 4.3% of the quarry workers have automobile (11 quarry workers having 2 wheeler and another 2 quarry workers having 4 wheeler). The

quarry workers sometimes use their automobiles to rush to the quarry for work. 3.3% quarry workers have other movable assets, 1.3% of the quarry workers have refrigerators. Quarry workers usually wash their clothes with hands. Since water connections have not yet reached their locality, most of the quarry workers do not have good water reservoir which is very important for their everyday life. Especially, the migrant workers buy a radio to listen to music, news etc. Mostly they are living in a leased house within the vicinity of the quarry and in some places power supply is not available. It clearly states that the living conditions are remaining very low according to the assets owned by the quarry workers. But it is evident that most of the quarry workers have prepaid mobile phone since it is easy to buy cell phone nowadays at a cheaper price. These mobile phones also connect people from lower to higher classes. It was also observed that quarry workers have also gas stove. But due to the thrift in using gas cylinder they use firewood for cooking.

Table No. 16 (B) shows that less than one fourth (20.3%) of the stone quarry workers own housing plot/land. The area is about 300 Sq.metre to 500 Sq.metre. But they need housing schemes for the poor to help them build houses instead of staying in rented houses. They have savings problems to build the houses (ref: Table No. 13 (A)). Less than tenth (9.0%) of the quarry workers have agricultural lands. Apart from quarry work, they work on the agricultural land. They grow fruits, vegetables, and paddy etc. as well. It produces a certain amount of income to the family. The agricultural land is mostly taken care by the other members of the family. Moreover, the quarry workers usually use these agricultural lands for gardening. Mizo's are very fond of sowing seeds in the land without trying to get more income but it enhances the need for their daily bread. Immovable assets indicate the standard of living of the quarry workers. No quarry workers are found to have cottage Industry/Production. As

per the study carried out by Elavarasi, R. 2006 p. 59 on ‘Socio-Economic and Health Conditions of Women Quarry Workers at Perambalur District’ (unpublished M.Phil dissertation), a small proportion (3.3%) of the women quarry workers have their land.

Quarry workers have both movable and immovable assets owned by themselves. The assets owned by the quarry workers give an insight into the living conditions. Normally, it clearly states that the living conditions are very pitiable and that they are economically weaker sections in the society. The quarry workers who have immovable assets are inherited from their parents and movable assets like television; automobiles are gifted or are bought second hand from their relatives and friends.

Quarry workers rear different livestock like piggery, poultry, cattle and goat. These livestock enhance their income in certain ways. Piggery is very popular and is a source of good income among the mizo society. People use it as savings and reserve money, when they sell their pigs they get lump sum of money and use it for buying their family needs.

Table No. 17 (A)

Livestock

Sl.No	Livestock	Frequency	Percent
1	Piggery	74	24.7
2	Poultry	16	5.3
3	Cattle	6	2.0
4	Goat	2	0.7

Table No 17 (B)

No. of household income from livestock

Sl.No	Sources of income	No.of families (n=86)	Percent (n=300)	Average income in Rs.
1	Piggery	63	21	1856.67
2	Cattle	3	1	116.67
3	Poultry	18	6	454
4	Goat	2	0.67	56.67
	Total	86	28.67	

Table No. 17 (A) reveals that nearly one fourth (24.7%) of the quarry workers have piggery. Most of the quarry workers have just started piggery about one-two month. Most of the quarry workers rear pigs for buying clothes at Christmas time, and some of them rear for selling to get money in times of need for other purposes. A few (5.3%) of the quarry workers have rearing poultry. Generally, broiler chicken is used for poultry rearing since the rearing period is not so long. They can sell these poultry after two - three months of rearing. The rate of both piggery and poultry is always

good. A negligible proportion (2.0%) quarry worker rear cattle, (0.7%) rear goats respectively. Cattle are used for ploughing agricultural land and for milk production. Goat is owned by the migrants and reared by their parents in their native place for selling and as a source of income.

Table No 17 (B) indicates the sources of income of quarry workers from livestock rearing. Livestock supplements and adds the income. It shows that less than one forth (21%) of the quarry workers family has an average income of Rs.1856.67/-/ month from piggery. As the price of pig increases, 48 inches (round measuring at the chest) of pig is around Rs. 24000/-. Another 6% of the quarry workers have an average income of Rs. 454/-/ month from poultry. The price of chicken is always fluctuating. As of today, dressed chicken is Rs. 250/-/ kg, undressed Rs.150/-/ kg. Generally, Mizo people use piggery for one kind of saving the money. 3% of the quarry workers have an average income of Rs. 116/-/ month. Those who have cattle are migrated quarry workers and are mostly rearing cattle at their native place. They are mostly used in the paddy field and sometimes squeeze milk as well. Like cattle goat is owned by the migrants in their native place. They also sometimes squeeze the milk too and rarely sell the goat to the customers who ask to buy it. So, the average income is very low at Rs. 56.67/-.

The quarry workers rear livestock to enhance income for their family.

Table No. 17 (C)

Demography and Living Conditions of Stone Quarry Workers: Pearson's R

Demographic Characteristic	Indices of Living Conditions					
	House: Number of Rooms	Monthly Family Income	Personal Income	Movable Assets	Immovable Assets	Livestock Index
Age Group	0.03	0.04	0.06	0.19**	0.08	0.06
Gender	-0.08	0.13*	-0.16**	0.17**	0.06	0.13*
Education Status	-0.09	0.14*	0.11*	0.23**	0.12**	0.19**
Size of the Family	0.18**	0.42**	0.04	0.29**	0.24**	0.10
Migration Status	-0.11	-0.12*	-0.17**	-0.39**	-0.28*	-0.20**

Source: Computed

** P < 0.01 * P < 0.05

The relationship between the demographic characteristics such as age group, gender, educational status, size of family and migration status and indices of living conditions such as number of rooms in the house, monthly family income, personal income, movable assets, immovable assets, livestock index correlations of Karl Pearson's coefficient of correlations was written, the results are written in tables. Each and every demographic characteristic is having significant relationship with at least one of the indices of living conditions. Age group has significant effects on movable assets. Higher the age group greater the number of movable assets owned by the quarry workers. Gender has positive effect on monthly family income, movable assets and livestock. When women's participating on quarry workers monthly family income is greater but the personal income of women is lesser than men. When women are participating in quarry work livestock as well as movable assets are greater. Educational status has a positive effect on monthly income, personal income, movable assets immovable assets and livestock. It means higher the educational status is higher is the living conditions of the stone quarry workers. Size of family has positive effects on most of the indices of living conditions. The results indicate that

higher the family size better the living conditions of the stone quarry workers. As regards migrations status, it has significant negative effects on all indices of the living conditions. It means the migrants have significantly lower living conditions than the non migrants.

Quarry work involves excavating raw materials and processing them to make products for industry. This includes quarrying limestone for cement production, crushing rock to make stone chippings and aggregate use in road construction, extracting clay for brick-making and slate for roofing. Modern quarrying is a mechanical process and operative work with large, powerful excavating, transporting and crushing machines. Quarry operators also use drilling equipment and explosives to break up rock. The nature of their work varies widely, depending on their exact job but can include working with heavy plant machinery such as excavators, draglines and cranes, operating processing equipments like rock crusher and stone grades, setting up and operating drilling equipment, maintenance work as a fitter, vehicle mechanic or electrician setting and denoting explosives known as 'shot firing', driving tipper and dumper trucks and other heavy vehicles. Some quarry operators may also have technical duties, working in a laboratory, recording site samples and carrying out quality control checks (www.careersinquarrying.co.uk/).

Stone quarry workers belong to the unorganized sector. Various types of operations are involved in this work. Based on these operations, the workers are employed at different places. Generally, quarry workers are engaged in four types of work known as stone cutting work, crushing, drilling and loading.

In a quarry, the workers toil every weekday except Sunday, most of the quarry workers are the bread earner for their family. The workers work in contract basis. The working condition of male workers is very different in various parts of the quarry. Workers mostly work from morning to evening, crushing stones of cubic feet, boulder and drilling the stones by using drilling machine. They are the neglected groups (Dogra, B. 2003, p. 75). They work under hazardous condition. Therefore, the chance of facing accident is very high, always risking their life in a dangerous situation. They

buy explosives secretly to simplify their work and if this fails, they lose their money and time.

There are full time and part time workers in the quarry. Full time quarry workers are working mostly from Monday to Saturday normally between forenoon and afternoon throughout the year. There is no separate holiday for them. They are absent only when they have personal problems or not feeling well from the work. Part time workers work according to their convenience, i.e., holidays and Saturdays. They usually work whenever they have time and need some money. They have the free will to be absent from the work.

Table No.18

Nature of employment

Sl.No	Type of employment	Frequency	Percent
1	Full time	202	67.3
2	Part time	98	32.7
	Total	300	100

Both full time and part time workers participate in the quarry. Table No.18 describes that vast majority (67.3%) of the quarry workers work on a full time basis. Less than one third (32.7%) of the quarry workers work on part time basis. Full time workers are very dependable to work for good production in the quarry. Quarry work is one of the most important sources of generating income for their livelihood. Full time quarry workers rely more on quarry. So much interest is given to the particular work. Since the full time male quarry workers work from early morning, they bring packed food, tiffin from home in the quarry for lunch. The wages depend upon the work performed and the quarry workers make much effort in the work that they are doing. For the full time workers there are hindrances to work in the quarry during monsoon; rainfall is quite a big problem for the quarry workers. The fluctuation of the extractions of stone production lessens their income compared to other normal or particular working seasons. The part time quarry workers have additional income

from other sources like petty trade, casual labour in the agricultural field, construction work, even in their own agricultural land according to the seasonal changes and wherever they have possible income to generate. Sometimes they do not attend their work regularly since it is their duty to take care of their family. The full time skilled workers also become supervisors at the quarry work. As per the study conducted by Sunitha, N, Nandini, N, Naik D.P.on 'Economic Environment and Health Status of Stone Quarry Workers' in Bangalore on An International Quarterly Journal of Ethno and Social Sciences (vol.2, 3&4 p. 27-33, 2010), vast majority (62.88%) of the stone quarry workers are permanent and one third (37.2%) of the stone quarry workers are temporary. It is relevant with the present study that, both vast majority (67.3%) in Aizawl and 62.88% of stone quarry workers in Bangalore respectively are working as a full time basis. But the participations of the part time stone quarry workers are quite lesser among the stone quarry workers in Aizawl.

It was observed that the entry into quarry work was easy and flexible. It was also observed that full time and part time workers work in the quarry.

In Mizoram the type of quarry worker is not mentioned in various names like other parts of India. They are generally called ‘Lung La’ in Mizo language (stone taker/ cutter or loader), ‘Rora chhu’ (Stone Chipper), ‘Crusher worker’ has no specific name in Mizo language. They are generally called as quarry workers. Crusher machine is not available or located in all the quarries of Aizawl. Normally, a machine commonly known as ‘Crusher’ (Lung her khawl in Mizo language) is located in a separate area.

Table No. 19 (A)

Respondent’s types of work

Sl.No	Category	Frequency	Percent
1	Stone taker/cutter	227	75.7
2	Stone chipper	66	22
3	Crusher machine worker	1	0.3
4	Helper	5	1.7
5	Supervisor	1	0.3
	Total	300	100

Mizoram quarry workers categories are different from other parts of small scale quarrying industries in India. In other parts of India, there is a specific name given to the quarry workers like, stone cutter, stone breaker, driller, bomber, driver, operator, helper, loader, manager etc. Table No. 19 (A) shows that vast majority (75.7%) of the quarry workers are working in stone taker/stone cutter category. It clearly states that stone taking/ cutting is the main task in quarry. Only males participate in this category except four (4) women who break the stones in Samtlang quarry (no specific name is mention for stone breaker; in Mizo language we put it stone taker). The work is very hard and it is difficult for females to perform this type of job. The stone cutter not only cuts the rocks for cubic stone, he also climbs up to the high mountains and drill the rocks and put explosives inside the holes that are

being dug. The explosive i.e gelatine they used for explosion is Rs. 25/piece, a cape which affects the gelatine to blow the rock is Rs. 15/piece and Rs.70/one roll of fuse wire. Later, the rocks are blasted into different blocks of stones. The quarry workers lever or rolls down large blocks of rocks to the earth and dresses it for cubic into different pieces and sometimes loading has done by them as well if the loader is not available at the particular time. When the stone cutters load the stone he gets extra money from the commissioner/buyer. Less than one fourth (22%) of the stone quarry workers are stone chippers. Mostly the stone chippers are females; males are seen less to participate. Women work at the quarries and also take a major role in looking after house hold works to enhance income for their families. Quarries are mostly situated within the locality. It is easy to take up chipping stones for those who are an inhabitant near the quarry sites. Females work after they have done the household work like cleaning, cooking, washing etc. When they leave the quarry in the afternoon, they again continue to perform household task. A small proportion (1.7%) of the quarry workers work as helpers. They work under sub contract for loading as well as breaking the rocks. A negligible proportion (0.3%) of the quarry workers work at crusher machine and supervisor respectively. Firstly, the workers break the rock into different pieces and put the stones into the crusher box and then load it to the truck. Most of the crusher workers wear scarves as masks to protect their face from dust. It was observed that in several areas they do not wear any kind of mask while working in the crusher machine. The supervisor and the contractor of the quarry manage and control every detail of the quarry work. They are also participating in the quarry work. The stone crusher machine workers are very few in numbers from the above table. Mizoram is a mountainous and hilly region with plenty of rocks. It is appropriate to open a quarry in many areas to extract stones for production. This

makes the quarry work easy to generate income for the people. The demand and supply of labour is also very high in the quarry. The quarry workers are multi skilled in their work like breaking, loading, cutting, bombing etc. The manual quarry workers do not wear masks, helmets, ear muffs, hand gloves etc. to protect their body from the surrounding dusts and air pollution. The employers do not produce any kind of facilities to prevent from danger. As per the study conducted by A.B. Saran (1990, p. 136) on the book 'Problems of Women Workers in Unorganised Sectors (Brick Kilns, Quarries and Mines of Bihar and West Bengal)', it is interesting to note that the female workers are engaging in loading/unloading of crude/ raw materials. In the stone quarries sorting of the stones and stones chips, breaking of the stones into different sizes are also performed chiefly by the women workers. But in the present study, that type of work is not prevalent except chipping of stones.

With the advent of technology and want of more and fast production of chipped stones there is quite a popular usage of crusher machine in the quarry. The quarry workers crush the stones not only manually. Especially in urban areas, crusher machine is important since now a day the need of chipped stones is at a high demand. So, more construction work is going on in different places especially in government and private quarries. Crusher operator is the one who looks after the machine.

Table No.19 (B)

Crushing machine

Sl.No	Name of the quarry	Crusher
1	Mel-4	Nil
2	Hlimen	Crusher
3	Samtlang	Nil
4	Lawipu	Crusher
5	Tuithum	Nil
6	Sakawrtuichhun	Crusher
7	Industrial Cross Centre	Nil
8	Phunchawng	Crusher
9	Lawibual	Crusher
10	Zemabawk	Crusher

From Table No. 19 (B) we have seen that out of the 10 quarries selected for study, the crusher machines which have been located in 7 quarries (more than a half). The machine is useful for getting more production. It eases the manpower and enhances time. There are no high skills required to operate the machine. The operator does not need a long period to know the working of the machine. Anyway, since it is a technical object the operator needs to be very careful. Accidents and injuries may happen due to the carelessness of the operator. But the chances may be less than the manual labour in the quarry work. It was observed that the migrants mostly work in

the crusher. They do not have daily income when the crusher machines do not crush the stones. The working pattern is mostly according to daily basis and contract basis. The quarry workers earn Rs.200-Rs.300/- a day according to the experience they have. The crusher workers first break the stones into 400-500 mm diameter and load the chipped stones into a truck by the quarry workers. Under contract basis, the quarry worker earns Rs. 150/meter of truck trip of chipped stones. The crusher machine crushes the stones into stone dust, 10 mm, 20 mm and 40 mm too. Again, the quarry workers keep the 40 mm chipped stones separately and the crusher machine workers chip the stones manually. They get half the amount of per tin of chipped stones; i.e. is Rs.17/- -- Rs.18/-/tin. The daily capacity of crushing the stones varies differently. It depends upon the stones they get for crushing. As we already know there is an insufficient supply of stone production from the quarry. Especially during the monsoon period, the rainfall disturbs the quarry work and the production of stones is quite limited and less. They mostly use the crusher machine made by China and India; Marshall and Cisco Company products are popularly used in the quarry. There are big and small size crushing machines used in the quarry for crushing. The big size is about 32-40 horse power and it is used to start by an electric current. In several parts of rural areas, where there is no proper electricity, they are using diesel engine too by using motor engine to pull the crusher.

It is observed that both part time and full time workers are working in the quarry. In the quarry both big and small crushing machines are also used to crush the stone for fast production.

The quarry workers work in the quarry because of many reasons. It varies differently according to the conditions and needs faced by them. In fact, Mizoram is a rocky mountain region and it is very convenient or opening a quarry and extraction of stones for production. Many people who do not have a specific job in other areas join the labour force to earn an income for their livelihood from the quarry. There is less opportunity in the organised sector in Mizoram.

Table No. 20

Reasons of working in the quarry

Sl.No	Reasons	Frequency	Percent
1	Unable to find another job	286	95.3
2	Invitation from relatives	3	1
3	Time pass	8	2.7
4	Owner	1	0.3
5	Support parents	2	0.7
	Total	300	100

In today's world it is impossible to get a good job without attaining a high qualification. It is found that unemployment is prevalent in Mizoram. Table No. 20 reveals that vast majority (95.3%) of the quarry workers work in the quarry because they have no other job. Quarry work does not require a high qualification and skill. Most of the workers are dropouts in schools especially while they are studying at high school. This can make them easy to enter into the quarry work and there is a less chance of hoping to join other work. They do not find any other job to join for instead. For the quarry workers it is an opportunity to work in the quarry to earn income for their livelihood. 2.7% respond that they are working only for time pass with a few hours. They are classified under the part time workers and they are also seasonal workers. They are working only when they need money for personal use. 1% reported that their relatives invite them and they follow them to work in the quarry to

supplement income for their family. They do not have any kind of interest of their own to work in the quarry. A negligible proportion 0.7% and 0.3% of the stone quarry workers reported the reason of their work at the quarry is to support the family and be the owner of the quarry respectively. When the family is large in size the daily needs also increases, and working at the quarry is a family occupation (ref: Table No. 5). The owner himself/herself supervises, manages and sometimes even works by breaking, cutting etc. Few of the quarry workers try to support their family for their survival. They think that quarry work can give them a fruitful income to support their family to meet their basic needs and requirements. Some of the quarry owners do not allow handling of responsibility to take care of the quarry to others. They are interested in quarry works and have leisure time to look after the quarry purposefully. In the quarry, workers education, vocational training programme are absent for less educated and dropouts. Quarry workers, therefore, enter into the job. In Aizawl there is not so much vocational training programme for the youth as well. As per the study conducted by A.B. Saran (1990, p. 131) on the book 'Problems of Women Workers in Unorganised Sectors (Brick Kilns, Quarries and Mines of Bihar and West Bengal)', it is also evident that vast majority (68.1%) of the quarry and mine sector of workers in Bihar causes for employment is lack of other employment opportunities too.

Therefore, the main reason for joining the quarry labour force is due to unemployment.

The duration of the work in the quarry refers to the period they spend to work in the quarry to generate income. The period varies differently. Many workers are started working from while they are youths. For most of the Mizos quarry work is a good source of income. The market is good and the demand of labour still increases day by day. Every day new workers are entering frequently to work in the quarry. Especially, the migrant quarry workers shift from one quarry to another to search for better opportunities.

Table No. 21

Period of employment in the quarries

Sl.No	Period	15-17	18-30	31-40	41-50	51-60	60 years an above	Total
1	Less than 5 years	7	105	41	16	3	2	174
		(87.5)	(62.1)	(56.2)	(45.7)	(30.0)	(40.0)	(58.0)
2	5-10 years	1	50	20	11	3	1	86
		(12.5)	(29.6)	(27.4)	(31.4)	(30.0)	(20.0)	(28.7)
3	10-15 years	0	12	6	3	2	0	23
		0.0	(7.1)	(8.2)	(8.6)	(20.0)	0.0	(7.7)
4	15-20 year	0	2	4	1	1	0	8
		0.0	(1.2)	(5.5)	(2.9)	(10.0)	0.0	(2.7)
5	More than 20 years	0	0	2	4	1	2	9
		0.0	0.0	(2.7)	(11.4)	(10.0)	(40.0)	(3.0)
	Total	8	169	73	35	10	5	300
		100	100	100	100	100	100	100

Figures in parenthesis are percentages

Mean: 5.2

Std. Dev: 5.3

The period of employment of the quarry workers varies from less than 5 years to more than 20 years. It indicates the fact that quarry work is very popular and known to Mizo people. It generates employment for the less educated unemployed persons. The work does not require special trained skills from any institution. From Table No. 21 it shows that the overall majority (58%) of the quarry workers are

working less than 5 years in the quarry. In that, vast majority (62.1%) of the quarry workers are under the age group of 18-30 years. The demand of adolescent period is higher among the quarry workers. The mean duration of employment is 5.2 years and the standard deviation of 5.3. The lowest (3.0%) of the quarry worker are working more than 20 years. In that just more than tenth (11%) of the stone quarry workers are under the age group of 41-50 years. Due to the need of manpower and energy the quarry work is a tough work and need more physical strength to extract stones. They are able to work progressively till the late 40's. It is found that there is a less participation of 40 years and above in the quarry but their experience is longer than the other stone quarry workers. As per the study conducted by A.B. Saran (1990, p. 134) on the book 'Problems of Women Workers in Unorganised Sectors (Brick Kilns, Quarries and Mines of Bihar and West Bengal', vast majority (79.6%) of the workers in quarries and mines of West Bengal are working below 5 years. As we compare with the present study the workers participation of stone quarry in Aizawl is lesser in the period i.e below 5 years.

The work duration of the quarry workers varies from less than 5 years to more than 20 years of age.

The duration of the working hours in quarries normally starts after lunch and in the evening when the sun sets. Quarry workers and other daily regular casual labour like domestic worker etc. start from morning to dusk and sometimes according to the work i.e. unless they finish their work they continue till night. Many of the construction workers also continue working the whole night to supplement their income and some works cannot be done in the morning due to road constructions. As per the Factories Act, 1984 overtime work is restricted under section 51-66 of this Act. According to this Act, the maximum working hours in a day is not more than 9 hours and 48 hours in a week for adult and adolescent male and female labour (www.futureageindia.com/factories-act.php). They need to safeguard the standard on workers physical and mental health for the future.

Table No. 22 (A)

Hours of work in the quarries

Sl.No	Hours		Respondents gender		Total
			Male	Female	
1	Below 7 hrs	N	20	34	54
		%	(8.4)	(54.8)	(18)
2	7 to 9 hrs	N	161	14	175
		%	(67.6)	(22.6)	(58.3)
3	Above 9 hours	N	57	14	71
		%	(23.9)	(22.6)	(23.7)
Total			238	62	300
			100	100	100

From Table No. 22 (A) it was found that quarry workers work from below 7 hours to above 9 hours in a day. There is no specified working hours for the quarry workers. The male quarry worker starts normally from 5:00-6:00 am and leave the quarry at 4:30-5:30 p.m. Out of the 300 respondents majority (58.3%) of the quarry workers are working between 7-9 hours a day. In the male cases a vast majority

(67.6%) of the respondents are working between 7-9 hours in a day. Summer and winter period have a greater significance about the working hours of the quarry workers due to the fact that in winter the sun sets very earlier compared to summer. Men normally toil in the quarry every day except Sunday because they are the bread winner for their family. Especially for male, the work is tougher than the female and is more time consuming; like dressing big stones into cubic, breaking the stones into boulder and loading etc, but generally females do not hold this job in the quarry. It surely takes long hours in a day so the wages depend upon the making of stones into cubic, hammering the border and loading as well, which makes a male worker gives more efforts. In practice, men left the house very early in the morning, packing their tiffin and bringing it to the workplace for lunch time. Meals are sometimes prepared at night and they also boil rice and cook vegetables in the shelter. Those who work from early morning are skilled quarry workers. In the female cases, majority (54.8%) of the respondents work below 7 hours a day. This is due to the fact that females mostly participate in the chipping of stones and leave the house later than male counterparts in the morning. Females need to do the household work like fetching of water, cooking, cleaning the house, washing etc. in the morning and evening. There is no distinction of working hours for full time and part time quarry workers. The reason behind is that females work mostly to supplement either their husband's income or their family income. Those females who are unmarried also want to enhance the family income and money for daily personal needs or for buying clothes. The responsibility taken by the females is more than males since they do most part of the household work; so there seems to be no space for spending long time in the quarry. They also leave the quarry little bit earlier than males. Based on the Factories Act of 1948 overtime work is common to the quarry work due to its unorganised nature.

There is no security measure that follows the hours of working. It is relevant with the present study that, as per the study conducted by V. Duraisingh (2009, p. 26) on the book 'Plight of Unorganised Workers' title 'A study on the Conditions of Quarry Workers at Vagaikulam Area in Thoothukudi District' majority of the quarry labourers are working for more than eight hours per day and working for six days per week. They normally work 48 hours per week.

Labour needs rest hours during the interval of work. These rest hours are used for having lunch, recess for physical tiredness from the job, chatting with their friends and spend some time for jokes during this period. The quarry workers mostly practise smoking, chewing betel nut and tobacco, the rest hours are used for consuming this kind of tobacco related things. As per the Factories Act of 1948, ½ an hour is the minimum interval during the work for adult, adolescent males and females for every five hours continue work.

Table No.22 (B)

Rest hours

Sl.No	Hour	Frequency	Percent
1	Half an hour	104	34.7
2	1hr	159	53
3	2 hrs	37	12.3
	Total	300	100

Table No.22 (B) reveals the rest hours for the quarry workers. Majority (53%) of the quarry workers have 1 hour rest period, more than one third (34.7%) of the workers are having half an hour rest period and the lowest (12.3%) have 2 hours rest period. 1 hour is quite enough for the interval for lunch break. According to the rest period given in the table, for most of the workers the rest period is not sufficient for relaxation from their tough job. It clearly states that workers are working with bodily stress and strain since they give much effort in their work. During winter, time is very limit and the sun sets early in the afternoon. No fixed regulation is made but the workers follow their regular pattern. The rest hour is used for having lunch and for going to the toilet during the work. There are no guidelines for giving rest hours for the unorganised labour. But as per the discretion of the quarry owners the quarry worker enjoys rest hours during noon time i.e. between 12:00-2:00 p.m. There is no

canteen nearby the quarries or even hotels, restaurants are not found near the quarry sites. Thus, the quarry workers cook food in nearby places under the shelter of the quarries. Some of them pack tiffin; food from home. The place of cooking is not hygienic. Drinking water facility is not available. They often take spring water, and collect firewood from the jungles nearby. The issues related to working hours and rest hours about the quarry workers are described in focus group discussion No. one (1) and three (3). The factory involves the production unit and it is found that quarry workers also carry production. The production is spreading in many small quarries. They are more than 12,000 (approximately) quarry workers in Mizoram. So, there is a need for an act to provide welfare measures for quarry workers like Factories 1948.

Both males and females are participating to work in the quarry. They work from sun rise to sun set. The working hours varies from below 7 hours to above 9 hours. Generally, males work longer than the female quarry workers. The quarry workers work overtime as per the Factories Act 1948.

All the quarry workers enjoy rest hours. Open urination and defecation are observed in the quarries.

Quarry workers toil under bad weather, which is quite unfavourable for them. Working under drizzling rain and scorching sunlight is very common among the quarry workers. They stop working only when there is heavy rain excepting the rest hours in the noon time. They pay much endurance in their work to earn for their livelihood.

Table No.23

Working under rain & sun

Sl.No	Category	Frequency	Percent
1	No	122	40.7
2	Yes	178	59.3
	Total	300	100

Table No.23 reveals that majority (59.3%) of the workers work under rain and sun and 40.7% do not work under the rain or scorching sunlight. The average maximum temperature in Aizawl City is 28.6⁰C and a minimum of 13.5⁰C during 2011. The maximum average rainfall in Mizoram is 547.9 mm during August in 2011. In Aizawl 147.5mm during 2011 (ref: Statistical Handbook Mizoram 2012, p. 134 & 135). As for today, the climatic condition of Aizawl is quite hot and humid. Mizoram receives rainfall abundantly during monsoon. The heavy rainfall disturbs the workers and results in lesser income; as such this time is considered as slack period for the quarry workers. It also hindrances the extraction of stones for the production. During this period, the construction work is lesser when compared with other seasons. Especially, the quarry location is mostly situated in remote low level area where the temperature is warmer than other places; some quarries exist near narrow drenches or valleys. It is very hard to bear the bad weather conditions. The stone quarry workers are having silpaulline spread it upon their working places which eases their work from sunlight and rain. The stone chippers mostly work under roofs made from silpaulline

but cannot protect them fully from heat and sun. If it is too hot and sunny and when there is heavy rainfall the workers sometimes take some rest from their work. The quarry workers are the most tolerable people among the manual labourers. The work demands manpower and they look older than their actual age.

Generally, it is found that the quarry workers work in the quarries with unmindful of the rain and sun.

A shelter is very important that provides cover or protection from the unpleasant weather. When the rains heavily poured down the workers need to protect themselves from rain and wind. In the quarries we have seen shelter to use it for having lunch and breakfast as well as for resting and also for cooking. The workers also keep safely some of their stuffs like bags, clothes, water bottle, tiffin, flask, requisite materials etc. in the shelter. The shelters are constructed by the quarry owners.

Table No.24

Shelter in the workplace

Sl.No	Category	Frequency	Percent
1	Not proper shelter	94	31.3
2	Proper Shelter	206	68.7
	Total	300	100

Table No. 24 describes whether there is proper shelter or not in the working place in times of bad weather conditions. The vast majority (68.7%) of the quarry workers replies that they have proper shelter in times of need. Nearly one third (31.3%) of the workers do not have proper shelter. Some shelter which is made of bamboo and silpauline are available but we claim that it is not a proper shelter because it couldn't be able to protect them from heavy rain and wind. A shelter is the primary need and it is a place to rest when undesirable things suddenly happen like accidents, injuries, stomach-aches, and nausea etc. during work. In several places the quarry workers themselves constructed temporary shelter. They also hide under the hilly rocky cave or trees. Within the same quarry, the quarry workers did not share one shelter due to the clusters and scattered of quarry working spot within the same community. The distance may vary far from one place to another.

It is observed that the shelter they have is not sufficient for the quarry workers to protect themselves from harmful things.

With the growing industrialisation in India, problems of occupational health and safety have also surfaced. Every year, lakhs of accidents take place in factories, mines, railways, ports and docks, leading to a large number of fatal injuries, acute ailments or permanent handicaps (A.M Sharma, 2008 pp. 65). The quarry is known to be prone to accidents and the chances are also high. Bomb blasting is hazardous for the quarry workers. Improper safety measure may decrease the chances of interest in the work. Landslides, slope failure may happen due to the improper mining in the quarry.

Table No. 25

Opinion at risk in the working place

Sl.No	Opinion	Frequency	Percent
1	Sometimes	221	73.70
2	Rarely	25	8.30
3	Always	13	4.30
4	No comment	41	13.70
	Total	300	100

Table No.25 describes the stone quarry workers' opinion on how their working places are at risk, which is measured in different categories. The highest response, vast majority (73.7%), of the quarry workers are sometimes feeling at risk during work. The next is no comment (13.7%) on opinion at risk, 8.3% of the quarry workers response rarely and the lowest (4.3%) quarry workers have the opinion of always feeling at risk in the working place. In the quarries explosive is used for blasting the stones. Except a few (13.7%), the opinion of feeling at risk is happen to all the quarry workers. Therefore, the risk for chances of accidents and injuries is very high. The falling objects are very dangerous for the quarry workers. The effects may quite deep more than imagine. In spite of feeling at risk the workers are supposed to work in the quarry to earn for their daily needs. Some of the quarry workers do not

have any idea or comment to feel at risk factor. It means that workers are working in accident free zone or safer places. Other workers are feeling scarce but that the quarry work is the major sources of income and it becomes habit and addicted so that their feelings are not turning to risk happen in the work spot. Always feeling at risk is not desirable so that the workers might want to lose the job and prefer to handle another job instead of discomfort feelings.

Knowing the risk, quarry workers are willing to work in the quarries for their survival despite different risky situations.

Being a manual labourer belonging to an unorganised sector, the quarry workers face several problems. Unlike the organised sector the workers in an unorganised sector do not enjoy labour welfare measures either statutory or non-statutory. Workers working in the unorganised sector get few wages, there is no provision for over time, paid leave, holidays, leave due to sickness benefit etc. Employment is subjected to a high degree of insecurity. A large number of people doing small jobs such as selling on the streets or repairing work come under the unorganised sector. It is largely outside the control of the government. Hard manual labour is an important element of quarry workers and it cannot be avoided. They use physical strength and lots of energy in that particular job. They are vulnerable and prone to accidents.

Table No.26

Problem faced by quarry workers

Sl.No	Problems	Frequency	Percent
1	Excessive physical work	213	71
2	Low wages	148	49.3
3	No job security	146	48.7
4	Hazardous work	118	39.3
5	Accident prone	40	13.3
6	Excessive hours of work	38	12.7

It is inferred from Table No. 26 that among the various problems met by the quarry workers at the time of working in quarry, vast majority (71%) of the quarry workers response that excessive physical work is the main problem. The next is low wages, no job security, hazardous work and accident proneness is another problem faced by the quarry workers. 12.7% of the quarry workers response that excessive hour of work is the least problem faced by the quarry workers in the stone industry. Quarry work requires physical strength and is a good source of income for the family

for both males and females. Compared with skilled stone mason, mistiri etc., quarry workers in Aizawl have lower wages. The quarry workers use more physical strength than other labourers under heat and rain. There are legislative measures made for the unorganised labour in Mizoram by the Labour and Employment Department. But, the quarry workers are not aware of the legislative protection. Quarry works are very hazardous and the workers are more vulnerable than other labourers since they are prone to collapsing of rocks or falling down of stones at any time, splinters of stones may come from anywhere, which may cause accidents. To enjoy the benefits of 'Workmen's Compensation Rules 2009' in Mizoram it is mandatory that the workers or the labourers have to be registered under 'The Mizoram Building & Other Construction Workers (Regulation of Employment & conditions of service) Rules, 2008 and 'The Mizoram Contract Labour (Regulation & Abolition) Rules, 2004. They are applicable to enjoy different benefits in times of injuries and accident occurring in the quarry. Being under an unorganised sector while working at the quarry they do not enjoy benefits like leave at times of sickness even when the family faces medical problems. Overtime work is common among them due to want of more income. Explosive is used for blasting rocks and an off-shoot of stone may cause injuries to the body. There is an excessive hour of work for some of the male quarry workers that they toil from early morning till evening. As per the study conducted by V. Duraisingh (2009, p. 28) on the book 'Plight of Unorganised Workers' title 'A study on the Conditions of Quarry Workers at Vagaikulam Area in Thoothukudi District' low wages is their main problem. But in the present study, low wages is the second problem responded by the quarry workers in Aizawl.

Being a worker at the quarry under an unorganised sector Labour Welfare has been given the least importance and basic facilities are lacking. Welfare Measures are lack in the case of quarry workers. These quarry workers still tolerate in their workplace and face several problems, but it is hard to fight for their own interest.

Quarry workers spend most of their time in the quarry to generate income for their livelihood. It is very tiresome and wearisome that the workers exhaust their physical strength and energy during their work. They become fatigue and tiredness may easily exist during the working hours. The leisure period is limit to relieve them from tiredness since their work hard manual work and needs lots of physical strength. Due to insufficiency of their income the workers cannot receive medical care for their body health like taking vitamins, calcium etc.

Table No. 27

Fatigue

Sl. No	Category	Respondents gender		Total
		Male	Female	
1	No	39 (16.4%)	11 (17.7%)	50 (16.7%)
2	Yes	199 (83.6%)	51 (82.3%)	250 (83.3%)
	Total	238	62	300

Figures in parenthesis are percentages

Table No.27 shows that the vast majority (83.3%) of the quarry workers feel fatigue or weak during work. Less than seventh (16.7%) of the workers do not feel fatigue during work. It can be caused by long hours of physical and mental activity, inadequate rest, excessive stress, and combination of these factors. Fatigue may cause low production since the workers do not have energy and they tend to work slowly. A lingering fatigue continues to be constant and limited. With fatigue there is an unexplained persistent and relapsing exhaustion. It is also caused by health conditions and lack of energy in the body. For women the common causes of fatigue is due to heavy menstrual period cycles. For males, dressing stones for cubic and lifting stones to the truck is very tough; holding a heavy hammer to break the rocks makes the

worker feel fatigue from the job. As for females, first they collect the scattered stones in baskets and carry these rocks to the work spot, after that the stones are chipped, sitting in the same position under roofs made of silpauline and dry shrubs even in bad weather conditions. There is no significant relationship between the fatigueness from the job between the male and female counterparts. As per the study conducted by P.P. Arya (1982, p. 46) on the book 'Labour Management Relations in Public Sector Undertakings' vast majority (69.6%) respondents of ITI also felt tired or very tired from the job. Similarly quarry work involves heavy work, involving lifting, loading, and transport and moving of heavy pieces of material.

Resilience is the scouting out opportunities for expanding and enlarging the skills for the workers. Boredom is the silent killer of morale, development and motivation to the quarry workers. From the findings quarry work is not a light job, but it is an easy source of income for those who want to earn for their livelihood. Those who are newly married and do not hold another job generally join the quarry work. The source of boredom results in major disconnections and mismatch between labour and work. This might also be between job functions and talents, experience and values. Lack of opportunity for new learning and development create feelings of confinement.

Table No. 28

Feeling boredom

Sl.No	Category	Frequency	Percent
1	Not feeling bored	121	40.3
2	Feeling bored during work	179	59.7
	Total	300	100

Table No. 28 shows that majority (59.7%) of the workers feel bored during work and the lowest (40.3%) do not feel bored during work. The feeling of boredom in working places is the results of underutilization. Repetitive task working the same task everyday with a stressful manner is the main reasons of boredom in the quarry. Quarry work requires skills to earn for a better income, so for those who have less experience have to struggle more and this causes boredom. The workers are rendered invisible because their talents, skills and capabilities are not being utilised. Moreover, they may be misused or stifled. Some quarry workers work without interest in their work but they do not have another opportunity to find other jobs. It is also the result of the feeling of frustration and resentment and lack of space to stretch in the working place which causes boredom.

Due to the increasing trend of joining labour force in various labouring field, the workers perform in various setting to earn for their everyday needs. Workers are obliged to work in their own specific job held by them. The heavy workload with high responsibilities in the family can cause burden to the workers. Without work there would be nothing to eat, since we need food, shelter, clothes etc. to survive. Family increases and the less income per capita also creates burden to the quarry workers.

Table No. 29

Reasons for perceiving work as burden N=85

Sl.No	Reasons	Frequency	Percent
1	Family fully dependent	20	23.5
2	Personal problems	30	35.3
3	Stress	15	17.6
4	Insecure job	5	5.9
5	Less pay	8	9.4
6	No specific reason	7	8.2
	Total	85	100

Chi-square test for the relationship between work burdensome and gender

Sl.No	Category	Respondents gender		Total
		Male	Female	
1	No	177 (74.4%)	38 (61.3%)	215 (71.7%)
2	Yes	61 (25.6%)	24 (38.7%)	85 (28.3%)
	Total	238	62	300

Figures in parenthesis are percentages

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.144	1	0.042		
Continuity Correction ^b	3.525	1	0.060		
Likelihood Ratio	3.966	1	0.046		
Fisher's Exact Test				0.057	0.032
Linear-by-Linear Association	4.130	1	0.042		
N of Valid Cases ^b	300				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.57.				
b. Computed only for a 2x2 table				

Table No. 29 reveals that out of the 300 respondents vast majority (71.7%) of the quarry workers feel that their work is not a burden to their daily life. 28.3% of the quarry workers perceiving work as a burden, the reasons of burden are responded differently. Among the reasons for perceiving work as a burden, more than one third (35.3%) of the quarry worker's reasons for perceiving work as a burden is personal problems, 23.5% of the quarry workers perceived reasons as family fully dependent, 17.6% of the quarry workers response is stress, (9.4%)less pay,8.2% have no specific reasons and the lowest response 5.9% of the quarry workers reasons for perceiving work as a burden is insecure job. Burden affects the work for many reasons since most of the workers are the bread winners for the family and the responsibilities taken by them is very high. Huge family with less per capita income may give burden to the workers. It may hamper the moral, motivation and personal development giving stress to the workers at their working place. Quarry workers may suddenly face accidents or injuries during work but the legislative measure taken by the government is not strong

enough for the labourers. So, it gives them a feeling of insecurity at work. Some of them earn low wages because of less experience or because of being unskilled and the wages earned by them is not satisfactory to support their family to make both ends meet.

It is observed that, fatigue and boredom certainly exist during and after work among the quarry workers since they spend long hours at their working places with repetitive tasks. They sleep very early at night since their bodies ache and feel weak; they need sufficient time to take rest for the continuation of their work. The quarry work is sometimes burdensome for the quarry workers due to different reasons.

The opinion of the daily work gives an understandable insight into the conditions of work performed in the quarry. The opinion of job satisfaction of daily work varies differently depending upon the wages, environment, standard of working, interest, supervisory behaviour, aspirations, welfare facilities etc. by the quarry workers. It depends on the workers thoughts, ideas and feelings about the aspects of quarry work in their job. Measuring this is difficult. It is the pecuniary and material influences upon the quality of the people's lives of labour.

Table No. 30 (A)

Job Satisfaction

Sl.No	Opinion	Frequency	Percent
1	Highly satisfied	3	1
2	Satisfied	236	78.7
3	Not satisfied	61	20.3
	Total	300	100

Table No. 30 (B)

Known reasons of dissatisfaction

Sl.No	Reasons	Frequency	Percent
1	Low wages	35	11.7
2	Physically tiresome	24	8.0
3	Spend for daily needs	7	2.3
4	Less time to work	5	1.7

Table No. 30 (A) reveals that vast majority (78.7%) of the quarry workers have satisfaction in their daily work. The quarry worker's living condition is normally very low and even if they are getting daily bread from the quarry without a higher income they have satisfaction in their daily work. Less than one fourth (20.3%) of the quarry workers are not satisfied in their daily work. The reason for perceiving dissatisfaction of daily work has many reasons. It will be discussed in Table No. 30

(B). Only 1% of the quarry workers are highly satisfied in their job. This may be due to the reason that they earn sufficient amount of money from the quarry. A study conducted by Blanchflower, D.G and Oswald A.J (2000, p 9), on 'Is the U.K Moving Up The International Well- Being Rankings' shows that during 1990's, 48% of the United States of American workers are satisfied in their workplace. Compared to the stone quarry labourers in Aizawl the satisfaction from the job is higher than the U.S workers.

Table No. 30 (B) describes that the perception for dissatisfaction from their daily work has many reasons among the quarry workers. More than tenth (11.7%) of the quarry workers dissatisfaction is low wages in the workplace. The low wages earned by the quarry workers cannot give satisfaction to meet the basic requirements in their family. The needs are many and the wages do not cover each and every household requirement. Less than tenth (8.0%) of the quarry workers are dissatisfied due to physically tiredness. Quarry work is normally a manual work and it consumes physical strength in the working place. The demand of everyday needs constraint to work in the quarry and hence physical tiredness and fatigue during work makes them unsatisfied in their daily work. They are physically tired before they get satisfaction from the quarry work due to physical health problems i.e. daily income. The work is usually contract basis; the more they work the more they earn. A small proportion (2.3%) of the quarry workers are unsatisfied since their expenditure seems to be too much for their daily needs compared to their low incomes. The low level of income gives no space to spare for other purposes of saving account for the future. They need to use income for everyday needs like rice, cooking oil; vegetable etc is a must to buy. A negligible proportion (1.7%) reported that the reason of dissatisfaction is due to less time to work. Those who are full time or part time quarry workers give much efforts

trying to get more income while working in the quarry. It takes a little bit more time to collect small and fragmented stones from the quarry for the stone chippers. For stone cutter the dressing period also takes more time to make stones for finished production, which have been reported from the study.

It is observed that job satisfaction among the quarry workers is high even though the work is tough and it is hard manual labour. This is due to the reason that there is non-availability of employment in the other sectors.

Labours in the unorganised sectors work with insecurity in nature under low wages, there is no provision for sickness and maternity benefits in times of illness, there is also lack of good facilities under poor working environment and the working places have improper ventilation. There seems to be lack of compensation in times of accidents faced by the labourers. Bonded labour is still prevalent in different regions, the labourers fall into debt under the contractor. It ruins the lives of the labourers for the future. They work under harsh weather. No wages are paid due to absenteeism. They need legislative measures to regulate the harsh working conditions. Sitting long hours while working may cause back pain, headache.

Table No. 31

Opinion of working conditions

Sl.No	Causes	Frequency	Percent
1	Less hygienic prevails	157	52.30
2	No latest technology	148	49.30
3	Time consuming work	147	49.00

Table No. 31 reveals that among the causes that are responsible for working conditions in the quarry, less hygienic environment prevails (52.3%) in the highest response. No latest technology (49.3%) was found to be the second followed by (49.0%) time consuming work which stood the third. Deforestation decreases the provision for clean water in the forest. In some areas, rivers have been used for making tobacco water (tuibur) which is located near the quarry site. It pollutes the water, and is dangerous for all the members of the community. Mostly, quarries are located below or at remote areas of the locality area and the climatic condition is extreme causing nausea, dizziness, tiredness especially during summer. There is no proper separate toilet, open defecation; drinking water is not available due to non

availability of good water reservoir in the quarry. There are no spittoons and water is contaminated. Stones contain silica which is very harmful for the quarry workers which can cause lung impairment. This creates intoxicated environment causing pollution which is very harmful for the quarry workers. When the rain falls the working places become wet making the quarry workers work in shanty places with mud which causes sneezing, cold etc. Some quarries and crushing machines are located in the roadside polluting the surroundings especially the machine workers. Well equipped latest technologies are not in use for the labourers, manual work has been practiced more in the quarry. If the quarry workers work fully with machine the manual work will be reduced. Out of the ten quarries from the present study, crusher machines are located only in 6 quarries (ref: Table No.19 (B)). But the owner of the crusher machine crushes the stone for their own business; everybody cannot share the machine in the community. He buys the stones and crushes and sells it to the customer or else he takes the stones from his own quarry and crushes it for selling. However, all the crusher machine owners do not open the quarries, having machines for business is more profitable in the quarries for the owners for easy and quick work. In European countries, machines like drilling machines, conveyer, crushing machines, cutting machines, loader etc. are well equipped in the quarries under the control of trained operator. It eases the work. The quarry work is a time consuming task due manual work, like dressing, cutting of stones, loading, drilling rocks by hands with metal rod to make hole for putting explosive etc. The productions are slower than the machines. Crushing machine does not exist in every quarry. Most of the quarry owners do not privately owned drilling machines. They are hiring from others in times of need at around Rs. 40/feet of hole that the machine is drilling. To put the explosive they

drilled around 3-20 deep feet in one hole. The depth of the hole depends upon the blocks of rocks in the mountain.

Manual work is still prevalent and ready to use in the quarry.

It is more preferable for the quarry workers to work within the residential local quarry. Extra time can be given to access to the quarry which lies within the vicinity, but problems like transportation may be faced while working outside the locality. Working within the local quarry may ease transportation and there is no such need of spending extra time to reach the quarry if the quarry is near from the residence.

Table No.32

Locality & Residential

Sl.No	Categories	Frequency	Percent
1	Working locality & residential locality(same)	222	74
2	Working locality & residential locality(different)	78	26
	Total	300	100

Table No. 32 shows that more than two third (74%) of the quarry workers working in the locality and residential area are the same. It is easy for the quarry workers to work within their own locality. It can avoid the limitations of time and transportation. More than one forth (26%) of the quarry workers working in the locality and residential area are different. But some of the quarry workers stay the whole week in the quarry sites in a house built by the quarry owner or built by themselves. They can give much effort to the quarry work without rushing to reach the quarry. Firstly, the main reason for working outside the locality happens when there is no quarry located within locality. Secondly, if the quarry is located or exists within the quarry workers locality, they prefer to work outside for better opportunities in other quarries to generate income. Most quarry workers are skilled in their work and the quarry owner invites them to start the work in the quarry and to take care of it in the future as well.

The distance between the working spot and residence varies from one person to another. Generally it is quite far because the quarry is located at remote areas of the locality even if the quarry workers are working within their own local quarry. The quarry workers need to give more time to reach the quarry even if it's by walking. They commonly reach the quarry sites by walking so that they do not have to wait for vehicles which take a lot of time.

Table No. 33

Distance of working spot from the residence

Sl.No	Distance	Frequency	Percent
1	Below 1 kms	136	45.3
2	1-2 kms	97	32.3
3	3-4	56	18.7
4	5-6	9	3
5	Above 6 kms	2	0.7
	Total	300	100.0

It was found from Table No. 33 that the distance from their residence to their work place is at the least about one kilometer to above six kilometers. A sizeable proportion (45.3%) of the quarry workers live at a distance from their workplace below 1 kilometer. These people mostly reside within their own quarry locality not very far from the residence and the quarry workers are working from the nearby neighbouring locality. Less than one third (32.3%) of the quarry workers are working at a distance between 1-2 kilometers. More than seventh (18.7%) quarry workers work at distances between 3-4 kilometers, less than tenth (3%) quarry workers between 5-6 kilometers and the lowest (0.7%) quarry workers at a distance above 6 kilometers. These quarry workers usually lodge near the quarry sites the whole week;

it is unprofitable for the quarry workers to work in the quarry everyday from long distance.

It is observed that quarry workers are mostly working within the local quarry. The distances for accessing to the quarries are quite far from the residential area.

Transportation is very important for the quarry workers to reach the quarry sites. The ways of access to the quarry is very different from one person to another. Mostly the quarries are located at remote areas from the locality and having regular pattern for modes of transportation is difficult for the quarry workers. The quarry workers sometimes catch whatever transportation possible for reaching their workplace which may include bus, taxi, tripper etc. Quarry workers sometimes need to spend several amount of money for their transportation. Many of the quarry workers work from outside the locality. They have to spare money for transportation every month even if they are full time or part time worker.

Table No. 34 (A)

Modes of transportation to reach the workspot

S.I No	Modes	Frequency	Percent
1	Sometimes by walk	108	36
2	Always by walk	174	58
3	Sometimes by truck	106	35.3
4	Always by truck	11	3.7
5	Sometimes by taxi	46	15.3
6	Always by taxi	0	0
7	Sometimes by two wheeler	5	1.7
8	Always by two wheeler	1	0.3
9	Sometimes by bus	58	19.3
10	Always by bus	0	0

Table No. 34 (A) shows that the highest (58%) of the quarry workers mode of transportation is by foot. Some quarries are not so far from the locality like Mel-4 quarry, Hlimen quarry, Lawipu quarry, Lawibual quarry. The main quarry workers work from the locality itself. Mostly the migrants from outside Mizoram settle near the quarry sites in a leased house. There is no need to catch a certain kind of transportation for reaching the working spot and accessing to their home back from the quarry in the morning and evening. Followed by 36% quarry workers whose

means of transportation is sometimes by walking or they reach by other modes like tripper, taxi, bus etc. Another 35.3% of the quarry workers sometimes reach their workplace by truck. The quarry workers take the chances of the truck which is used to carry loads to the quarry, these trucks are used to reach and depart from the quarry as well. There are 19.3% quarry workers reaching their workplace by bus since bus services are still to be found near the quarry sites and 15.3% quarry workers go sometimes by taxi. It means that the quarry is little bit far from the residential area and sometimes the quarry workers have to catch any available taxi. The quarry workers get on the bus and taxi as far as it can carry them. No buses or taxis reach the quarry without hiring, the quarry workers get down at the bus and taxi stand and again they have to walk or get a lift from a tipper to reach their workplace. Less than five (3.7%) quarry workers reach the quarry by tripper, Samtlang quarry is located at such a place where one has to turn off from the main road and it is very hard to pass without vehicle. Most of the quarry workers wait for truck at the cross road. Another 1.7% quarry workers accessing the quarries sometimes by two wheeler vehicles, they use it when they are in a hurry and the remaining 0.3% always uses two wheeler vehicles. Thus, the quarry worker stays in the quarry the whole week and leaves the quarry only at weekends. There is no such quarry workers who are always using taxi and bus as a means of their transportation. Quarry owners do not make any conveniences for their workers, so the quarry workers make themselves available at their own conveniences.

Table No. 34 (B)

Amount spend for transportation/month

Sl.no	Amount	Frequency	Percent
1	No spend(0)	216	72.0
2	Below 100	49	16.3
3	101 - 200	22	7.3
4	201 - 300	10	3.3
5	Above 300	3	1
	Total	300	100.0

Note: Reference period is last one month

Table No. 34 (B) shows that vast majority (72.2%) of the quarry workers do not spend any kind of money for their transportation. The quarry workers reach the quarry by foot or by truck tipper. The quarry workers mostly reside near the quarry or work within the local quarry. Many of the quarry workers stay within the vicinity of the quarry and there is no requirement of spending money for transportation including migrants. Less than seventh (16.3%) of the quarry workers spend below hundred rupees. Less than tenth (7.3%) of the quarry workers spend Rs.101/- -- Rs.200/-, 3.3% of quarry workers spend Rs.201/- -- Rs300/- and a few (1%) quarry workers spend more than Rs 300/-. The quarry workers sometimes reach the quarry by two wheeler vehicles; they need to spend money for buying petrol for their transportation. They need to climb hilly areas measuring about 10 meters to reach their actual workplace. In the height of the mountain they drill the rock, putting explosive and lever the stones using metal rod. The quarry workers are sometimes chained by ropes to their body to avoid falling down from the hill.

The modes of transportation reaching to the quarry are multifarious in nature. Quarry works need to spend several amount of money from their income for accessing the quarries.

Table. No 34 (C)

Working Conditions, Health Problems and Living Conditions of Stone Quarry Workers: Pearson's R

Indices of Working Conditions	Health Problems		Indices of Living Conditions					
	Occupational Health Problems Index	General Health Problems Index	House: Number of Rooms	Personal Income	Monthly Family Income	Movable Assets	Immovable Assets	Livestock Index
Working Hours	-0.13*	-0.11*	0.13*	0.12*	- 0.15*	- 0.18*	0.04	-0.08
Working Condition Index	0.18**	0.15*	- 0.23*	-0.13*	-0.06	-0.01	-0.08	0.31**
Accident Index	0.27**	0.15*	- 0.12*	0.00	-0.11*	-0.08	-0.04	0.09
Working Environment Index	-0.07	-0.07	0.09	0.20*	0.19*	0.16*	0.11*	-0.04
Work Perception Index	0.23**	0.21**	-0.08	0.02	- 0.18*	-0.06	0.00	0.14*

Source: Computed

** P < 0.01 * P < 0.05

The relationship between the working conditions such as working hours, working condition index, accident index, working environment index, working perception index, and indices of health index such as occupational health problem and general health problem, indices of living condition such as number of rooms in the house, personal income, monthly family income, movable assets, immovable assets and livestock index, correlations is assessed by using Karl's Pearson's coefficient of correlations, and the results are written in Table No.34 (C). The poor working conditions lead to greater health problems and poor living conditions of the stone quarry workers. Working hours have positive effects on personal income and housing but negative effects on family income and movable assets. Relating to

working condition index there are positive effects on health problems while having negative effect on housing conditions and personal income, which means poorer the working conditions greater the occupational and health problems faced by the stone quarry workers. Greater accident proneness leads to greater health problems and better working environment is associated with better living conditions.

Figure No. 4 **Pattern of labour on quarry**

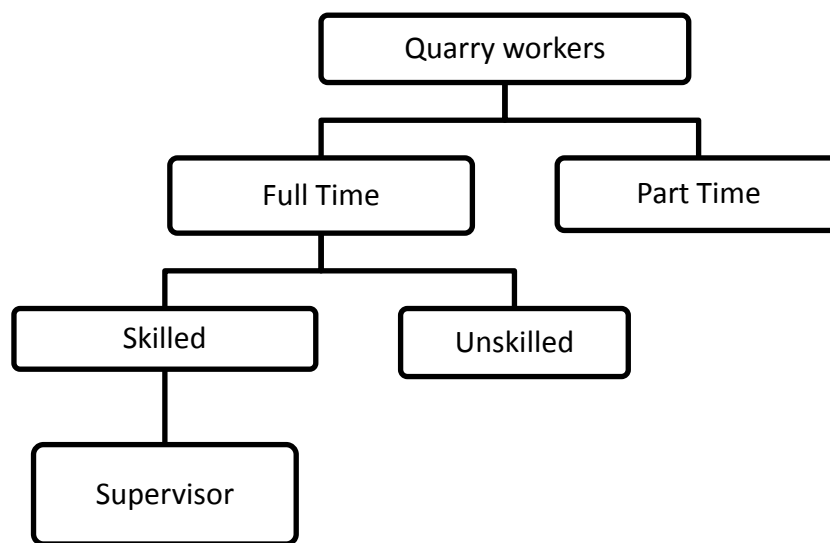


Figure No. 4 depicts the quarry workers performance in the quarry. In the quarry both full time and part time quarry workers' work. Except on Sundays, the full time quarry workers work every day from morning till evening. The part time quarry workers are considered as seasonal labourers, they work in the quarry only for their own convenience (ref: Table No. 18). The skilled and unskilled quarry workers work in the quarry. When they start their quarry works, the quarry workers are unskilled labour, they do their work like breaking stones for the boulder, loading stone to a truck, being helper to the skilled labour, throwing stones together at one place for breaking, drilling hole with the use of metal manually, removing the soil etc. After working in the quarry for around 2-3 years they regularly become skilled workers.

They are able to work in dressing or moulding, cutting, planning the rocks for bombing etc. They can earn a suitable income for their family. After becoming skilled they cut the stones at a very quick pace. Cutting of stones becomes easier and faster for them. The work may become little bit slower at rough places even if the worker is a skilled worker. The skilled quarry workers retire from the quarry at around 40-50 years (ref: Table No. 21) since the work is tough. They mostly adopt chronic back, joint and leg pain in their body (ref: Table No. 39). They cannot attend regularly for work at the quarry and those regular skilled retired workers become supervisors. Those who want to open a new quarry call upon the skilled workers to supervise in the quarry and stay at the quarry for about 1 month at the working spot for starting the quarry and help them to initiate plans for the quarry owners for processing the stones for production. The wages are fixed according to the agreement made between the supervisor and the owner of the quarry. If it is not very far from the supervisor's locality they do not need to stay in the quarry. After retirement they hire the land from the landlords and even hire the quarry labourers under contract basis. Even if the supervisor is working, he does not have to work hard. He manages and controls the quarry work. It is popular these days that the supervisor or the normal quarry workers open the quarry at 50:50 basis. This means that the quarry or land is owned by the landlords; the labourers work under the supervisor as contract basis and share half of each (the landlords & the supervisor) of their daily income from the quarry.

Figure No. 5

Participation on quarry

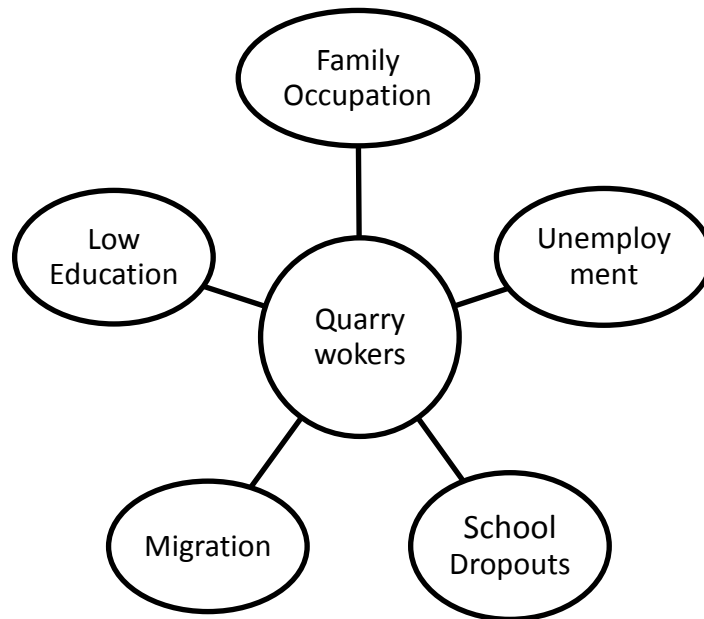


Figure No.5 shows the kinds of people entering into the quarry work. The quarry work is easy to enter due to its unorganised nature. Labour working in the quarries is mainly due to family occupation, low education, dropouts, unemployment, and migration. Everyday many people use quarry work for their family occupation (ref: Table No. 5) and with the increase in size of family members (ref: Table No. 4) generates quarry work as a good source of income for their livelihood. For those quarry labourers who have low educational backgrounds (ref: Table No.2) can easily work in the quarry for their daily needs. The condition of low educational level cannot afford to work under good payable jobs where they could earn more; this leads them to work in the quarry where no educational requirements are required. They earn wages according to the skills they have. They cannot seek any other job from other sectors so they become unemployed. According to the unemployment statistics of Mizoram as on 31st March'13, recorded as between 2011-12, the total number of unemployment is 50,265 persons, (28,166 males and 22,099 females) (ref: statistical

handbook Mizoram 2012, p.95) from different category. The highest number of unemployed people educational level lies on H.S.S.L.C (Higher Secondary School Leaving Certificate) i.e., 12,237 persons. In the quarry a majority (36.3%) of the quarry workers has attended high school level (ref: Table No. 2). School dropout leads to early employment in the quarry (ref: Table No.21). Migration plays an important role in the quarry works. They migrate from different parts of India and foreign to seek for a better employment in Mizoram due to economic reasons. There are lone migrants and migrants with families who are staying mostly in a leased house near the quarry sites. They do not get proper facilities from the quarry owners and the working and living conditions are poorer and more deplorable than the non migrants.

Everybody needs a stable dwelling place to live in. Residence merely requires bodily presence as an inhabitant in a given place. It is in particular living condition in a locality and the actions of a person residing in a certain place. Quarry workers reside usually in urban and rural areas.

Table No. 35

Residential characteristics (Urban/Rural)			
Sl.No	Urban	Frequency	Percent
1	Melthum	26	8.7
2	Hlimen	40	13.3
3	Tlangnaum	5	1.7
4	Lawipu	37	12.3
5	Maubawk	3	1.0
6	Chawlhhmun	18	6.0
7	Luangmual	7	2.3
8	Tuivamit	5	1.7
9	Tuithum	10	3.3
10	Bawngkawn chhimveng	1	0.3
11	Sakawrtuichhun	30	10.0
12	Ramrikawn	1	0.3
13	ITI	30	10.0
14	Falkland	1	0.3
15	College veng	3	1.0
16	Mualpui	6	2.0
17	Bethlehem	2	0.7
18	Zemabawk	23	7.7
19	Thuampui	7	2.3
	Rural		
1	Samtlang	10	3.3
2	Phunchhawng	35	11.7
	Total	300	100

Note: Rural & Urban are classified according to Aizawl Municipal Council

Table No. 35 represents that the respondents are residing in rural and urban areas of various localities in Aizawl city. The vast majority (85%) of the quarry workers are living in urban areas while less than fifth (15%) of the quarry workers

live in rural areas. The urban inhabitants are much more when compared to the rural inhabitants because almost all the quarries are located in urban areas. It is very easy for the urban quarry workers to work in their locality or near the locality. According to the census of India 2011, in Aizawl there are 46828 males and 44389 females residing in rural areas, in urban areas there are 154244 males and 158583 females residing in the Aizawl District (ref: Statistical Abstract of Mizoram 2011, p.4)

Urbanisation has a very important role to play on the functioning of small scale industries. In urban areas there is a demand of stones for buildings and other construction works, which has been processing resulting to a high demand of quarry work. Working at the quarry is a major source of income in urban unorganised sector in Mizoram. It can easily generate income in urban than in rural areas not only for the quarry workers but for other people who are working in construction, casual labour, street vendors etc. Development programme is quite large in urban areas and it creates demand of labour in different types of work.

Quarry workers reside both in urban and rural areas. Except a few (15%) of the quarry workers reside in urban areas.

Living arrangements of people in one household vary differently and these arrangements allow people (or ideas) to coexist. It refers to whether or not the person lives with another person or persons and, if so, whether or not he or she is related to that person or persons. It is a derived variable, derived from the response to questions about the relationships among the people who live in the household. The family pattern of the Mizo family is a joint family. Living with parents indicates that there is a warm and close relationship with the elders. Migrants mostly arrange living with their friends.

Table No. 36

Respondents living arrangement

Sl.No	Category	Frequency	Percent
1	Relatives (with father/mother)	86	28.7
2	Relatives	145	48.3
3	Husband's family	9	3.0
4	Wife's family	8	2.7
5	Independent	10	3.3
6	Friends	42	14.0
	Total	300	100

Table No. 36 shows the living arrangement of the quarry workers at the time of the study conducted at the quarries. It shows the present living conditions of the quarry workers. Out of the 300 quarry workers, more than one third (48.3%) are living with their relatives. A negligible proportions (2.7%, 3.0%, 3.3%) are living with their wife's family, husband's family and independently respectively. Normally the size of the Mizo family is 4-6 and it is large in size as a family. Quarry work is regarded as a family employment for the workers (ref: Table No. 4&5). Mizo society is a close knit community and the living arrangement is mostly with relatives. Nuclear and independent family system is not popular among the community. From the earlier

times, Mizo children sleep with their parents; one bed is often shared among the whole family till a child becomes an adolescent. Those who live independently are mostly those who have lost their parents due to death or those who want to live all by themselves without disturbing their relatives or else those who do not have relatives at all. The quarry workers living with their friends mostly belong to the lone migrant quarry workers who do not bring their family at the workplace and maintain their life and living with their mate immigrants. The migrants also live with their own families and mostly reside near their work place

Quarry workers mostly live with their relatives.

Being an unorganised worker at the quarry, workers are not provided with housing facilities by the quarry owner. The quarry workers need to be provided with good housing schemes. According to the census of India 2011, on the condition of census house, 62.3% has good house condition, 34.8 % has liveable house condition and 2.8% has dilapidated house condition (ref: census 2011, Mizoram at a glance)

Table No. 37 (A)

Type of house and residence

Sl.No	Type		Residence type		Total
			Owned	Rented	
1	Tiled	N	62	80	142
		%	(40.8)	(54.1)	(47.3)
2	Concrete	N	6	19	25
		%	(3.9)	(12.8)	(8.3)
3	Kutch (sethlam)	N	81	46	127
		%	(53.3)	(31.1)	(42.3)
4	Semi Pucca(a ban cement)	N	3	3	6
		%	(2.0)	(2.0)	(2)
	Total		152	148	300
			100	100	100

Table No.37 (A) indicates the type of house of the quarry workers. Sizeable proportions (47.3%) of the quarry workers are living in tile houses (Assam Type). This type of house is made of tile walls with metal sheet roofs and wood structure. Wood is used for floor as well. When we compare to owned house and rented house majority (54.1%) of the quarry workers live in rented tile houses and (40.8%) of quarry workers live in their own tile houses. A small proportion (2%) of the quarry workers live in a semi-pucca house. This type of house usually has a beam made of concrete in structure and the rest of the house is constructed with wood and has a metal roof as well. Kutch house is house made with bamboo and mud floor with metal sheets but without a proper structure. The migrants are mostly living in this type of

house built by the quarry owners. Concrete house is made with iron rod structure and a beam with brick walls and cement floor. The housing conditions of the quarry workers are not very poor but the maintenance of the housing is poor. The housing condition is simple and mostly there does not seem to be good materials and equipments available in the house. Cleanliness is not maintained by the quarry workers due to the fact that there is no sufficient water facility available to them which is a good source of livelihood. In the society a tile house (Assam type) is very popular not only the quarry workers live in it but also the non quarry workers live in this type of houses. Water taps is not known. Instead they collect water with bucket and stock it in a plastic water reservoir near the basin for cooking and cleaning utensils. If they have gas stove they spare for emergency and use firewood to supplement the gas. They make temporary bathroom in an open space made with bamboo and silpaulline sheets with improper roof which is also used for bathing and washing.

Table No. 37 (B)

No. of rooms and residence type

Sl.No	No. of rooms		Residence type		Total
			Owned	Rented	
1	Single	N	61	78	139
		%	(40.1)	(52.7)	(46.3)
2	Double	N	50	52	102
		%	(32.9)	(35.1)	(34)
3	Triple	N	41	18	59
		%	(27.0)	(12.2)	(19.7)
Total			152	148	300
			100	100	100

Table No. 37 (B) indicates that a sizeable proportion (46.3%) of the respondents have a single room. As compared to owned houses and rented houses

majority (52.7%) of quarry workers live in single room rented houses and (40.1%) quarry workers live in single room owned houses. Single room here refers no other rooms inside the house; there is no separate kitchen, bedroom, and living room in this type of accommodation. Only one third (34%) of the quarry workers have double room. Double room here refers to a separate one bedroom with another single room comprising of a kitchen and a living room. It is observed that the pattern of the rooms they are dwelling is not suitable or desirable for the standard of living and that the size of the house is quite small and congested. Only 19.5% of the quarry workers has triple rooms, here there are three separate rooms a kitchen, a living room and a bedroom. In Mizo society, living room is mostly used for as a sitting room since they usually do not afford a separate sitting room since an extra room is not available. The partition wall of the room is also temporary and not stable in many of the workers houses. According to the Census of India 2011 out of the 221077 number of household, 2.8% has no exclusive room, 18.8% has one room, 42.6% has two rooms, 22.2% has three rooms, 8.3% has four rooms, 3.0% has five rooms and 2.3% has 6 and above rooms (ref: census 2011, Mizoram at a glance www.censusindia.gov.in). Generally, the housing condition is very poor; they mostly rely on the spring, valley water and often fetch water from the forest. There are no attached toilet inside the house, they mostly use ordinary pit latrine near the house. It is also observed that good water reservoir is not available in most of the study areas to stock the rain water. It is observed that there are some migrants quarry workers using open space for defecation reside in the quarry. This makes the surrounding unhygienic.

Quarry workers live in owned or rented houses mostly in tile, concrete, kutcha and semi-pucca houses.

Our attitudes, likes and dislikes, values, opinions, beliefs may be different from one person to another. The way we perceive our surroundings, neighbourhood and society and we have great influences on the body, mind and the spirit. It reflects the conditions of our present situation as an individual and in the society as well as the achievement we receive.

Table No. 38

Attitude of society towards quarry workers

Sl.No	Attitude	Frequency	Percent
1	Sympathy	28	9.3
2	Empathy	4	1.3
3	Neglect	14	4.7
4	No comment	254	84.7
	Total	300	100

Table No. 38 shows that more than two third (84.7%) of the quarry workers have no comment from the attitude of society toward them. This is due to the fact that, there is no class distinction, discrimination and caste hierarchy among the Mizo tribes. Quarry work is connected with our culture because there are abundant hilly rocks to produce adequate supply of stones for various purposes like housing, building and other construction works. Quarry workers never face disdain from the society. Less than tenth (9.3%) quarry workers attitude is sympathetic. The society cannot do much for the quarry workers to support their socio-economic status in the society. Another 4.7% attitude is neglect because some quarry workers are isolated from the society. The society does not dwell deep to think about them as they are the weaker sections of the society. Only a few (1.3%) quarry workers attitude is empathy. Some quarry workers are single earner and the family fully depends on him. There is sometimes a need to spend money for their health problems. This makes the quarry workers wary about how to spend their everyday life.

The attitude of the society towards the quarry workers is not very bad. Discrimination does not exist between the other members of the society and the quarry workers. But most of the people worry about the explosive they use for it might bring harm to others.

Stone quarry workers belong to the unorganized sector. Various types of operations are involved in this work. Based on these operations, the workers are employed at different places. Generally, quarry workers are engaged in four types of work known as stone cutting work, crushing, drilling and loading. They face health problems such as back pain, miscarriage, varicose veins, silicosis, lung cancer and tuberculosis. The working condition leads many quarry workers to die while they are still young of age. Quarry workers work for more than fifteen years and face health problems such as chronic chest pain, chronic dyspnoea etc. (Elavarasi.R.2006, p. 1).

The workers employed in stone quarries, which is unorganized sector of industry, are exposed to variable silica dust concentration at their work place, a very large extent of respiratory morbidity and lung function impairment is observed in this group of employment. Their health is very much affected by their working conditions with symptoms of chronic pain like back pain, chest pain etc (V.B.Ghotkar, B.R. Maldhure & S.P. Zodpey. 1995, p. 6)

They work in unsafe and hazardous condition; the explosives which are used for the quarry to smash rocks and stones are very dangerous for the quarry workers. They have to work endlessly whether in summer or under bitterly cold winter. They are nestled in a shanty and dilapidated home with no potable water to drink.

Among the quarry workers various health problems emerges. General health problems and occupational health problems are being faced by the quarry workers. Mizoram Health Care scheme and Rashtriya Swasthya Bima Yojana (RSBY) which is to provide smart card cashless health insurance to B.P.L (Below Poverty Line) families is functioning under the ministry of Health and Family Welfare Department of the State Government.

Table No.39

Health problems

Sl.No	Problems	Frequency	Percent
1	Bone-Joint/Leg/Back/arms or hands/shoulders pain	110	36.7
2	Ulcer	80	26.7
3	Piles & Gastric related	26	8.7
4	Eyesight	24	8
5	Headache	32	10.7
6	Indigestion	25	8.3
7	Bronchitis/Sneezing/Chronic cold & cough	14	4.7
8	Rheumatic	17	5.7
9	Gynaecological problems	9	3
10	Heart	5	1.7
11	Kidney	5	1.7
12	Nerve	4	1.3

It clearly states from Table No. 39 that stone quarry workers suffer from various health problems. More than one third (36.7%) of the quarry workers suffer from body join/leg/back pain. A negligible proportion (1.3%) of the quarry workers suffer from nerve problems. There are 26.7% ulcers and 10.7% headache. Less than tenth, (8.7%) quarry workers have piles and gastric related health problems,8.3% indigestion, 8% eyesight, 5.7% rheumatic, 4.7% chronic cold and cough, 3% gynaecology and 1.7% for both heart and kidney respectively. It is evident from the present study, from informal discussion that there are quarry workers who are

suffering from diabetes; malaria and typhoid are also commonly found diseases among the quarry workers. Since they spend long hours at the quarry sites like loading, cutting, breaking of stones makes them suffer from musculoskeletal problem and there seems to be certain pains in the body: joints, back, legs, hands and arms. Chipping of stones by their hands and sitting in the same position is also another reason for the occurrence of pain in their body. Consumptions of alcohol and tobacco related products are the main reasons for the cause of ulcers, piles, indigestion in the body (ref: Table No 44 & 45). Poor quality food and improper timing of food taken by the quarry workers also cause stomach problems. The problems of urinary tract and kidney may happen because of unclean and insufficient drinking water supply in their home as well as at their workplace. Rheumatic and nerve problem may be caused since they use their physical strength and energy without proper medical care. The emission of dust particles from the quarry site and surrounding areas creates eyesight problem as well as sneezing, chronic cold and cough etc. Quarry workers may be exposed with the risk of poor illumination or excess brightness which may cause eyestrains, or glare with discomfort and fatigue, headache. Physical work under heat and cold is very stressful for the quarry workers and impairs their health conditions too. According to the results from the main labour force survey by the European Union in 2007 the bone, joint or muscle problem holds the highest health problem faced by the labourers in different kinds of occupations. The unpleasant climatic conditions may make respiratory problems like sneezing, cold, cough etc. among the quarry workers. Female quarry workers are found to suffer from gynaecological problems .It is very hard to get plenty of nutritious food in their everyday life to enhance their health conditions. Due to the low income the quarry workers do not have sufficient money to spare for buying healthy food to strengthen

their physical health and mental health as well. Insufficient intake of vitamins and minerals makes the female labourers suffer from nausea, dizziness, etc. Gynecological problems like improper menstrual cycle and improper blood flow is common among the female stone quarry workers. From the report of Vanglaini Newspaper Vol-XXVIII NO.114 Aizawl Tuesday May 2013, it was reported that for during 2013, there are 103545 persons under R.S.B.Y (Rashtriya Swasthya Bima Yojana) and 7284 persons under H.C.S (Health Care Scheme) registered. It also reported that people working under MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Schemes) who are having job card and street vendors are included in the schemes. As per the study conducted by N. Sunitha, N.Nandini and D. Paramesh Naik (vol.2 (3&4)2010, p. 30) on 'An international quarterly journal of ethno and social sciences' title Economic Environment and Health Status of Stone Quarry Workers in Bangalore' 29.8%) of the quarry workers got headache, 18.0% body pain, 22.68% eye symptom, 9.79% abdominal symptom, 45.36% respiratory problems. As per the study carried out by Elavarasi, R.(2006 p. 77) on 'Socio-Economic and Health Conditions of Women Quarry Workers at Perambalur District' (unpublished M.Phil dissertation), 53.4% of the quarry workers got body pain, 43.3% of both body and hand pain, 3.3% hand pain only. Of all the studies including the present study, body pain, respiratory problem and headache are the main problems among the quarry workers. The challenges faced by the health conditions of women quarry workers are discussed in case study No. 3. They spend a meagre amount on their health conditions (ref: Table No.9 (C)).

Quarry workers suffer from both occupational and general health problems. The health care schemes do not reach the quarry workers.

ACCIDENTS IN THE WORKSPOT

With the growing of industrialisation in India, problems of occupational health and safety have also surfaced. Every year, lakhs of accidents take place in factories, mines, railways, ports and docks, leading to a large number of fatal injuries, acute ailments or permanent handicaps. More than 60 accidents take place per thousand workers in the country, many of them fatal. Disabling injuries and illness also deprive an employer of the full working life of an employee. Apart from these fatal injuries and permanent disablement cause agony and hardship to the family members. Due to the death of permanent disablement or the bread-winner, the family sometimes is reduced to state of penury (Sarma, A.M. 2008, pp 65 & 66)

Table No. 40 (A)

Injury

Head Injury		Fracture of bones		Bruise	
Frequency	Percent	Frequency	Percent	Frequency	Percent
8	2.7	33	11	41	13.7
1 time		1 time		Below 20 times	
8	2.7	29	9.7	36	12
Treatment from own pocket		2 times		Above 20 times	
		4	1.3	5	1.6
Treatment from own pocket		Treatment from own pocket		Treatment from own pocket	
8	2.7	33	11	41	13.7

Note: Head injury & fracture of bone reference period is since working in the quarry and reference period of bruise is last 2 months

Table No. 40 (B)

Chances of accident

Sl.No	Chances	Frequency	Percent
1	No accident chance	263	87.7
2	Upto 15	33	11
3	15 an above	4	1.3
	Total	300	100

Note: The chances of accident reference period is last one month

Table No. 40 (A) reveals that 2.7% of the quarry workers face head injuries in the work spot because of falling down objects and off shoot coming from the breaking of stones from their friends and explosion of rocks .That is one time each happens for the quarry workers. In times of injuries the employers give little money as helping hand but this is not sufficient for the whole treatment. Mostly the injuries are not deep and the workers continue the work after one week or two. The workers are very enduring to join the work to earn their livelihood. 11% of the quarry workers have fractures in their hands, arms and legs. This usually happens when one falls down at the workplace, improper holding of stones, and leaning upon stones that suddenly slide from the upper side and so on. 9.7% of the quarry workers faced fracture one (1) time and the next 1.3% of the quarry workers faced two (2) times fracture in the body. It takes more time to leave from the work and suffer a lot for their family and other relatives. Bruises and cuts always happen in their hands and feet. 13.7% of the workers replied that they have bruise and cuts during the work. Out of the 300 quarry workers 12% of the quarry workers have below 20 times bruises and 1.6% of the quarry workers faced bruises during the course of work. There is no proper First Aid Kit in the quarry and the treatment of the injuries is usually done by the victim or by his workmates.

Table 40 (B) reveals that the highest (11%) of the quarry workers faced upto 15 chances of accident for the last one month. The lowest (1.3%) quarry workers faced 15 and above chances of accident in the working place. According to the result the chances of accident during the work is high during the reference period. Explosive is mostly used in the quarries to break down the rock and it creates the chances of accident in the quarry. The rocks are blasted and shaken and become unstable to stick on the mountain. The rest of the objects might fall down at any time from upward while working under the hill and there are less chances of moving away from the working spot. The workers also climb up mountains to do the stone work and there is always the risk of slipping down. Hammer is a useful tool used for cutting and breaking; they sometimes crush their fingers and cause serious injuries. In fact, there are higher chances of accidents for male quarry workers than the female. The issues related to accidents on the workspot about the quarry workers are described in focus group discussion No. one (2). The challenges faced by male quarry workers accident on the workspot is discussed in Case study No.4.

Quarry workers are facing major and minor accidents in their body during the course of their work and chances of accidents are very high. No compensation has reached so far to the quarry workers and most of the treatments are done from their own pocket money.

It is a common practice among the Mizo community that access to medical care and consulting a medical practitioner only happens when one is very seriously ill. Generally, the poor economic conditions and paucity of income of the quarry workers create no consciousness to access medical check-up in times of need. It needs several amount of money to buy medicine to follow the Doctors prescription. The quarry workers lack awareness about the health conditions and they need frequent or periodically free medical camp in the working spot.

Table No. 41

Medical check- up just a once

Sl.No	Conditions	Frequency	Percent
1	Not check up	235	78.3
2	Check up	65	21.7
	Total	300	100

Table No 41 clearly states that vast majority (78.3%) of the quarry workers do not undergo medical check-up even once in their lifetime. Less than one-fourth (21.7%) had undergone a medical check- up. It is due to the fact that in the quarries and residential area the environment is quite good at present stone crushers are not located near the working spot. Water is clean and not contaminated in most of the area, forest reserve area exists and there is less pollution. Local vegetables are rich in vitamins and anti-oxidants, however the quarry workers are regularly eating boiled dishes which are absent from oil; very harmful effect to their body to increase cholesterol. They have the habit of walking to the quarry (ref: Table No. 34 (A), many of the quarry workers often climb about 10 metres uphill or on mountainous regions which is a part of their life. At night, the quarry workers sleep soundly since the climatic condition is good and moderate compared to other states of India. It was evident from the field study that minor health problems are present but they do not

have sufficient amount of money to use for medical check-up and they seem to lose consciousness about their health conditions especially when they do not suffer from severe pain. From the informal discussion of the present study they have the habit of just taking a pain relief tablet and medicines like, paracetamol, fenceta, digene etc. They are usually taking these medicines to relieve the pain from their body. Moreover, they require spending money for their daily needs. These different health problems do not stop them to work in the quarry. They keep their pains to themselves until it causes severe pain. Quarry workers who are conscious about the health conditions have undergone medical check up by taking the advantage of free health camp implemented in the locality where the treatment is free of cost to each and every one. Those who are having health problems like high blood pressure, diabetes, rheumatic, gynaecology problems etc. need to go for a check- up regularly because of their poor health conditions.

Most of the quarry workers do not undergo medical check- up especially when they do not feel severe pain in their body. This may be due to economic problem, lack of interest, time limitation and lack of consciousness about their health conditions.

Quarries are located at the remote areas from the locality and the access to medical care is mostly far away from the quarry sites. Medical care centres like Public Health Centre/ Sub- Centre, Hospital are desirable for the quarry workers to access in times of emergency. This will mitigate the injury affected into their body. North East India is an underdeveloped area of the country. The continued political unrest and ethnic violence, and the difficult terrain make essential health and development services inaccessible.

Table No.42

Access to medical care when facing accident

Sl.No	Conditions	Frequency	Percent
1	Not nearby (above 2 kms)	169	56.3
2	Nearby (1-2)	131	43.7
	Total	300	100

Table No.42 clearly shows that majority (56.3%) of the quarry workers response that access to medical care is not nearby when they are facing an accident. More than one third (43.7%) of the quarry workers response that access to medical care is near from their workplace. Even if the health centre is nearby the transportation is the first problem faced by the quarry workers since the quarries are located in the remote areas and it is not easy to catch vehicles from and near the quarry. The Sub-Centres are mainly referred to as the nearest health centre. Civil Hospital which is a multi speciality hospital is very far away from each of the quarries and transportation is rarely available in times of need and emergency. There is insufficient supply of first aid kit (ref: Table No. 43) to avoid or prevent serious and painful injuries of the body. The out of reach medical care centres makes the quarry workers more insecure to the working places. As we have already known that the quarry workers are very vulnerable due to the risk of accidents in the working place,

there is always a possibility of meeting undesirable things from the surrounding like falling of trees, rocks and other materials sliding from the tailings onto people and machines. With regard to the maintenance of rock drills, stone crushers pose a great hazard to the workers involved in this task. Access to medical care centre nearby reduces the risk of death or chronic pain due to accidents from the work.

Access to medical care is almost far from the quarry when the quarry worker faces an accident. The rough geographical conditions also make the transportation more problematic.

First Aid Kit is one of the most important necessities for the quarry workers. They work under hazardous situation and are prone to face accidents at any time. They need first aid kit when facing minor and major injuries like tissue damage, bruise, fractures of bones, splinters of stones fall on the head from uphill etc. Quarry workers are exposed to many hazards including frequent and heavy lifting, noise and vibration.

Table No.43

First Aid Kit in the workplace

Sl.No	Conditions	Frequency	Percent
1	Not available	278	92.7
2	Available	22	7.3
	Total	300	100

Table No.43 reveals that more than two third (92.7%) of the quarry workers responses that they do not have First Aid Kit when facing injuries at the workplace .Less than tenth (7.3%) of the quarry workers responses that they have first aid kit in times of injuries. It is sad to know that the First Aid Kit is not provided by the quarry owner. They themselves manage by their own self in times of need. This makes the working conditions of quarry workers more insecure at their workplaces. Some injuries like, fractures, head injury, deep tissue damage etc. needs to be attended with first aid before approaching to the doctors or nurses. Other minor injuries like bruises, cutting of skin, crushing of fingers etc. can be healed from first aid treatment. It will surely ease the quarry workers so that they do not need to spend money for buying butadiene, band aid, plasters, cotton, dettol, bandage and pain relief etc. at home. It is the duty of the employee to keep sufficient materials of first aid especially when facing an accident. The responses for availability of first aid kit in the quarry are very poor at times of emergency. It is evident that there is less security among the quarry

workers and they are also vulnerable. The work is hazardous and accidents may always happen during the work. Slips, trips and falls of rocks from height makes the risk for chances of accidents.

Quarry workers are still insecurely working in the quarries without safety tools like first aid kit in times of need.

Consumption of alcohol is very common amongst the quarry workers; it is usually taken to relieve their fatigue and exhaustion from the job. They consume mainly after work while some of the quarry workers drink occasionally. The Mizoram Liquor Total Prohibition Act (M.L.T.P) (2005) strictly prohibits selling, consumption or making alcohol anywhere in any places all over Mizoram. Illegal practice of alcohol is non-bail able according to this Act.

Table No. 44 (A)

Consumption of alcohol

Sl.No	Category	Frequency	Percent
1	Not consume	199	66.3
2	Consume	101	33.7
	Total	300	100

Table No.44 (A) shows that two third (66.3%) of the quarry workers do not consume alcohol, whereas the remaining one third (33.7%) of the quarry workers consume alcohol. From the present study, those who respond as never consuming alcohol may drink sometimes when they are feeling tired. However, Mizo's belonging to tribal society; consumption of alcohol is widely prevalent. Illicit distillation is practised in many villages in Mizoram. Usually, people consume local made alcohol which is made by rice and yeast. The price of alcohol is around Rs.150/ltr, but the price may change at any time. As per the research conducted by Robin D.Tribhuwan and Jayshree Patil (2009, p.176) on the book 'Stone Quarry Workers Social Insecurity and Developmental Issues'; from the four castes they studied, 27% of the quarry workers are addicted to drink alcohol. As we compare with the present study, consumption of alcohol is quite high among the quarry workers in Aizawl. In Budhpura, Rajasthan 87% of the quarry workers are alcoholic and the price of country made liquor is Rs.27/180 ml bottle (P. Madhavan & Sanjay Raj, 2005 p.22). It is

interesting to note that there are three quarry workers recovering from viz., ganja 35 years male, 32 years female and 33 male drug users. They respond that it effects their health conditions and they are regret to use these substances and also it hampers their body outlook too.

Table No. 44 (B)

Time of consumption

Sl.No	Occasion	Frequency	Percent
1	Do not consume alcohol	199	66.3
2	Evening/Night	101	33.7
	Total	300	100

Table No.44 (B) reveals that one third (33.7%) of the quarry workers consume alcohol at evening/night time before meals so that are able to eat food with a better appetite. Quarry workers consume alcohol at the night time thinking that they will be able to relax and get proper sleep without feeling pain on their body. From the present study nobody is found to start drinking alcohol from morning hours.

Table No. 44(C)

Place of consumption of alcohol N=101

Sl.No	Places	Frequency	Percent
1	Home	70	69.3
2	Road side	3	3.0
3	Alcohol seller house	8	11.4
4	Work place	1	1.0
5	Friends house	19	27.1
	Total	101	100

Quarry workers consume alcohol at any place according to their own convenience. Table No.44 (C) reveals that vast majority (69.3%) of the quarry workers consume alcohol at home. Home is very safe for consuming alcohol and the

quarry workers drink without disturbing others. Quarry workers eagerly buy alcohol packet from the seller and bring it home so that they won't be caught. More than one forth (27.1%) of the quarry workers drink alcohol at their friend's house, 11.4% at alcohol sellers house, 3.0% at road side and a small proportion (1.0%) drink at the workplace. Sharing alcohol in the friend's house makes the quarry workers enjoy themselves rather than drinking on their own. It is easy to drink alcohol at the seller's house especially when the quarry workers work late at the site. Mostly the quarries are located at the remote side of the locality and the roadsides are always available to share alcohol among the quarry workers. Sometimes the alcohol sellers illegally bring alcohol to the quarry sites and without getting the attention of others they find a chance of drinking within the vicinity of the quarry.

Table No. 44 (D)

Reasons for consumption of alcohol N=101

Sl.No	Reasons	Frequency	Percent
1	Addiction	11	10.9
2	Pain relief	57	56.4
3	Enjoyment	19	18.8
	Total	101	100

Quarry workers consume alcohol for several reasons. Table No. 44 (D) reveals that the main reason for consumption of alcohol by majority (56.4%) of the quarry workers is to relief pain from their body. Carrying heavy objects can cause body pain like back pain, leg pain, hand and arms pain etc. creating problems in their body due to harsh work under long hours with unpleasant climatic conditions in the quarry. More than seventh (18.8%) of the quarry workers consume for enjoyment. Quarry work is a hard manual work and it is sometimes very boring to work in the quarry. Sometimes, the workers like to share or try out new things with their friends and

drinking alcohol makes them feel comfortable and happy for a while. A small proportion (10.9%) of the quarry workers are consuming alcohol because they are addicted to it. But the quarry workers do not get drunk while they are at work and manage a routine as to when and how much to drink by themselves. Consuming alcohol is a part of their life. However, nobody is seen drunk while paying field visits at the quarry.

Table No. 44 (E)

Times of consumption of alcohol N=101

Sl.No	How many times	Frequency	Percent
1	Everyday	26	25.7
2	Twice or thrice a week	41	40.6
3	Once a week	34	33.7
	Total	101	100

The times of consumption of alcohol varies differently. Table No. 44 (E) reveals that more than one third (40.6%) of the quarry workers consume alcohol twice or thrice a week. It means that they are drinking alcohol for pain relief, time pass and enjoyment when feeling of drinking occurs, one third (33.7%) of quarry workers consume alcohol once a week. Many of the workers cannot drink regularly since drinking alcohol is expensive nowadays and their income cannot provide them with the liquor every now and then since their income is very low. They often consume alcohol when they feel like drinking and often use it as a relief from pain or else to socialise among their friends or to imitate the actions of their friends. One fourth (25.7%) of the quarry workers consume everyday at the time of field study. This does not mean they are addicted; they drink regularly when they have alcohol, but can also live without it. At present, quarry workers consume bad quality alcohol which is made from Bii (yeast coming from Myanmar). It needs only one night for the yeast to

prepare the alcohol and does not contain the original smell of alcohol. It is more desirable for the alcohol seller and maker since it brings good market within a short period. It is very harmful for the body because it can destroy the pancreas and stomach easily. The traditional Mizo liquor (**Zu**) takes at least 3 nights for preparation. The government of Mizoram strictly prohibits illegal practicing of making and selling of alcohol. It is sad to know that illicit seller may often visit the quarry site. Quarry workers get money easily, since the market of stone production is good. The seller takes the chance to sell his liquor at the time too. The alcohol consumers are at the risk of pancreatic problem when they consume bad quality alcohol. Good quality alcohol cannot be afforded by them due to high prices.

Consumption of illicit liquor is common among the workers and non workers of Mizoram. Quarry workers have the habit of drinking illicit liquor. To relieve themselves from stress at work and to relieve themselves from pain alcohol has been usually consumed by the quarry workers. They drink once, twice or thrice or everyday in a week. They spend their income to satisfy their desire and temptation to drink liquor. Illicit sellers also often go to sell liquor within the quarry sites.

Tobacco is very popular among the Mizo people. It is connected with the culture and the society from the ancestors. People like very much to smoke cigarettes, Mizo local cigarette, chewing betel nuts and tobacco products like khaini, '*tuibur*' (tobacco water). It was observed that all categories of people including children are into one form or the other. Cigarettes and other tobacco products (Prohibition of advertisement and regulation of trade and commerce, production, supply and distribution Act 2003 No.34 of 2003) prohibited trade and commerce and supply distribution of cigarette and other tobacco products with matters connected to it. According to this Act the Mizoram State Tobacco Control Society prohibited and banned on selling gutkha products. They do not allow smoking in public places, restaurants, hotels, schools, offices etc. if caught they have to pay a fine of Rs.200 per person.

Table No. 45 (A)

Tobacco related products

Sl.No	Category	Frequency	Percent
1	Not using	63	21
2	Using	237	79
	Total	300	100

Quarry workers like to use tobacco related products in their everyday life during and after the course of their work. Table No.45 (A) shows that vast majority (79%) of the quarry workers consume tobacco related products like smoking, chewing pan, tobacco and tobacco water (*tuibur*). They consume continuously during day and night while working in the workplace and at home. The overall reason for using tobacco is addiction. This is evident from the present study that to quit smoking, chewing tobacco and pan is very hard since the users mostly practice right from their teenage and become addicted to it using it as a part of their daily life. No one is

observed to ban the practicing of their bad habits. It may affect their health conditions now as well as in the future. Mizo people consider cigarette as mosquito repellent. Smoking is not prohibited by the Mizo society. Since it has been a tradition from late grandmother/father, the children tend to imitate their actions. The pregnant women in Mizo society crave to lick cigarette ashes. Less than one fourth (21%) of the quarry workers do not consume any kind of products made from tobacco and betel nuts. It is similar with the findings of Tribhuvan. R & Patil. J, a study was conducted among different 4 castes of stone quarry workers in Moshi and Yewalewadi in Haveli Blocks of Pune district in Maharashtra. Among the stone quarry workers, majority of the quarry workers use tobacco related products. From the report on Vanglaini Newspaper, 1 June' 2013, 65% of the Mizo people are not abstaining from tobacco related products.

Table No. 45(B)

Tobacco use frequency **N=237**

Sl.No	How many times in a day	Frequency	Percent
1	10 times	214	90.3
2	15 times	14	5.9
3	20 times	8	3.4
4	25 an above	1	0.4
	Total	237	100

Table No.45 (B) shows that vast majority (90.3%) of the quarry workers using tobacco related products 10 times a day. Many of the stone takers/ cutters do not have much time to smoke cigarette or '*zozial*' (traditional Mizo cigarette) while at work since they have to use both hands to cut and break the rocks. But female quarry workers are mostly found to be chewing tobacco while at work. Less than tenth (5.9%) of the quarry workers consume 15 times in a day, 3.4% of the quarry workers are using 20 times a day and a negligible proportion (0.4%) consume 25 and above

times in a day. As per the study carried out by K.Nobutaka & W.Osamu (2004), on Industrial Health 2004 (42, pp. 303-314), ‘Silicosis and smoking strongly increase lung cancer risk in silica-exposed worker’. They found out that silicosis is one of the risk factor of lung cancer. So, from the study it is clear that the stone quarry workers in Mizoram are also at the risk of lung cancer since they are silica-exposed workers.

Table No. 45 (C)

Total Expenditure/day

Sl.No	Amount in Rs.	Frequency	Percent
1	NA	46	15.3
2	below Rs. 50	189	63
3	Rs. 50-100	60	20
4	above Rs.100	5	1.7
	Total	300	100

It was found from Table No 45 (C) that less than sixth (15.3%) of the quarry workers do not consume both tobacco related products and alcohol. Among the 300 stone quarry workers vast majority (63%) of the quarry workers spend below Rs.50/- per day for their consumption and use tobacco related products. Less than one fourth (20%) spend Rs.50/- -- Rs.100/- per day and the remaining 1.7% spend Rs.100/- and above. Those who spend below Rs.50/- generally use tobacco related products and often consume alcohol. The quarry workers who spend above Rs. 50/- are those who consume/use both the intoxicants. Those who have the habits of practicing intoxicants find hard to save money. The price of alcohol and tobacco related products are increasing at a fast pace.

The use of tobacco is common among Mizo society especially among the quarry workers. They use tobacco in various forms, smoking cigarette, chewing

tobacco and betel nuts etc. Even though considerable amount of money has been spent for buying intoxicants, they are unable to stop this expenditure.

The working environment in the quarry sites develops various problems related to the labourers. It is very crucial for the workers that most of the days they spend their valuable time earning income for their family. The results may worsen due to the non safety and undesirable environment at their work place. The dissatisfactions of careful protective measures create a feeling of risk to the labourers.

Table No. 46 (A)

Opinion of Working Environment

Sl.No	Category	Frequency	Percent
1	Not safe	214	71
2	Not hygienic	124	41.3
3	Clean environment	65	21.7
4	Safety Environment	44	14.7
5	Accident free zone	31	10.3

Table No. 46 describes the opinion of quarry workers working environment. 71 percent of quarry workers opined that the environment is not safe. From the hygienic point of view, 41.3 percent of the workers opined that the working environment is not hygienic. The next 21.7 percent of the workers opined that the environment is safe. The lowest percentage 10.3% views that the working environment is accident free zone. The environment of the quarry is not safe for the quarry workers since the quarries are mostly situated in accident prone areas, dust and noise pollution are also prevalent in this area. The working spot is also sloppy and rough. Climatic changes brought about by extreme weather changes are quite unfavourable for the labourers and makes the environment unsafe. The workers have no other options but to work in the quarry to earn their livelihood. The quarry is unhygienic so that the sanitation and toilet facilities are not properly available. Open defecation is commonly in practice; cleanliness is not practiced at the quarries. Many of the quarry workers working spot

are in a ditch or near the ravine mixing with mud and water; this makes the environment unhygienic for the quarry workers. The clean environment site or working spot is where no related pollution exists and disturbs them. The environment is clear and favourable for the quarry workers. It is safe for the quarry workers where the environment is clean and dust related particles are not much available to inhale. This can be met usually by the stone chippers who are chipping stones just far enough from the stone crusher machines. There are zones which are free of accidents for the workers, the workers work away from the main quarry site so they are free from off shoot of stones, and do not have to run away during explosion of rocks or avoid falling down objects from the high mountain.

The stone quarry workers working environment is different from one place to another and from one person to another according to the location of the working spot they are working. They remain working in unsafe and unhygienic environment.

Table No. 46 (B)

**Demography and Occupational Health Problems of Stone Quarry Workers:
Pearson's R**

Demographic Characteristic	Occupational Health Problems Index	General Health Problems Index
Age Group	0.17**	0.09
Gender	0.31**	0.24**
Education Status	0.09	0.14*
Size of the Family	0.21**	0.17**
Migration Status	-0.24**	-0.16**
Occupational Health Problem Index	1	0.54**

Source: Computed

** P < 0.01 * P < 0.05

The relationship between the demographic characteristics such as age group, gender, educational status, size of family and migration status, occupational health

index problem and indices of occupational health problems namely occupational health problem index, general health problem index is measured by using Karl's Pearson's coefficient of correlations, and the results are written in Table No.46 (B). Age group has significant positive effects on occupational health problems index. It means higher the age group greater the occupational health problems. Gender has also significant positive effects on occupational health problems and general health problems means women have greater occupational health problems and general health problems as compared to male stone quarry workers. Educational status has positive effects on general health index only. Higher the educational status higher the perception of general health problems. Size of the family has positive effects on the occupational health problems as well as general health problems of the quarry workers. Migration status has negative effects on occupational health problems as well as general health problems. Migrants have greater occupational health problems than the non migrants. Occupational health problems and general health problems are positive effects; it means higher the occupational problems greater is general health problems.

The Labour and Employment and Industrial Training Institute Department is the concerned department to enforce and protect the Legislative Measures for the labourers in Mizoram. The Geology & Mineral Resources Department functions under the Mizoram Minor and Mineral Concession Rules 2000. It concerns about checking the situation of the quarry; examining stone quality, explosives using, issuing permit, and collection of Royalty in the office. Tax is collected from the stone buyer/commissioner from the check gate who does not have permit to buy stones production from the quarry. The pollution control board of Mizoram issues permit to the owner of the crusher machines only after identifying the locations of the crusher which will not be harmful or hazardous for the surroundings as recommended by the Board.

Table No. 47

Reasons for visiting quarry by the Gov't N=20

Sl.No	Reasons	Frequency	Percent
1	To see permit	10	50
2	Checking stone quality	3	15
3	To check up safe place	4	20
4	Give up to use explosive	3	15
	Total	20	100

Table No. 47 reveals the significance of the visiting programme from the Geology and Mineral Resources Department Aizawl. The vast majority (93.3%) of the quarry workers respond that they do not know anything about the government paying visits to them. Out of the 300 quarry workers only 6.7% quarry workers respond and give the reasons for the government paying visits to them. Among the respondents majority (50%) of the stone quarry workers give reasons are checking permits. The quarry owners extract stones without getting permit issued from the Geology Department which is illegal. If the quarry owners immediately get the permit

from the government, the quarry can be closed down by the Geology and Mineral Resources Department under the Mizoram Minor and Mineral Concession Rules 2000. However, the concerned department does not hold a strict discipline to regulate the quarry and the monitoring cell is not strong enough. The work is insecure for the quarry workers to claim for medical care when facing accidents. Another 20% response of reasons for visiting is to check whether the quarry is safe for extraction of stones or not. There are quarries located near the roadside and it is hazardous for the surroundings. People may face accident due to falling object, slips or slides of rocks from the height. Less than sixth 15% responses that the visitor checks the stone quality and give information to discontinue using explosive bomb respectively. The surveyors take stones from the quarry to the Department and are then checked by the Mining Engineer by using the material such as Triaxial Test, Shear Test, and Permeability Test etc. After a few days only, mining engineer informs the stone quality to the quarry owner and conveys for what purposes the stone is fit for. The quarry owners produce the stones according to the stone quality. The risk of using explosive material is very high; it may cause injuries as well as fatal accidents. Splinters of stones from the mountain after the explosion of rocks may shoot at the quarry workers. The quarry workers practice improper mining and it causes slope failure resulting in collision of rocks from above. It means that the rock is mostly cut/break from the bottom side. It loosens the rocks from above and can cause failure of the quarries. Quarry workers respond that only the Geology and Mineral Resources Department visits the quarry.

The Geology and Mineral Resources Department, Labour and Employment and Industrial Training Institute Department and the Health and Family Welfare Department rarely visit the quarry for the purposes like, checking permit, stone

quality, and unsafe place and give information to cease using explosive as well as labour welfare and health care services.

All the labourers are relying on the government, who can give security and benefits for the deprived and weaker sections of the society. The quarry workers need the government to regulate legislative measures for the betterment of the workers since they work with less security.

Table No. 48 (A)

Want from gov't

Sl.No	Govt action	Frequency	Percent
1	No idea	76	25.3
2	Utilities/Facilities	70	23.3
3	Compensation for workers	42	14.0
4	Job security	40	13.3
5	Upgrading wages	31	10.3
6	Work survey	19	6.3
7	Loans	19	6.3
8	Think that no need of govt interventions	3	1.00

The quarry workers need many things from the government in their everyday works. They want the government to take actions for them. From Table No. 48 (A) it clearly shows that 25% of the quarry workers have no idea how to demand their wants and needs from the government. They do not know how to solve their problems. 23% of the quarry workers felt the need to be provided with good utilities/facilities like hammer, chisel, drilling machine etc with at a subsidised rate. It will ease them from spending money to buy equipments from their own pocket. The materials break easily when used regularly. 14% want fair compensation from the government due to their poor living conditions, 13.3% quarry workers want job security due to undesirable things like accidents which can cause physical impairment of a worker. It may happen

at any time during and after the course of their work. Wages are not received by the quarry workers at the time of sickness and absenteeism from the job which makes the production slower. 10.3% quarry workers want the government to upgrade their wages. If the work is on contract basis they want the government to control the rate of stones and other different kinds of stone works performed in the quarry. 6.3% of the quarry workers want their work to be surveyed and receive loans. They want the government to visit periodically to hear about their working conditions. They also think that loans can give an opportunity to their livelihood to start the business. It is surprise to know that 1% of quarry workers think that there is no need for the government to intervene among the quarry workers as they can manage their business by themselves. From the informal discussion at the time of field study, the quarry workers try to proceed their needs to the government about the compensation and job security as we have already stated above. Many of them are worried and have fewer expectations towards the Geology and Mineral Resources Department, Labour and Employment and Industrial Training Institute Department and the Health and Family Welfare Department. So, they do not try to burden the State Government with their needs for various reasons. It is discussed in Table No. 48 (B).

Table No. 48 (B)

Reasons for not trying to proceed needs N=284

Sl.No	Reasons not	Frequency	Percent
2	Govt. will not listen	55	19.4
3	No idea	126	44.4
4	Non- interfering	57	20.1
5	Satisfied with existing conditions	37	13.0
6	No political connection	9	3.2
	Total	284	100

As cited above from Table No. 48 (B) that out of the 300 respondents vast majority (94.6) of the quarry workers do not try to proceed and be a burden to the government. Among them, more than one third (44.4%) of the quarry workers think they have no idea about the reasons of not trying to proceed their needs and problems to the government. More than ninth (20.1%) of the quarry workers think that they do not want to interfere the government about their requirements. Another 19.4% of the quarry workers reasons think that the government will not listen properly about their wariness and neglect and so find it meaningless to approach the government. 13.0% quarry workers are satisfied with their existing conditions. Earning everyday needs from the quarry makes them satisfy to work in the quarry. They are not conscious about other things in their work. The lowest (3.2%) quarry workers propose that they do not have political connections. They do not expect any kinds of facilities and benefits from political sphere. They find it troublesome and feel that there is no time for the quarry workers to approach the government.

The stone quarry workers want the government to pay more interest about the welfare and regulate the legislative measures to protect them from vulnerability in the society. Most of the quarry workers do not want to convey about the needs and problems to the government that they will not be recognised properly.

N.G.O (Non-Governmental Organisation) is an important factor to promote the deprived and weaker sections of the society. The quarry workers need a good N.G.O to support for their well-being. Mostly, the quarry workers are low in education and they lack vocational training to alternate their hard work from the quarry to generate income for their family. Their children also need proper guidance that their parents have limited time to share for their family.

Table No. 49

Kinds of benefit from N.G.O

Sl.No	Kinds	Frequency	Percent
1	Not get benefit	298	99.3
2	Rs.2000	2	0.7
	Total	300	100

From Table No.49 a negligible proportion (0.7%) get a benefit from N.G.O. From the interview these 2 women do not remember the N.G.O who gave them money. Their purpose of giving is that they want to help female workers who are poor and deprived in the society. In Mizoram, the N.G.O's work mostly for the people who act as under anti-social activities like, commercial sex worker, drug addict, liquor seller, drug dealer etc, and those who are living with H.I.V/A.I.D.S patient. They also work in other areas or places like orphanage, juvenile, agricultural worker, female domestic workers etc. There is no specific concern for the N.G.O's to promote the welfare and to promote for the betterment of the quarry workers. No N.G.O is seen to pay keen interest to the quarry labourers or other unorganised labourer like street vendors, hawkers, construction workers, casual labourers etc. In other parts of India like Maharashtra, 'Santulan' is an N.G.O who works for the betterment of the stone quarry workers and their children. They are also interested in the quarry workers children's too.

There is no N.G.O as such to work for the upliftment of the quarry workers.
Except a few (0.2%) do not get any kinds of benefits from the organisations.

Community based Organisations like the Young Mizo Association (Y.M.A), Mizo Hmeichhe Insuihkhawm Pawl (M.H.I.P), Mizoram Upa Pawl (M.U.P) and Village Defence Party (V.D.P) are the popular voluntary organisations and well-known in the Mizo Society. In the religious side, Kristian Thalai Pawl (K.T.P), Thalai Kristian Pawl (T.K.P) and Pentecostal Youth Department (P.Y.D) etc. are the organisations for which the people of the community participate actively in the society. The organisations function for the betterment and welfare of the society. Quarry workers participate in any of the organisations. All of the Mizo's are Christians. Generally, Mizo people attend church regularly.

Table No. 50 (A)

Participate in Social/Religious activities

Sl.No	Conditions	Frequency	Percent
1	Not participate	127	42.3
2	Participate	173	57.7
	Total	300	100

Y.M.A : Largest Youth Organisation in Mizoram (register member from 15 years)

K.T.P : Largest Youth Christian Organisation in Mizoram (Presbyterian Denomination)

T.K.P : Second Largest Youth Christian Organisation in Mizoram (Baptist Denomination)

P.Y.D : Third Largest Youth Christian Organisation in Mizoram (Pentecostal Denomination)

M.H.I.P : Largest Women Organisation in Mizoram

M.U.P : One and only Organisation for the Old People (register from 50 years an above)

V.D.P : Community defender party from illicit substance users

Table No. 50 (B)

Reasons for not participate

N=127

Sl.No	Reasons	Frequency	Percent
1	No time	9	7.1
2	Not interested	6	4.7
3	Both	1	0.8
4	No specific reasons	111	87.4
	Total	127	100

Table No.50 (A) reveals that out of the 300 respondents' majority (57.7%) of the quarry workers participate in the social and religious activities, but most of them are not interested in participating actively in the social and religious activities. Active participation is not their due nature because of their hard work, they become tired and when they reach home they are bent to take rest or else the quarry workers need to go home early because they need to attend the church and committee meeting in the social and religious functions etc. Sometimes the piece rated workers may be unable to get the normal wages at that time. Whereas 42.3% of the stone quarry workers do not participate in any kind of activities. They are mostly, the migrants from the other states who are not participating in the social and religious activities. For them, language and other cultural practices are barriers. Their conditions do not suite to participate because they are living in lease houses or near the quarries and transportation is very difficult for them to reach the Church, Temple or Mosque in the religious sphere. They do not participate in the social functions since they are not the permanent inhabitants in the locality.

Table No.50 (B) reveals that out of the 127 respondents who participate in social and religious activities 87.4% of the quarry workers have no specific reasons. In reality, as it has been discussed, for the migrants it is very difficult for them to join the society since they have their own cultures, beliefs, practices, and norms or rather

they have language problems. Less than tenth (7.1%) have no time, 4.7% are not interested and 0.8% have both no time and no interest. Time is very limited for them because after work they become subjected to fatigue and they want to spend more time to rest at home. Free and extra time is needed to participate in the social and religious activities. Some quarry workers are not interested and ignore any kind of programmes and functions made by the leaders in the church and society.

The quarry workers participate in the social and religious activities during holidays and hold key positions in social organisations and in the Church organisations as well. Mostly the quarry workers participate simply or generally participate activities like church attendant, 'hnatlang' (community service), mithi lumen (a typical mizo culture involving condolence to the bereaved family by singing whole night), thlan laih (graves digging). But, when they leave the quarry, they get exhausted. Since time is limited for the quarry workers they are disinterested in participating at any social or religious activities. Migrant people come only for work and they are not concerned about the religious and social functions. Hence, they do not participate in social and religious activities. The participation in social and religious activities is higher among the non-migrants than the migrants.

The stone quarry workers form Associations or Welfare to mould the labourers in times of need and help. They also form the association to follow the smooth functioning of the quarry in certain aspects like the rate of stone, rate of mistiri etc. In the association a worker can get registered as a member to promote the welfare of the labourers under the ‘Mizoram Trade Union Regulation, 1992’ for paying Rs.470/- under the Labour and Employment and Industrial Training Institute Department Aizawl.

Table No. 51
Associations

Sl.No	Name of the quarry	Association	Year
1	Mel-4	Quarry Worker Association	2008
2	Hlimen	Quarry Welfare	2008
3	Samtlang	Nil	
4	Lawipu	Quarry Association	2010
5	Tuithum	Mistiri Association	2010
6	Sakawrtuichhun	Nil	
7	Industrial Cross Centre	Nil	
8	Phunchawng	Nil	
9	Lawibual	Nil	
10	Zemabawk	Quarry Worker Welfare	2008

From Table No.51 we have seen that there are quarry workers who build or establish associations or welfare to formulate the labourer. In several places where Associations or Welfare is not formed the present 10 selected quarries are being chosen for investigation. Among the 10 quarries only 5 (half of the selected field study/research area) formulate the associations or welfare for the smooth functioning of the quarry workers. It was observed that if the association is established, it is very difficult to function smoothly due to the limitation of time for the formulation of their

own interests. They all are busy in their work, and the working spot is scattering into different places and it is not easy to communicate with each other frequently. They function irregularly and their main function is to fight for higher wages. But even if somebody needs to be helped due to death or accidents they contribute money and give aid to the victims. This is one of the aims organised in the association. No reports have been found about having strikes, making noises or bad manners inside the quarry.

From the field study with an informal discussion the reasons for not forming the association is that there is lack of initiative among the stone quarry workers, they don't think it is necessary to formulate an association among the workers, they also feel free without forming the association. Most of the quarry workers have no idea and no response about not forming the association to formulate the workers. There is a lack of interest for the betterment of the quarry workers and lack of awareness about the importance of welfare and association. They are afraid of irregular functioning which will be meaningless for the labourers even if the association or welfare is formed. The workers also feel that there is no gain or profit in having an association. Therefore, they are satisfied in their daily labour and don't think it necessary to form an association. The issues related to forming the associations about the quarry workers are described in focus group discussion No.3.

The quarry workers formulate an association or welfare for the promotions of their working conditions.

Part: A

Conclusion

The present study highlights the fact that male and female quarry workers are drawn from various age groups and the mean age is 30 years. Male quarry workers surpass female quarry workers. As the works involved are risky and the work demand is strenuous, male quarry workers outnumber female quarry workers in all the study sites. It was also found that the primary works in quarries are performed by the males like dressing, cutting, loading of cubic stones from earth to truck, etc. Men are more reliable than women to work and earn for their livelihood in the quarry. However, females also work in quarries to support their family. Female mostly work lighter jobs like stone chipping. It was interesting to note that older persons are also involved in such perilous work partly because they wanted to fill up their free time, partly to supplement the family income and partly for refreshing. Their timings are also subjected to change as they are not regular workers and performed their work at their own convenient time. It was found that children are also involved in the quarry work. It was observed that a quarry produces a good income for the quarry workers. Female quarry workers are working with their families, or at least with their relatives.

Among the quarry workers, maximum education qualification was high school followed by middle and primary. This could be explained that since maximum number of quarry workers starts joining quarry worker after finishing high school as they attained adolescence, and at this stage they mostly feel not much interested in their studies and are very fond of trying to do new things. As a result, the quarry workers have some knowledge of reading and writing. Workers who have completed graduate level are seldom to be seen, as the type of work didn't demand higher qualifications. The present study revealed that all the quarry workers except few are

literate and hence it was found that the literacy rate of the quarry workers is high compared to other states in India (ref: Table No.2).

In the present study, married quarry workers lead a major role in participating at the quarry work. They are more or less likely to concentrate in generating income for their family due to easy entry as well as for the adolescent period, and they are not having other regular sources of income. Quarry works generate casual nature of employment for the people to earn their livelihood. Marriage is not a bar for quarry work. Both the sexes are employed, it was found that unmarried and school dropouts are also working in the quarries. Early employment in quarry work in Mizoram leads to early marriage. Both married and unmarried enter into quarry work. After marriage they continue to work as a quarry worker. Marriage is not a hindrance to work in the quarry.

Being Mizo's as tribes, the quarry workers in Mizoram belong to large size family.

It was found that quarry work is a family occupation and maximum of four quarry workers are found in a family.

Quarry workers send their children to both government and private English medium school. It was observed that due to very low level of income most quarry workers' children go to Government primary and middle schools run under the Sarva Shiksha Abhiyan Scheme in their own locality. It eases the quarry workers to spend money for their child's education. Besides this, there are children who do not continue to join school due to poverty, much needed work and due to scholastic problems. There are children who dropout their regular school due of poverty and the family demand is very high among their children to enhance income for their family. Their

parents eagerly let the children to join labour in various occupations like, domestic worker, helper in construction of houses, electric wiring, automobiles repairing in workshops, tea stall, hardware store etc. Some children are expelled from schools due to misbehaviour and practising illegal activities like alcohol, smoking, missing classes etc. in the school. Quarry workers children attended the Anganwadi before they join the regular school.

Therefore, there is a possibility of child abuse among the quarry workers children in Mizoram which enhances the high rate of child abuse in Mizoram. The present study highlights the involvement of children in hazardous work at quarry in Mizoram.

It was found that quarry workers are concerned about their children's education. Generally, the quarry workers family are unable to pursue higher education because of their insufficient income. Quarry workers who have the knowledge about the importance of education do not allow their children to join labour by force. Quarry workers who have more children and earn meagre income do not give much interest about higher education. The higher the education the amount needs to be spent is more. School dropout is rampant among the quarry workers children. Anganwadi is found useful for quarry workers children to promote the child bearing for the school life. Aspirants about the children education from their parents were very low among the quarry workers for attending the school in both government and private schools.

The vast majority of the quarry workers in Mizoram are non-migrants. Mizoram is a peaceful state and there are many people migrated from different parts of India due to the push and pull factors. They come to work for labour in search of different kinds of jobs. In the case of Myanmar's there are influxes by political

suppression and economic reasons of which they migrate to Mizoram. It is mandatory that all the migrants in Mizoram today need Inner Line Permit (I.L.P) to come and work in Mizoram. The period of millennium has a greater impact/influence on the labour migration in Mizoram. There is an increasing employment opportunities in Mizoram, and their main reasons are economic problems.

The income range varied differently according to the nature and hours of work spend per day or per week. The workers generally live simple ways of life and cannot attain higher standard of living according to their income. The female workers especially add or supplement their income from other sources, since their work is mild and usually involve stone chipping. Their low income cannot provide sufficient daily needs. The increase in price of commodities for everyday needs dethrone the quarry workers of better living conditions.

The gross family income of the quarry workers is not high. It was also observed that even though the other quarry workers members in the family do other job to enhance income, it was irregular and few. When the family income increases the livelihood becomes more comfortable than before, Increase in the labour force participation supplement the income and it can minimise the wariness of the family. Those who are living in marginalised community hardly pursue or maintain the standard of living for the family.

The quarry workers generally earn a very meagre amount to meet the demand of their family. Normally, the income cannot reach both their ends. With a meagre amount of income and large family, the rise of needs in day to day life makes it difficult for them to save money for further needs and the insufficient income makes the quarry workers more insecure and vulnerable to the society. They can manage

their income by means of borrowing and repaying whichever is convenient. The quarry workers in Mizoram adopt a simple living. Even though the quarry workers lack the knowledge of management of family income, they seem to get through with life, without proper planning.

The quarry workers often take advance wages from the employer whenever they are facing family, personal and health problems. It shows that somehow, there is a good relationship between the quarry workers and the employer. In other parts of India, it is very popular that the employer compels the labourers to take wages in advance. They are financially bonded automatically and the working conditions of the labourers become more deplorable and deprived. But in Aizawl, the quarry workers do not face such bondage from the employers.

Quarry workers borrow money from various financial institutions like, Rural Bank, Private money lender; etc. The reasons and the amount borrowed vary from one person to another according to the needs and problems faced by them. It was evident that the quarry workers also borrow money from their friends and relatives for a short period and they are paid back as soon as possible when they get wages. In the olden days labourers are said to be born in debt, live in debt and die in debt. But in Mizo context, all quarry workers are low middle income group and they have a good standard of living.

A small number of quarry workers have saving account in bank and the amount they saved are not generally very high. Generally, the quarry workers work for everyday needs. Moreover, the pattern of getting the wages makes the quarry workers less interest to have saving account. It clearly shows that there is economic insecurity among the stone quarry workers. It is significant to note that the stone

quarry workers have the habit of savings; however the percentage of savings is low and money saved are for the purpose like housing and in times of sickness or children's education etc.

For those quarry workers who do not have their own house need to pay rent for house every month. Since their income is less, they can hardly save money to build a house and henceforth they need housing schemes for the unorganised workers to build houses for them. For those who migrate temporarily need a shelter to settle easily and save their income.

Quarry workers have both movable and immovable assets. The assets owned by the quarry workers give an insight into the living conditions. Normally, it clearly states that the living conditions are very pitiable and that they are economically weaker sections in the society. The quarry workers who have immovable assets are inherited from their parents and movable assets like television and automobiles are gifted or are bought second hand from their relatives and friends.

The quarry workers rear livestock to enhance income for their family.

It was observed that the entry into quarry work is easy and flexible. It was also observed that full time and part time workers work in the quarry.

In the quarry both big and small crushing machine are also used to crush the stone for fast production.

The main reasons for joining the quarry labour force are due to unemployment.

The working duration of the quarry workers varies from less than 5 years to more than 20 years.

Both males and females are participating to work in the quarry. They work from sun rise to sun set. The working hours varies from below 7 hours to above 9 hours. Generally, males work longer than the female quarry workers. The quarry workers work overtime as per the Factories Act 1948.

All the quarry workers enjoy rest hours. Open urination and defecation are observed in the quarries.

It was observed that the shelter provided by the quarry owner is not sufficient for the quarry workers to protect them. Generally it was found that with unmindful of the rain and sun, the quarry workers work in such inhuman working condition.

Knowing the risk, quarry workers are willing to work in the quarries for their survival despite different risky situations mainly because it was their only way of earning their livelihood.

Being a worker at the quarry under an unorganised sector Labour Welfare has been given least importance and basic facilities are lacking. Welfare Measures are lack in the case of quarry workers. These quarry workers still tolerate in their workplace and face several problems, but it is hard to fight for their own interest and they have to admit their destiny as they have no other choice.

It was observed that, fatigue and boredom certainly exist during and after work among the quarry workers since they spend long hours at their working places with repetitive and monotonous tasks. They sleep very early at night due to fatigue since their bodies ache and feel weak; they need sufficient time to take rest for the continuation of their work for the next day. The quarry work is sometimes burdensome for the quarry workers due to different reasons.

It was observed that job satisfaction among the quarry workers was high despite the works are tough and hard manual labour. They are able to earn for their survival which give them self respect; in addition to the reason that there is non-availability of employment in the other sectors.

Manual work is still prevalent and ready to use in the quarry.

It is observed that quarry workers are mostly working within the local quarry. The distances for accessing to the quarries are quite far from the residential area.

The modes of transportation reaching to the quarry are multifarious in nature. Quarry works need to spend several amount of money from their income for accessing the quarries.

Quarry workers reside both in urban and rural areas. Except a few (15%) of the quarry workers reside in urban areas.

Quarry workers mostly live with their relatives.

Quarry workers live in owned or rented houses mostly in tile, concrete, kutcha and semi-pucca houses.

The attitude of the society towards the quarry workers is not very bad. Discrimination does not exist between the other members of the society and the quarry workers. But most of the people worry about the explosive they use for it might bring harm to others.

Quarry workers suffer from both occupational and general health problems. The health care schemes do not reach the quarry workers. This is very pathetic and need to be addressed at the Government level.

Quarry workers are facing major and minor accidents in their body during the course of their work and chances of accidents are very high. No compensation has reached so far to the quarry workers and most of the treatments are done from their own pocket money.

Most of the quarry workers do not undergo medical check up especially when they do not feel severe pain in their body; this may be due to economic problem, lack of interest, time limitation lack of consciousness about their health conditions.

Accesses to medical care/hospital/clinic are almost far from the quarry sites when the quarry worker faces an accident. The rough geographical conditions also make the transportation more problematic.

Quarry workers are still insecurely working in the quarries without safety tools like first aid kit in times of need.

Consumption of illicit liquor is common among the workers and non workers in Mizoram. Quarry workers have the habit of drinking illicit liquor. To relieve themselves from stress at work during daytime and to relieve themselves from pain, alcohol has been usually consumed by the quarry workers. They drink once, twice or thrice or everyday in a week. They spend their income for the satisfaction of their desire and temptation to drink liquor. Illicit sellers also often go to sell liquor within the quarry sites.

The use of tobacco use is common among Mizo society especially among the quarry workers. They use tobacco in various forms, smoking cigarette, chewing tobacco and betel nuts etc. Even though considerable amount of money has been spent for buying intoxicants, they are unable to stop this expenditure.

The stone quarry workers working environment is different from one place to another and from one person to another according to the location of the working spot they are working. But one thing that they have in common is the unsafe and unhygienic environment.

The authorities from the government (viz., Labour & Employment and Industrial Training Dept.) rarely visits the quarry for the purposes like, checking permit, stone quality, and unsafe place and give information to cease the frequent use of explosive.

There is no N.G.O as such to work for the upliftment of the quarry workers. Except a few (0.2%) do not get any kinds of benefits from the organisations.

The quarry workers participate in the social and religious activities during holidays and hold key positions in social organisations and in the Church organisations as well. Mostly the quarry workers participate simply or generally participate in activities like church attendant, “hnatlang” (community service), mithi lumen (a typical mizo culture involving condolence to the bereaved family by singing whole night), thlan laih (grave digging). But, when they leave the quarry, they get exhausted. Since time is limited for the quarry workers they are disinterest in participating at any social or religious activities. Migrant people come only for work and they are not concerned about the religious and social functions. Migrants do not participate in social and religious activities. The participation in social and religious activities was higher among the non-migrants than the migrants.

The authorities from the government of Mizoram (viz., The Labour & Employment and Industrial Training Department) rarely visits the quarry for the

purposes like checking permit, stone quality, and unsafe place and give information to cease using explosive.

The stone quarry workers want the government's agency to pay more interest about the welfare and regulate the legislative measures to protect them from vulnerability in the society. Most of the quarry workers do not want to convey about the needs and problems to the government that they will not be recognised properly.

Part-B

Suggestions

1. Quarry workers in Mizoram work in the open cast; they are exposed to adverse weather conditions such as extreme temperature, humidity, rain and scorching sunlight. The quarry owners may provide silpaulline to protect from heat and rain. They need a good shelter to be safe from heavy rain, wind and in times of emergency.
2. Quarry workers work in hazardous conditions and they often face injuries and accidents in the workspot. There is no hospital near the quarries. There is a need for first aid kit, medicines and the management of quarries may make arrangements for accessing the first aid centre.
3. There is a need to organize for the unorganized workers to take a keen interest on expanding women labour in Mizoram by the 'Mizoram Building and Other Construction Welfare Board'.
4. Although some of the quarry owners provide free housing to few migrant workers and most of the migrants are deprived of this facility. It is recommended that basic amenities and facilities such as house, toilets, bathrooms, urinals, water tanks for washing clothes, drinking water facilities, electricity etc. should be provided by the employers. Besides this, government of Mizoram may construct houses for the poor especially workers in unorganised sector.
5. The Government Hospital (Civil Hospital) is quite far away from the quarries. The Municipal Corporation, Primary health centre and Government colleges can provide annually services to the stone quarry workers by going at the site. To organize various programmes such as; health check up, eye check up, treatment for minor

illness, provision of first aid kits, health and nutrition education programme, genetic counselling, health insurance, mediclaim accident, death compensation, policy awareness camps, training of traditional midwives, providing hand gloves, ear muffs, shoes, glasses, helmets, caps etc. for their safety.

6. The quarry workers are not broad minded to supply the equipments for the quarry works. At the same time the quarry workers are found to be very poor and the quarry work is a neglected area. Hence, the quarry workers requires special attention by the gov't of Mizoram. The quarry workers need basic equipment like; chisel, hammer; big and small, iron rod and shovel. The government of Mizoram shall provide tools in a subsidised rate.

7. Quarry workers are the ignorant group of labours and the low level of education in the society. A Voluntary Organization may come forward to support the workers. It should give an awareness about the various government legislative provisions like The Minimum Wages Rules,1992, The Mizoram Workmen's Compensation Rules,2009, The Mizoram Contract Labour (Regulation & Abolition) Rules,2004, The Mizoram Trade Union Regulation,1992, The Mizoram Inter-State Migrant Workmen (Regulation of Employment & conditions of services) Rules,2008 etc. The N.G.O's may organise Workers Education along with the help of quarry workers.

8. Manual work is very hard and strenuous for the quarry workers. Latest technology like, drilling machine, cutting machine, lifting machine etc. may be introduced by the quarry owners to ease the work for quarry workers.

9. The quarry workers responded that they do not know other job to choose for alternation of their present job. Vocational training like, tailoring under TRYSEM

(Training of Rural Youth for Self Employment), Shoe repairing, automobiles mechanic, beautician, home based work like chow making, candle making, handicrafts etc. may be given according to their interest or choice.

10. At present the quarry workers association are not functioning effectively; they should be strengthened so that they regularize the wages of quarry workers and take the welfare measures for them. The associations need awareness to register under 'The Mizoram Trade Union Regulation, 1992'.

11. Social work intervention is needed in the areas like women empowerment, children's education, guidance and counselling. Provisions are also required to support the quarry workers to send their children in anganwadi centres and to learn new things and getting nutrition for daily requirements like, milk, dal, chana(peas) and nuts, biscuits, vitamins etc.

12. Family budgeting must be taught to the quarry workers. The importance of saving should be disseminated to the quarry workers.

13. It is the duty that the state can prosper only if proper care, security, protection and welfare are given to its workforce. Legislative measures, like The Mizoram Workmen's Compensation Rules 2009, is applicable for those who faced injuries and accidents which enable them to claim their rights in times of need. The labourers need awareness for registering into the concerned Department about the Act and Rules amended by the State government. Those who faced injuries need to access Public Health centre, sub centre or Government Hospital which is nearest possible to consult a doctor, nurse or health worker. Some minor injuries like cuts, bruises which are not deep or need to be operated are treated at home.

FOCUS GROUP DISCUSSION

Focus group discussions have been conducted by the researcher to collect more information about the needs and problems of the quarry workers. The focus group discussion was held at three (3) quarries namely Lawipu Quarry, Sakawrtuichhun Quarry and Tuithum Quarry. These three quarries are located at remote areas.

1. Focus Group Discussion at Lawipu Quarry

The focus group discussion was organized on the 16th of Nov'2012 by the researcher at Lawipu Quarry at 9:30 am. Conducting discussions with stone workers at Lawipu quarry was organized in one group which comprises of men and women quarry workers with a group of ten quarry workers in the discussion. Migrants from Jharkhand were also included in this study. In this study, the researcher introduced herself from where she had come from and the purpose of the organized discussion. She explained first about the meaning of focus group discussion. Before, she asked questions and requested them to speak freely and raise their ideas and thoughts one by one in every given topic. She raised the questions according to the understanding of the quarry workers.

The researcher opened the topic about the wages of the quarry workers. She explained about the Minimum Wages Rules, 1992 and continued to ask them whether they had knowledge about the rules. Workers are working under the Rules. The wages depend according to the volume of work they have done. There is a three tier working system. Firstly, the working system is that the quarry workers hire a patch of land from the landowner (quarry owner) giving a sum of Rs.2500/- every month. The removal of mud and soils from the earth's surface and hiring J.C.B, buying explosives, drilling holes are done by the quarry workers. Secondly, the quarry

workers work on daily basis, starting from Rs.200/-. The wages increase depending on the experience and skills of the workers. Thirdly, the quarry owner does the job of removing the soil, explosion of rocks and drilling. The quarry workers get half the amount cubic/ metre of stones. The other half of the amount is taken by the quarry owner (i.e. fifty fifty basis). The quarry workers opine that it is very high for the quarry workers to pay a royalty of Rs.3 per cubic stones to the Geology and Mineral Resources Department head of Mizoram. Their main problem is the rate of stones. The rate is lower than other quarries because the customers make some excuses about the poor road constructions for the transportation of the stones. The customer needs to hire a tipper at a higher price. They can be easily bargained since they do not earn any money from the quarry if they do not sell the stones. It will affect the daily livelihood because they depend on the quarry work.

The working hours are normally from 6:00 am – 4:30 p.m. Long hours of work pay more wages in a day and they work in strenuous conditions to get more income. The quarry workers feel that they are the lowest wage earners according to the work performance because quarry work needs more physical strength and needs manpower energy. Holding hammer of 7-8 kgs the whole day is very hard for the quarry workers. It can easily affect their health conditions due to the vibration of tolls bouncing their body especially the stomach. They toil everyday resulting sufferings from chronic pains. Alcoholic consumption gives relief to the pains caused from their hard work and also to help them get proper sleep during night time.

The quarry workers buy their equipments for extracting the stones at a cheap rate. The only benefits are the landowners as has been revealed from the discussions. If the quarry workers are unskilled the quarry owner is unable to give more wages. To be skilled at the quarry work, it needs two years of practice in the quarry. They do not

have much time to participate in the society because they have to work every day in the quarry; even one day is very useful for them to earn for their daily needs and requirements. The quarry workers feel insecure while working during the rainy season. Falling objects like trees and mud may cause the rocks to slip and collapse.

The researcher focused on the importance to form a trade union to fight for their rights especially certain special issues, which may help in promoting the welfare of the quarry workers. She also motivated the workers to register themselves in the Labour and Employment and Industrial Training Department. This will be very useful for the quarry workers to claim workmen's compensation provided by the Workmen's Compensation Rules, 2009 especially at the times of major and minor accidents faced at the workplace. The quarry workers share that it is very hard to form associations and that their ideas are not common among the members of the quarry workers. There is lack of initiative too.

There is a construction housing scheme of JNNURM for the poor running through near the quarry sites. This scheme will end soon. The researcher informed the quarry workers to try to include themselves as a B.P.L member. Without being a member of B.P.L there is less chance to reside and maintain their normal standards of living in the house. Political affairs affect the life of the quarry workers too. She also asked the migrant workers about I.L.P of which they do not have. Most of them seemed interested and continue to discuss about how to register in the Labour and Employment Department under The Mizoram Inter-State Migrant Workmen (Regulation of Employment conditions of services) Rules, 2005. These rules provide security and welfare in times of accidents and injuries faced by them. The issues regarding the migrant workers are described in Table.No.8. The issues related to working hours and rest hours about the quarry workers are described in Table No. 22.

2. Focus Group Discussion at Sakawrtuichhun Quarry

The focus group discussion was organized at Sakawrtuichhun Quarry on the 16th Nov'2012 at 1:30 pm. The researcher conducted discussion in one group which consisted of both male and female with eight individual members participating in the discussion. The researcher first introduced herself and told the workers the purpose of her visit and the purpose of group discussion. She acknowledged the workers about some awareness pertaining to the insecurity and unprotected labour of the quarry workers. The quarry workers were very friendly and open minded. They allowed and gave their precious time for the discussion. The researcher first raised the topic about The Mizoram Minimum Wages Rules, 1992. It was found that nobody is working below the Minimum Wages Rules. The quarry workers main problem was the rate of the stone. There are different rates of stones in the quarry one place at a time. The upward side is easier to access than the downward side by the customer and the stones are sold at a little bit higher rate than the lower lane. The problem was that the road to access the downward side of the quarry is rough and improper. So, the lower lane of stones at the quarry cannot be sold at a good price compared to the upper lane. They want the government to control the rate of the stones. The quarry workers spend Rs.3000/- per month for hiring the land. If a worker hires the land, the removal of soils, green shrubs and trees, buying explosive and hiring the excavator are all paid by the quarry workers.

The researcher gave awareness about the Workmen's Compensation Rules, 2009. Almost all of them have registered themselves in the Labour and Employment & Industrial Training Department. She ensured the quarry workers that at times of injuries and accidents, they can claim compensations easily from the Department.

They also disseminated that the State Government has kept about rupees four crore for the security and welfare of the unorganized labourers in times of need and help.

The next topic was about their health conditions; one of the quarry workers said that he is having rheumatic problems and is still on injections because of the pain. Other male quarry workers said that in the night time, they feel fatigue and their whole body aches and unable them to move quickly and making them want to sleep early. They sometimes take medicine to relief pain before and after work from the workspot. Without work they cannot earn money to sustain their family's needs and requirements. There is no other job for them since they are not highly educated. They all are the members of B.P.L. The researcher clearly told about the provisions of B.P.L that when they are hospitalized they can claim for medical reimbursement for their expenses on buying medicines from the hospital.

The next topic was that the researcher asked the quarry workers about the working conditions at their workplace. They shared that they needed new silpaullines to spread upon the working spot to shelter them from rain and sun for a better continuation of their work under harsh weather. The silpaullines get easily damaged under rough weather. Buying another new one is very expensive for the quarry workers. The quarry workers realized through discussions that the government will give them the silpaullines free of cost. The equipments for extracting the stones are bought from their own money. The quarry workers want to buy these equipments at a cheaper rate if possible or else they feel that the government should distribute it to the workers once a year even a single chisel or hammer. They start working from morning 6:00 am to 4:00 pm in the evening. The quarry work consumes lots of the physical strength and manpower and it affects their health easily especially their stomach caused by the vibration of hammering huge rocks. The daily habits of meals

also create indigestion to their body. The quarry workers do not have time for medical check up which cause problems to their health since they are not benefitting any health schemes or have access to doctors. The lower level of income give them the desire to earn more making them ignore their health conditions. The researcher made the quarry workers aware about the difficulty one can face through illness if one is not looking after at the right time and to spend some time to check their health status at the Civil Hospital. The women shared that they lack vitamins and nutritious food to make the body strong. The same problems were shared with the male workers; the low level of income does not provide sufficient money to buy good and healthy food to eat and to look after their body.

The researcher asked the workers if they have formed an association or not. The quarry workers replied that it is very hard for them to form an association because there is a lack of initiative. The workers were discontented with each other which is common among them because their thoughts and ideas cannot be similar especially in the case of the rate of stones. This was the reason why it is hard to form a union. But they proposed to form in the future. The researcher again discussed with the quarry workers that is the best possible way to fight for their rights and know about their welfare in every sphere. They need a strong voice to form a union when facing needs and problems. The explosive that is being used is very dangerous for the quarry workers if a false explosion happens, it can make them disabled or handicapped. After the explosion, the rock falls down or slides from above. It can make the quarry workers work under hazardous conditions under an insecure environment. They are at risk the whole day which also effects their psychology as well.

Mizo society is a close community and the people voluntarily participate in social activities like grave digging, funeral, community services etc. Time is limit for the quarry workers for active participation in the social activities. The strenuous work and the repetitive task make them feel tired and thus results in less participation in the society. The issues related to accidents on the workspot about the quarry workers are described in Table No.40.

3. Focus Group Discussion at Tuithum Quarry

The research scholar paid a visit to the Tuithum quarry for Focus Group Discussion on the 16th Nov'2012 at 4:15 pm. She again introduced herself and talked about the purpose and intention of her approach at the quarry for Focus Group Discussion in Mizo Language because they did not understand English. They feel shy to access the researcher but she explained that the discussion would be very good for them to express their ideas, thoughts and feelings. There would be no harm or danger for them in the future. They accepted the request of the researcher and gave her their valuable time while they were busy with their work. There were ten members participating in one group including two migrants from Burma. There were only male workers present in the group discussion.

The researcher acknowledged the workers about the Minimum Wages Rules.1992 and nobody was working beyond the Rules. The next topic is about the question raised on the working conditions at the quarry. The quarry workers mostly work from morning 6:00 am-4:30 pm in the evening. They have a break of about ½ hours for having lunch at 10:00 am in the morning. Sub contract basis is very common in this quarry. The contractor hires the land to the quarry land owner giving an amount of Rs.10000/- per month. The land owner does everything like the clearing or removing of earth, buying explosive, hiring excavator. Then, the quarry workers

get half the amount they earn from per cubic of stones from the contractor. One cubic stone is Rs.20 and the quarry workers share Rs.10/-, the other Rs.10/- is shared by the contractor.

The next topic issued by the researcher was about The Trade Union Regulation, 1992. The quarry workers gave awareness on the formulation of the Union. On the light of the topic the quarry workers told that the association was formed earlier but now, it is very hard to formulate the workers. The main problem is the rate of the stone. The Mizo quarry workers want to increase the rate of the stone so that the wages of the quarry workers will be automatically raised. The Geology and Mineral Resources Department fixed the rate of stones at Rs.25/- per one cubic of stones. But they did not follow the rules. The majority of the workers at the quarry are migrant people from Burma. Due to the low level of economic conditions they did not mind about the rate. If they are getting even a small amount of money they are satisfied in their work and there is no complaint from the side of Burmese workers. It makes the stone price hard to increase.

The next topic given by the researcher was The Mizoram Workmen's Compensation Rules, 2009. She also informed the importance of these Rules and to get this compensation, the quarry workers first need to get registration to the Labour and Employment and Industrial Training Department. They can claim the compensation if, in case, accidents and injuries happen to them in their place of work. The quarry workers shared the researcher that there were two people who lost their right finger due to the rock slide pinned down on their fingers. They were immediately taken to the hospital and the doctor treated them very well. But all the charges for their medical treatment was paid by themselves since they were not given

any financial support from any sources. Because of this, the quarry workers are now trying to do registration in the future.

The researcher asked a question regarding their health conditions. The quarry workers replied that they have no time to take rest or even taking care of their health. Stomach problem is popular especially among the males because of the vibration of hammer. Bones and muscle pain are the main problems in their body. Those who are single earners have to work harder since their families are fully depended on them. Even a single day is very precious for them to earn money for their livelihood. These days, daily needs and requirements are very expensive and so, without work the living conditions remain poor. Most of the Mizo quarry workers are not included in the B.P.L family. The researcher enlightened the quarry workers to include themselves in the B.P.L family and so that they can enjoy health care scheme run by the state government. This ensures the security of the quarry workers and enjoys the welfare and privileges in the society as well as in their workplaces. The issues related to forming the associations about the quarry workers are described in Table No. 51. The issues related to working hours and rest hours about the quarry workers are described in Table No. 22.

Case study No.1

Mrs. Jenny, an old woman of 70 years, have retired from quarry work because of her illness six years ago. She lives not very far from the quarry site with her only grandson. She narrated their story about how she can survive being a single mother and told about her experience of how she had been suffering from serious health problems. Forty years back she divorced her husband who was having an affair with another woman. She has one son but unfortunately the son left his mother to Southern

part of Mizoram due to work. Till today the whereabouts of her son is still not yet known as he has not contacted her mother for more than ten years and the mother does not know any means of finding her son. While she was working in the quarry, she gives much effort to the work trying to get more income for her family. Her health condition becomes poorer day by day but she continues to work. Sometimes she would take medicine to relief herself from pain before and after work. At last, when she suffered from severe pain in her stomach, she went to the doctor and the doctor told her that her pancreas was not functioning and told her to discontinue the work and take rest at home. Since she does not have sufficient money to take care of herself to meet both ends, it is hard for her to spend money for her medicines and take care of her health. She also has pile problems which sometimes bleed. Due to her health problems she has lost weight for not having appetite because of her pancreatic problems. There is also a varicose vein in her legs. Her body is very skinny and she cannot sit in a chair for even a few minutes without a thick cushion. She cannot move quickly in any position because of weakness from her body. Her only grandson left the school to earn for their livelihood for their survival. Table No. 1 describes the challenges faced by the old age female quarry workers.

Case study No.2

Mr James, aged 19 years old, migrated from Tidim, Burma, has an experience of only three months in the quarry, living in a lease house near the quarry sites. He narrated about the experience of his poor living and health conditions of his family. He has three brothers and two sisters. His father was affected by schizophrenia disease three years ago. His mother has stomach problem. They are economically poor. His family is living under the Burma Army oppression. Politics affect the lives of the people. Earning money is very hard in his native place. Due to poor living

conditions he followed his friends to Mizoram to work in the quarry. He does not have any interest in the work at the quarry but he has to earn something for his family even though the wages are low. Every day he works an average of 9 hours. He suffered from malaria after he joined the quarry work. His friends paid all the medical treatment for him. Till today, if he works hard he can still feel the pain in his body which makes him feel uncomfortable to work at the quarry. He cannot give his fullest effort in the working place and get tired easily. He suffers insomnia when he thinks of his family living under the oppression of the Burmese Army having insufficient food to eat. He tries his best to earn more money to send his parents as soon as possible. The challenges faced by migrant quarry workers are discussed in Table No.8

Case study No.3

Mr. John aged 33 years and Mrs. Ruth aged 30 years are couples who work in a quarry. They have 2 daughters and 1 son. The husband had been working since 7 years as a stone cutter and his wife joined as a labourer in the quarry to help her husband to supplement their income. The couple reveals the reasons for their work at the quarries. They live in a rented house and pay Rs. 800 /- monthly. Their kids are sent to Government Primary School and every day the children enjoy mid day meal in their schools. This eases their expenditure for the children's tiffin. The couples hire a land giving an amount of Rs.2500/-/month. They hire other two quarry workers giving Rs.250/- per day. Each and every day money is needed to spend for their daily needs and they find it difficult to save money. Their health conditions are not very good because her husband suffers from rheumatic problem and he has to take injections every week for years. They both have stomach ulcer problems too. Gynecological problem is also faced by his wife. Several amounts of money are spent for buying medicines. Even when the doctors organized free health clinic in the locality, they

have to ignore these free health clinics because of the demand to earn income which pushes them to work in the quarry. Every minute, every hour and every day is precious for them. They have very limited time to spend in other things. Moreover, knowing that quarry work is a very hard and strenuous work, yet it is the best possible and convenient way to earn income for their family. Her husband has good experience in quarry work and they can easily generate income for their family having no other choice. Finding other jobs with regular wages is not possible for them due to their low level of educational qualification. They look older than their ages. Blemishes exist on their faces because they are working under unfavorable climatic conditions and under scorching sunlight. Her husband says that in the night time the wife cannot open her eyes properly because of fatigue from the job. All his muscles become stiff and sore and thus consume alcohol for pain relief and sometimes eat medicines before and after work to kill the pain. His wife also tells that she is always having body ache after work. The challenges faced by the health conditions of women quarry workers are discussed in Table No. 39 of Chapter 7.

Case study No.4

Mr. Albert, a 28 year old faced injuries on 14th March 2013 at 7:30 am while he was working. The top soil suddenly slides down which injured his thigh, palm, spinal cord and waist. He was bleeding a lot when he injured his right thigh. Hurriedly his friends rescued him and ran to the Civil Hospital. The owner of the quarry helped him financially for his medical expenses/ treatment. Unfortunately, he cannot claim compensation from the government since he was not registered under any kind of Act implemented by the Labour and Employment and Industrial Training Department. He was bed ridden for about a month because of his injuries. He could not sleep properly due to the pain, and ate only snacks like biscuits, cold drinks etc. instead of food. He

is slowly recovering from his injury which had happened three years back. His wife suffered a lot mentally, she was worried about her husband's physical health and was scared that he would be handicapped for the rest of his life. She cannot earn daily bread properly since she had to take care of her husband. Months later, his wife commissioned stones from the quarry assisting their financial problems from the little amount of money that she makes but is not sufficient for their daily needs. Now he can move slowly inside the house but sitting on the couch is still a problem for him so he is always seen lying down on the couch. Till now he can still feel the pain in his right palm. The doctor asked him to go for check up at the end of July. He wants to recover as soon as possible from his injuries since he feels that he has a huge responsibility to look after his family. The challenges faced by male quarry workers accident on the workspot are discussed in Table No. 40 chapter No.7.

Case study No.5

Samuel aged 11 years, studying in class-V work at a stone quarry, part time as a manual driller. He is a brilliant student and is usually the topper in his class. His parents got divorced and he is now living with his mother and grandparents. He drills the holes for planting bomb (gelatine) a feet paying Rs.20/- per feet holes. He drills with his friends. It takes 15-20 minutes for drilling one foot hole. Nobody force him to work in the quarry. It is his free will because he wants money for buying edibles and spending for his swimming fees. Swimming pool exists near the quarry site. He has drilled a hole five times. He enjoys his work and has no complaint about it because he gets paid to do the work. Sometimes he spends his hard earned money to buy cigarettes, gutkha products and beetle nut. He drills holes only on Saturdays for time pass. For him drilling holes earns him his pocket money and he would like to

continue drilling holes in the future as well. The challenges faced by child quarry workers are described in Table. No.1.

(The real names of the persons are not disclosed in case study to avoid personal identification)

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13. **Details of family background**

Sl. No	Relations with respondents	Age	Sex	Marital Status	Educational Qualification	Occupations	Income	Present Status
1								
2								
3								
4								
5								
6								
7								

14. Marital Status:

- 1) Married ↑
- 2) Unmarried ↑
- 3) Divorce ↑
- 4) Deceased ↑

15. With whom do you live?

- 1) Relatives ↑
- 2) Husband Family ↑
- 3) Wife's Family ↑
- 4) Independent ↑
- 5) Friends ↑

16. What is the age of your marriage? _____.

17. Are you migrated from other states to work here? Yes / No

(a) If yes, details

From Where	When	Reason

18. Do you have children?

Yes / No

(a) If yes, how much? _____.

19. How many hours you are working in a day? _____.

B. HEALTH CONDITIONS :

1. Do you have any kind of health problems? Yes / No
If yes, specify

Sl No	Problems	Remarks	
1.	Body/Joint paints/Leg pain/Back pain		
2.	Eye sight problems		
3.	Heart diseases		
4.	Ulcer		
5.	Piles& Gastric related		
6.	Headache		
7.	Rheumatic problem		
8.	Sneezing/bronchitis/chronic cold & cough		
9.	Indigestion		
10.	Injury		
11.	Any other diseases		
12.	No health problems		

2. Do you faced problems like:

- 1) Low Wages ↑
- 2) Disease Problems ↑
- 3) No Job Security ↑
- 4) Hazard Work ↑
- 5)Accident ↑
- 6)Excessive Physical Work ↑
- 7) Excessive hours of work ↑

3. Have you done insurance? Yes / No
(a) If Yes, what type? _____.

4. Do you have savings account? Yes / No
(a) If yes, where? _____.

5. Is there any causes related to your working conditions :

- 1) Less hygienic prevails ↑
- 2) Old machines ↑
- 3) Time taken is more ↑
- 4) Low wages ↑
- 5) Insecurity ↑
- 6) No latest technology ↑

6. Is there any causes related to your living conditions:

- 1) Living environment is poor ↑
- 2) Low income ↑
- 3) More dependents ↑
- 4) Indebtedness ↑

7. How are your chances of accident?
- 1) Very High ↑
 - 2) High ↑
 - 3) Moderate ↑
 - 4) Low ↑
 - 5) Very Low ↑
8. How is your opinion about management approach towards Labourers?
- 1) Satisfy ↑
 - 2) Not Satisfy ↑
 - 3) Good ↑
 - 4) Bad ↑
9. Do you consume alcohol/drug/ganja? Yes / No
- (a) If yes, details**
- | Reasons | Clarifications |
|-------------------------|----------------|
| At When | |
| At Where | |
| Why | |
| How many times in a day | |
10. Do you face any kind of harassment? Yes / No
- (a) If yes, what kind of harassment? _____.
11. Do you get proper sleep? Yes / No
- (a) If no, why? _____.
12. Did you take any kind of vitamins to keep strength to you? Yes / No
13. Do you take intoxicants like:
- 1) Pan ↑
 - 2) Smoking ↑
 - 3) Chewing Tobacco ↑
14. Do you have proper shelter while raining during work? Yes / No
15. Do you still working in the middle of raining or heavy hot sun? Yes / No
16. How long u have taken for rest during work? _____
17. Do you keep First Aid Kit in times of need ? Yes / No
18. In there any Hospital or PHC near by when facing an accident ? Yes / No
19. Do you get free medical check up just a once? Yes / No

C. ECONOMIC CONDITIONS :

1. Did you borrow any kind of cash from other sources? Yes / No
(a) If yes, specify

Sources	When (Year)	Amount	Reason	Re-paid/ Not repaid	Remarks
Bank					
Co-opera -tive Society					
Money Lender					
Any Other					

2. Have you taken an advance wages from the quarry owner or contractor? Yes / No
(a) If yes, why? _____.

3. Do you think that your daily/monthly income is sufficient? Yes / No
(a) If no, give details

Reasons	Clarifications
Why	
How did you manage	

4. What is the reason for taking up the quarry work? _____.
5. What is your nature of employment in the quarry?
 1) Full Time ↑
 2) Part Time ↑
6. Family Income (Monthly):Rs. _____.
7. How long you have experienced in this work? _____.
8. What is your opinion of your daily work?
 1) Highly Satisfied ↑
 2) Satisfied ↑
 3) Not Satisfied ↑
9. In what category you are working in the quarry? _____.

10. How is your working environment?

- 1) Clean Environment ↑
- 2) Safety Environment ↑
- 3) Accident free zone ↑
- 4) Not Hygienic ↑
- 5) Not Safer ↑

11. Do you get proper wages? Yes / No

(a) If no, why? _____.

12. Do you think that your family income is sufficient? Yes / No

(a) If no, give details :

Reasons	Clarifications
Why	
How did you manage	

D. SOCIAL CONDITIONS & GOV'T INTERVENTIONS :

1. Do you feel that the society neglect you? Yes / No
2. Is there anybody coming to this areas to sale illicit activities? Yes / No
(a) If yes, what kind? _____.
3. Do you feel depress that you are a quarry worker?
 - 1) Sometimes ↑
 - 2) Rarely ↑
 - 3) Always ↑
 - 4) No comment ↑
4. Do you participate freely in the social and religious activities? Yes /No
(a) If Yes, in what way? _____
(b) If no why? _____
5. Do your children go to school? Yes / No
(a)If no, why? _____.
6. What do you think of your own status after becoming a quarry worker?
 - 1) Stable ↑
 - 2) Unstable ↑
 - 3) Security ↑
 - 4) Insecurity ↑
 - 5) Freely ↑
7. Are there any school dropout among your children? Yes / No
8. Are your children delinquents? Yes / No
(a) If yes, give detail _____.
9. Do your children involve in social/religious activities? Yes / No
10. What is your attitude towards quarry workers?_____.
11. Are you satisfied with your decision making in the family? Yes / No
(a) If no,why?_____.
12. What is your perception of quarry workers?_____.
13. How do you feel the attitude of society towards your self?
 - 1) Sympathy ↑
 - 2) Empathy ↑
 - 3) Neglect ↑
 - 4) No comment ↑
14. How do you feel the attitude of your children/family towards your self?
 - 1) Positive ↑
 - 2) Negative ↑
 - 3) No Comment ↑
15. Do your children/family involved in anti-social activities like Drug/Alcohol? Yes / No

16. Do you get benefit from:
 1)Gov't ↑
 2)N.G.O ↑
 Specify : _____

17. Are you fearful to work in the quarry?
 1)Sometimes ↑
 2) Rarely ↑
 3)Always ↑
 3)No Comment ↑

18. Is there anybody paid a visit to the quarry from the concerned Departments?
 Yes / No
 (a) If yes,in what way?_____

19. Did you form an association to formulate the workers? Yes / No

(a) If yes, details

Organisation	When (Year)	How it functions now a day	Govt. Intervention
Trade Union			
Welfare			
Association			
Any Other			

(b) If no, why_____

20. Is it function nowadays? Yes / No
 (a) If no, why?_____.

21. Have you faced an accident? Yes / No

(a) If yes, details

Sl.No	Causes	From Where did u manage
1.	Head Injury	
2.	Frackles	
3.		
4.		
5.		
6.		
7.		

22. Do you have movable assets? Yes / No
 (a) If yes, Specify,
 1)Sewing machine ↑
 2)T,V/V.C.D ↑
 3)Two Wheeler/Four Wheeler ↑
 4)Refrigerator ↑
 5)Washing Machine ↑
 6)Any Other ↑

23. Do you have immovable assets? Yes / No
 (a) If yes, Specify,
 1)Plot ↑
 2)Agricultural Land ↑
 3)Cottage Industry/Production ↑
 4)Any Other ↑

24. How many livestock do you have?

Sl.No	Name	Income per/'Year
1.	Pig	
2.	Cow	
3.	Chicken	
4.	Goat	
5.	Any other	
Total Income		

25. Did you get financial support from the gov't? Yes / No

26. Are you trying to proceed your further needs and problems to the Gov't?
 Yes / No

a) If yes, in what way,_____.

b) If no, Why?_____.

27. Is there any quarrellings between among yourself? Yes / No

(a) If yes, what type?

28. Do you face problems from your family? Yes / No

(a) If yes,in what way?_____

29. Do you feel sometimes bored to work in the quarry? Yes / No

30. Do you feel tired to work in the quarry?

31. Do you think that your work is burden a lot to you? Yes / No

(a) If Yes, Why ? _____

32. What do you think exactly you want that the gov't is taking part for the quarry workers ?_____.
33. What is the conditions of the transport/transaction?
- | | |
|------------------------|---|
| 1)Good | ↑ |
| 2)No proper road | ↑ |
| 3)Slippery during rain | ↑ |
| 4)Under Construction | ↑ |
34. What material you are using in the quarry?

Interview Scheduled
Topic : Socio- Economic and Health

Submitted by:Rosie Lalzirliani
Supervisor: Prof. J.Visuvathas
Jayesingh
DEAN School of Social Sciences
Mizoram University.

Conditions of the Stone Quarry
Workers in Aizawl.

A. MIMAL CHANCHIN KIMCHANG HRIATNA:

1. Hming:
2. Kum:
3. Mipa emaw hmeichhia:
4. Chenna hmun:
5. Lunglakna hming:
6. Lehkha zir thlen (a rem chuan):
7. Thlatin a sum lak luh zat. Rs._____.
8. I chenna in eng ang nge?
 - 1) Mahni In ↑
 - 2) Mi In luah ↑
- (a) Mahni In luah emaw mi In luah emaw a nih chuan, thliar hrang rawh:
 - 1) Pin dan pakhat chauh awm ↑
 - 2) Pindan pahnih awm ↑
 - 3) Pindan pathum awm ↑
- (b) Mi In luah I nihchuan, luah man thliar hrang rawh:
 - 1) Rs.500 hnuai lam ↑
 - 2) Rs.500-Rs.1000 in kar ↑
 - 3) Rs.1000-Rs.1500 in kar ↑
9. I In luah chu eng ang nge? (Mi In luah emaw or Nangma In)
 - 1) Tiled In ↑
 - 2) Cement In ↑
 - 3) Sethlam In ↑
 - 4) A ban Cement In ↑
10. Nupui pasal chungchang:
 - 1) Nupui pasal nei ↑
 - 2) Nupui pasal neilo ↑
 - 3) Nupa inthen ↑
 - 4) Awm hrang ↑
 - 5) Hmeithai ↑
 - 6) Nupui sun ↑
11. Tute nen nge inchen?
 - 1) Chhungkhat te nen ↑
 - 2) Pasal chhungte nen ↑
 - 3) Nupui chhungte nen ↑
 - 4) Mahni in ↑
 - 5) Thiante nen ↑

12. **Chhungkaw dinhmun tlangpui (tun dinhmun ah)**

Chhungkaw zat	Zawhna chhangtunen a inlaichinna	Kum	Mipa emaw hmeichhi a emaw	Nupui pasal neih dinhmun	Lehkha zir san zawng	Hnathawh	Pawisa lak luh zat
1							
2							
3							
4							
5							
6							
7							
8							

13. Nupui pasal I neih in kum eng zat nge I nih? _____.

14. In in neih in I kawppui chu kum eng zat nge a nih? _____.

HRISELNA CHUNGCHANG:

1. Hetiang ang natna hi I nei reng em? Aw / Aih
I neih chuan, han sawi teh le

Sl No	Natna	Sawi duh I neih
1.	Taksa na/Ruh chuktuah na/ke na/Hnungzang na	
2.	Mit khawhmuh fiah lo	
3.	Lung na	
4.	Pumpui na	
5.	Tai & pumpui lam kaih hnawih	
6.	Luna	
7.	Ruhseh natna kaih hnawih	
8.	Hahchhiau/awm na/hritlang benvawn	
9.	Pumpui tha lo	
10.	Natna chi dang la awm thei te	
11.	Natna chung changah harstna nei lo	

2. Insurance I ti reng em? Aw / Aih
 (a) I tih chuan, eng ang chi nge? ↑
 1) Mimal insurance ↑
 2) Pawl ho insurance ↑
 3) A dang ↑

(b) I tih chuan, eng agency ah nge? _____.

3. A hnuai a mi te hi I lo ching ve thin em, Aw/ Aih

A chhan	Zu	Damdawi	Ganja	Zial	Pawisa sen zat
Engtik a tangin					Rs.
Khawi hmunah					
Engvangin nge					
Ni khatah vawi eng zat nge					

4. Zan ah I mu tha thei em? Aw / Aih
 (a) I theih loh chuan, enge a chhan? _____.
5. A tul hun a hman theih mai tur damdawin nang mah ruaitu che chuan a nei em? Aw / Aih
6. Vanduai tawh palh a inenkawl main a tur I hnathawhna bul velah a awm mai em? Aw / Aih
7. Vawikhat tal damdawi thiam I rawn tawh em? Aw/ Aih

C. EILEH BAR DINHMUN:

1. Ni tin/thla khat a I sum lak luh hi a tha tawk in I hria em? Aw / Aih

(a) Tha tawk I tih loh chuan, a chhan

A chhan	Sawifiahna
Eng vangin	
Eng tin nge I in enkawl	

2. Eng a ti nge lung lakna hmunah kher hna I thawh? _____.
3. Lung lakna hmuna hna I thawh thin dan tlangpui?
 1) Ni lengin ↑
 2) A chang changin ↑
4. Eng tia rei nge he tiang a hna I thawh tawh? _____.

5. He tianga nitin a hna thawh hi enge I ngaih dan?
 1) Ka lungawi khawp mai ↑
 2) Ka lungawi ↑
 3) Lungawi chiah lo ↑
 (a) Lung awi zan loh chuan:
 A chhan han sawi teh, _____.
6. Eng angin nge lunglakna hmun ah chuan I thawh ve thin? _____
7. Lunglakna neitu emaw I inhlawhna mi hnenah chuan hlawh lo lak lawk ang chi te i nei thin m? _____ Aw / Aih
 (a) I lak lawk chuan, enge a chhan? _____.
8. Hlawh I phu tawk I la thin em? _____ Aih / Aw
 (a) I lak loh chuan, a chhan? _____.
9. Bank ah pawisa I khawl em? _____ Aw / Aih

- I khawl chuan, han sawi fiah teh

I khawl na hmun	Eng zat nge I khawl Rs.
-----------------	----------------------------

10. Thil hlu lak sawn theih chi I nei em? _____ Aw/ Aih
 (a) I neih chuan, eng ang chi nge,
 1) Puanthui khawl ↑
 2) T, V/V.C.D ↑
 3) Iirthei ke hnih nei/ Iirthei ke li nei ↑
 4) Chawhmeh vawn thatna khawl ↑
 5) Insukna khawl ↑
 6) A dang ↑
11. Lak sawn theih loh thil hlu I nei em? _____ Aw/ Aih
 (a) I neih chuan, eng te nge,
 1) In hmun ↑
 2) Huan thlai china hmun ↑
 3) thil siamna hmun te nau/Siam chhuahna ↑
 4) A dang te pawh ↑
12. Ran eng zat nge I neih?

Sl.No	Hming	Sum lak luh zat / kum khat ah
1.	Vawk	
2.	Bawng	
3.	Ar	
4.	Kel	
5.	Adang awm thei a piang	
A vai a sum lak luh zat		

13. Hmun dang a tangin pawisa I puk thin em? Aw/ Aih

(a) **I puk chuan, han sawi teh**

Pukna hmun	Eng tik kum ah	A zat	A chhan	Rulh tawh zat/ La rulh loh zat	Sawi duh dang
Bank					
Co-opera -tive Society					
Pawisa puktu					
Hriat tur tul dang					

D. HNA THAWH DAN LEH KHAWSAK DAN:

1. State dang a tangin he lai hmunah hna thawk tur a lo lut I ni em? Aw / Aih

(a) **I nih chuan, a chipchiarin han sawi teh**

Khawi hmun a tangin	Eng tik kumah	Achhan
---------------------	---------------	--------

2. Ni khatah darkar engzat nge hna I thawh thin?

- 1) Darkar 7 ai a tlem ↑
- 2) Darkar 7-9 vel ↑
- 3) Darkar 9 chunglam ↑

3. I khawsak dinhmun harsat chhan eng e ni ang:

- 1) Khawsak boruak a hniam ve hrim hrim ↑
- 2) Sum lak luh tlem luat vang ↑
- 3) Chawm hlawm an tam ↑
- 4) Leibat tam vang ↑

4. I hnathawhah harsatna enge I tawh :

- 1) A hmun hma a hrisel lo ↑
- 2) Hmanraw hlui tawh vangin ↑
- 3) Hun a duh rei deuh ↑
- 4) Tunlai thiamna hman ani ve lo ↑

5. Heng ang harsatna hi I tawk em:

- 1) Taksa rim tawng lutuk a hna thawh ↑
- 2) Rim tawng tak a hna thawh ↑
- 3) Hlawh hniam lutuk ↑
- 4) Duh hun hun a hna thawh ↑
- 5) Hlahu thawn awm tak a hna thawh ↑
- 6) Tawhsual tawk ↑

6. Lunglakna hmuna hnathawh hi I hlau thin em?

- 1) A chang chuan ka hlau ↑
- 2) Hlau lem lo ↑
- 3) Hlau reng mai ↑
- 4) Sawi tur hre lem lo ↑

7. Tawh سوال I tawk tawh em? Aw / Aih

(a) I tawh ve tawh chuan, a kim chang in

Sl.No	A chhan	Vawi eng zat nge	Khawi a tangin nge I in enkawl
1.	Lu a hliam tuar		
2.	Ruh khi		
3.	Hliam pem		
4.			
5.			

8. Thlakhat chhungin tawhsual tawh thei dinhmunah vawi eng zat nge I din? _____.

9. Ruahsur lai a han tawm hul theihna tur a awm em? Aw / Aih

10. Ruah sur buan buan lai leh ni sat vanglai takin hna I thawk tho em? Aw / Aih

11. Hna I thawhin meng tia rei nge ni khat ah I chawlh thin? _____

12. In zar buaina ang chi I tawk thin em? Aw/ Aih

(a) I tawh kthin chuan, a chhan,

	A chhan bul	Sawi belh duh I neih
1.	Mi pat hmeichhiatna a inzarbuaina	
2.	Sum leh pai thil a inzarbuaina	
3.	Chhungkua a inzarbuaina	
4.	Chi leh chi a in zarbuaina	
5.	Rilru lam thleng a in zarbuaina	
6.	Adang awm thei a piang	

13. I hna thawhna hmunhma eng ang nge?

1) Hmunhma fai tha ↑

2) Hmunhma a him tha ↑

3) Tawhsual tawh tur awm lohna hmun ↑

4) A thianghlimlo ↑

5) A him lem lo ↑

14. A chang chuan lung lakna hmuna thawh hi thawpik thlak I ti ve thin em?

Aw / Aih

15. Lunglakna hmun a thawh hi a hah thlak I ti em? Aw/ Aih

16. Lung lakna hmun a thwh hi phurrit tlingin I hria em? Aw/ Aih

(a) I tih chuan, enge a chhan? _____

14 Sawrkarah I harsatna leh I mamawh te I thlen tumna te i nei thin em?
Aw / Aih

- Thlen i tum chuan, eng tin nge, _____.
- (b) I thlen thin loh chuan, enge a chhan? _____.

15. Veivahna/chet lak velna kawng enge a dinhmun?

- 1) A tha e ↑
- 2) Kalkawng mumal a awm lo ↑
- 3) Ruahsur lai chuan nal tak a ni ↑
- 4) Siam that mek a ni. ↑

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