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Occupational Hazards And Health: A Comparative Study Among Medical Laboratory Technicians

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Abstract: ***This descriptive research has been undertaken to examine and differentiate impact of occupational hazards on health of medical laboratory technicians and also to understand and differentiate their extent of perception toward impact of occupational hazards on health. The study has sampled 120 medical laboratory technicians (60 from private multi speciality hospitals and 60 from private diagnostic centres) in Tirunelveli city, Tamilnadu by simple random sampling after stratified the subject into medical laboratory technicians working in private multi speciality hospitals and diagnostic centres using stratified random sampling. The study has examined and differentiated 24 factors to understand the effect of occupational hazards on health. The primary data have been collected using questionnaire method. The secondary data have been collected from books, journals, and websites. Both mean and standard deviation have been administered to analyse the data. The result of the study has shown that among 24 health related factors, 14 factors have equally been experienced by medical laboratory technicians working in both kinds of organizations and 10 factors have highly been perceived by medical laboratory technicians working in hospitals than diagnostic centres. The extent of perception of the respondents towards these factors has been at medium level.***

Keywords: Medical laboratory technician, occupational hazard, private hospital, diagnostic centre, Tirunelveli city.

1 INTRODUCTION

1.1 Background of the study

Working condition has strong impact on well being of employee's health. Non supportive working environment can cause harm if not controlled. This non supportive working environment is termed as occupational health hazards. Occupational health hazards refer to the potential risks to health and safety for those who work outside the home (Maier 2009). WHO (2009) defined hazards as a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impact, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. The International Labour Organization (ILO) estimated that 6,000 workers around the world die every day from work-related diseases and accidents. Javed Sadaf and Tehmina Yaqoob (2011) indicated that paramedics were exposed to occupational health hazards both psychologically and physiologically as they are directly working with patients.

Paramedical employees are integral part of hospital staff (Mittman et al., 2002). Among the paramedical employees, medical laboratory technicians are the important groups supporting medical, surgical and other paramedical groups in a large way so as to enable them providing the patients effective medical and surgical care. Their nature of job is to investigate body fluids such as blood, serum, urine, sputum and muscle tissues so as to find bacteria and other diseases existed in them. They handle various electrical and electronic equipments and instruments such as analyzer, microscope, thyroid machine, arterial blood gas and complete blood count machines, centrifuge, syringes, microscopes and various chemicals in their day to day work life to investigate body fluids and other tissues.

The hospitals provide the patients diagnostic, medical and surgical care. Whilst, the diagnostic centres provide diagnostic

care alone and they are not involving in medical and surgical care of the patients. Hence, the management practice differs in both kinds of the organizations. To collect blood and other fluids from the patients existing in all areas of the hospitals such as outpatient department, intensive care units, operation theatre, emergency ward and all other wards and dealing with various natures of doctors, patients and their relatives are also the part of the work of medical laboratory technicians working in hospitals. At the same time, though the medical laboratory technicians working in diagnostic centres look after the same duties, the extent to which they deal with the patients admitted in various wards of hospitals and their relatives are comparatively less than medical laboratory technicians working in hospitals. Moreover, they deal with the patients who come to the diagnostic centre alone. They visit the hospitals to collect blood from the patients occasionally.

Medical laboratory technicians working in both kinds of organizations are very susceptible for needle stick injuries and infections since they need to collect blood with the use of needles from the infectious patients frequently. Prolonged standing, neck bending, focused attention on microscope and pipettes, prolonged sitting in front of computer and microscope and dealing with different nature of infectious patients are some of the common activities involved in their profession. These are some of the commonest factors causing infection, neck pain, back pain, leg pain and the like. Thus, it can be understood that all these activities of medical laboratory technicians working in hospitals and diagnostic centres involves both physical and mental works.

The study area has attained significant growth in health care area. The numbers of hospitals, pharmaceuticals and diagnostic centres have increased greatly. But, poor human resource management system such as inadequate welfare facilities, two shift work duty with 12 hours working system, inadequate training, lack of information about causes of occupational hazards and preventive measures are yet found in majority of the hospitals and diagnostic centres. Therefore, it is important making the management of hospitals, diagnostic centres and other health care institutions to aware about sources of occupational hazards existing in all occupational groups. In view of this angle, the present research is undertaken in the study area to exclusively analyse the sources of occupational hazards of medical laboratory technicians working in private hospitals and diagnostic centres.

1.2 Statement of the Problem

Medical laboratory technicians working in hospitals as well as diagnostic centres are exposed into the number of occupational hazards in their occupation. But the degree, in which they expose into those factors vary depending upon the nature of organization in which they are working. Prolonged standing, bending activities, focused attention with high level of attention, dealing with infectious patients, dealing with emotionally unstable, urgency nature and violent patients, long working hours, two shift work, prolonged night shift, inadequate safety, heavy work load, multiple work and so on are some of the common factors influencing their both physiological and psychological health. These factors will cause many health related issues such as, eye strain, pain in neck, back, shoulder, head ache, stomach ulcer, hair loss, digestive disorder, needle stick injuries, poor sleeping, tiredness, hepatitis B and appendicitis and so on. Medical laboratory technicians working in hospitals undergo patient related hazards. But, the degree in which medical laboratory technicians working in diagnostic centres undergo patient related hazards is comparatively less than medical laboratory technicians working in hospitals

When a medical laboratory technician is performing his or her duty with these effects for long period of time, it will not only affect their health seriously but also affect accuracy of results of investigation which will then threaten safety of the patients. Therefore, the knowledge about the various hazards arsing as a result of occupational will help them protecting their health from occupational hazards. Hence, it is necessary to educate them about various hazards involved in their occupation and the ways of preventing them in order to promote their health and safety of patients. Moreover, it is also important to bring the attention of the management of hospitals, diagnostic centres and other health care sector towards these effects of occupational hazards so as to take necessary preventive steps towards those hazards. Hence, the present study is undertaken in the study area with the objective of examining and differentiating the various impacts of occupational hazards and providing suitable suggestions to prevent them.

1.3 Scope of the Study

The present research has been undertaken in Tirunelveli city which is the capital of Tirnelveli District which is located in south end of Tamilnadu state, India. The study has focused the medical laboratory technicians qualified with DMLT (Diploma in Medical Laboratory Technology) 1 year and 2 year courses and working in leading private multi speciality hospitals and private diagnostic centres. The research has covered the variables which are related to impact of occupational hazards on general health.

1.4 Significance of the Study

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The findings of the study will be helpful for hospitals, diagnostic centres and similar organizations which offer same services to know various effects of occupational hazards on general health of medical laboratory technicians and take necessary steps in the form of modifying the infrastructure in the department, arranging training and development programmes, preparing guidelines to make awareness about occupational hazards and execute them. The suggestions given by the researchers will be useful for medical laboratory technicians to improve their knowledge to safeguard them from occupational hazards. The study will be the base and sources of secondary data for future research scholars.

1.5 Objectives of the Study

The objectives of the study are given below.

i. To examine and differentiate the impact of occupational hazards on general health
ii. To understand and differentiate extent of perception towards impact of occupational hazards on general health
iii. To offer suitable suggestions to protect health from the impact of occupational hazards

2 LITERATURE REVIEW

Occupational hazard can be defined as the risk to the health of a person usually arising out of employment. It can also refer to work, material, substance, process or situation that predisposes or itself causes accidents or disease at work place.

Occupational hazard is defined as a risk accepted as a consequence of a particular occupation (Simpson JA and Weiner ESC, 1989).

World Health Organization (1948) defined, "Health is a state of complete physical, mental and social well being and not merely an absence of disease or infirmity" (Park K 2000).

In the present research, the researchers defined occupational hazards that all the factors which affect both physical and mental health of the medical laboratory technicians.

Rajan D (2014) identified the sources of occupational hazards of medical laboratory technicians working in private multi speciality hospitals under nine dimensions namely organization structure and policy, ergonomics, fear and safety, resources, work load and work shift, environment and hygiene, interruption, patient and communication and training related factors. The study identified that rigid leadership style and strict supervision by higher authorities, long sitting in front of computer, inadequate safety in the work place, shortage of laboratory technicians and supporting staffs in accordance with volume of patients, two shift work system which are irregular, inadequate space in the work place, receiving multiple instructions from many authorities, dealing with emotionally unstable, angry, urgency and blaming nature of the patients and their relatives and inadequate information about occupational hazards related to job were the major sources of occupational hazards of medical laboratory technicians. The analysis of the study also proved that all factors of occupational hazards are perceived at medium level by majority of the respondents.

Awosile B, Oseni O and Omoshaba E (2013), examined hazards exposures of workers of animal related occupations in Abeokuta South Western, Nigeria. Zoonotic diseases, animal bites, animal kicks, bird pecking and scratching and dog bites were the commonest occupational hazards of exposure. Majority of the workers were known of the term occupational hazards and various hazards associated with their job. Physical stress due to work or body fatigue and back and or waist pain was the commonest physical hazards. Dust and animal dung were the allergic hazards of exposure and allergic rhinitis and conjunctivitis were the most common allergic conditions. Fumigants, insecticides and pesticides were the common chemical hazards and respiratory irritation was the most commonly reported clinical condition. Skin diseases and respiratory diseases were the most common occupational diseases. Tuberculoses, avian influenza and brucellosis were the most common zoonotic diseases. Diseases, infections and death were the common possible implications of zoonoses perceived by the workers. Less than 50% of the workers were aware of various preventive measures against work related zoonotic diseases. Use of protective coverings, good hygienic practices, washing of hand after work period were the most common preventive measures against work related zoonotic diseases noted by workers.

Pooja Dwivedi and Kiran UV (2013) assessed occupational hazards of farm women and areas of the body discomfort among farm workers from the samples of 120 farm women in Lucknow district. The result of the study showed that the farm women felt highly stressed working during season. Majority of the workers had pain in upper arms and lower arms as they were exposed to high level of repetitive task and threshing. Majority of the farm women reported high incidence of hazards. Farm women lead a high stressful life as they were involved in multiple role to make their life more comfortable and happier.

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Ashok D (2012) studied occupational hazards of supportive group of women employees in health care units in Tamilnadu from the samples of 197 supportive women employees. The analysis of study explained that lack of supervision and control, lack of training, usage of untrained employees, congested space in working area, use of old machinery and equipments, overloading of employees, violation of safety rules, overloading of employees and poor housekeeping practices were the employees' safety related factors associated with occupational hazards. The study also showed that respiratory diseases and hypertension were in top level experienced. Skin diseases, diabetes, cardio vascular diseases, menstrual irregularities, sleep disorder were next in level experienced. Around one fifth of respondents had experienced bacterial infections to fungal infections. One fourth of them had experienced various parasitic infections and one third of them had experienced viral infections. Anxiety, mental stress, depression and emotional disorder, ENT related problems, low back pain due to carrying heavy loads of work in a standing posture, head ache and body ache due to work stress, discomfort during travel time, worrying about welfare of children when at work were factors influencing occupational hazards.

Javed Sadaf and Tehmina Yaqoob (2011) studied gender based occupational health hazards among paramedical staff in public hospitals of Jhelum. The results of the study showed that females were more exposed to occupational health hazards as compare to males. There was no difference between male and female paramedical staff in exposure to occupational health hazards. Females are more exposed to psychological occupational health hazards as compare to males. Physiological health hazards are more influencing paramedical staff's health as compare to psychological health hazards in public hospital. The hypotheses of the study reflected that there was a significant effect of age in exposure to occupational health hazards among paramedical staff. There were no significant differences in exposure to occupational health hazards exist between on the basis of experience in different categories. The study concluded that over burden of work and deficient staffs were enormous hazards in public hospital faced by paramedical staff.

Amosu AM et al., (2011) analyzed the level of knowledge regarding occupational hazards among nurses in Abeokunta, Ogun state, Nigeria. The sample consisted of 100 nurses who had been randomly selected from 10 public and 2 privately owned health care facilities. Majority of the respondents were between 21 – 30 years of age, females, married and had 11 years and above in the nursing profession. Majority of the respondents agreed that the nursing profession is associated with occupational hazards. Back injury was the commonest occupational hazards followed by neck and back pain. Prolonged standing, negligence and carelessness, lifting of patients and equipments, failure to observe simple safety rules in the wards, shortage of staff and excessive work load are the foremost predisposing factors of occupational hazards. The respondents suggested that avoidance of lifting of patients and heavy equipments and proper training and retraining of nurses on safety measures are the ways of preventing occupational hazards.

Saldaria MAM et al., (2012) examined the impact of occupational hazard information on employee health and safety. In the study, global farming, industry construction and services sectors have been focused. Farming and services sector have been given 17.5% hazard prevention communication, global, industry and construction sectors have been provided 16.8% and 14.8% respectively. Farming and construction sectors are experiencing 43.1% and 35.8% musculoskeletal symptoms. Global services and industry sectors experienced 32.3% 31% and 30.4% respectively. Services, industry and global sectors experience high psychological symptoms of 10.8%, 10.2%and 10.1% respectively where as farming and construction sectors experience 8.6% and 7.1% respectively. Construction, industry and farming sector experience high level of occupational accidents in the rate of 13.8%, 13.1% and 10.4% respectively. Farming and services sectors experience low level of occupational accidents at the rate of 9.9% and 9.2% respectively.

Ahmed HO and Mark S Newson Smith (2010) analysed knowledge and practices of cement workers related to occupational hazard in United Arab Emirates. The study sampled 153 male workers in a cement factory in Ras Al Khaimah, UAE. The study highlighted that 52.9% of the respondents had known about the hazards associated with current job. The most commonly mentioned hazards were dust, heat, machines such as milling machine and falling materials, chemicals, fire and smoke. Majority of the workers mentioned that exposure to the dust was a serious hazard to their health. Respiratory symptoms (cough and sputum), eye problem have been majorly experienced as dust related problems by respondents. Stomach, liver and heart problems were least experienced as dust related problems. Majority of the respondents indicated that mask was a safety device. Next to it, helmet, safety hoes, and goggles, were the protective devices used by respondents. Moreover, majority of the workers reported that masks were comfortable and not interfering with their communication while wearing them.

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Fasunloro Adebola and Foluso John Owotade (2004) assessed the level of awareness of occupational hazards among clinical dental staff at a dental staff in Nigeria and it had sampled 38 respondents. Doctors (59%), nurses (8%), technologist (5%), therapists (10%), and dental surgery assistants (18%) have been focused in the study. Back ache was the most frequently experienced hazard among 47% of respondents. 68.4% dental personnel had been vaccinated among them more were doctors than non doctors. 35% had experienced an injury from sharp instruments in the past six months. 71% had regular exposure to dental amalgam. Use of eye goggles, proper waste disposal, wash hands with bactericidal soap, wear gloves routinely, change gloves between patients, use of face mask, wash hands before gloving and ensure instrumental sterilization were the mechanism followed by employees to control the cross infection. Amalgam blood level check, periodic check of clinic for amalgam vapour, use of goggles, water spray and suction, confine use to impervious surface, use no touch technique, store amalgam in sealed containers, clean up spilled amalgam, work in well ventilated space and use tightly closed capsules were the safety measures adapted while handling amalgam. The respondents were well known about injury, Hepatitis B, HIV and less known about tuberculosis, blindness, back ache, litigation and others.

It could be noted from the above literature that the study undertaken in the study area has analysed the sources of occupational hazards of medical laboratory technicians working in private multi speciality hospitals in Tirunelveli city alone. It has not studied about the impact of occupational hazards. Moreover, it has not studied about the medical laboratory technicians working in diagnostic centres. Therefore, there is a scope to study about the impact of occupational hazards of medical laboratory technicians working in diagnostic centres. Hence, the present study is undertaken covering the medical laboratory technicians working in private diagnostic centres also.

3 RESEARCH METHODOLOGY

i) Research design

This survey based research has adopted descriptive research design.

ii) Population, Sampling and Sample Frame

A sample of this study is medical laboratory technicians working in private multi speciality hospitals and diagnostic centres with the qualifications of one year and two year courses in medical laboratory technology. The subject has been divided into two groups, namely the medical laboratory technicians working in private multispeciality hospitals and the medical laboratory technicians working in diagnostic centres. From each stratum 60 respondents have been sampled using judgement sampling technique. Thus, a total of 120 respondents have been sampled from both kinds of organizations. The sample frame of this research is District Employment Office from which the researcher collected the list of private multi speciality hospitals, diagnostic centres and the medical laboratory technicians employed in them.

iii) Methods of Data Collection

The primary data have been collected through structured questionnaire prepared by the researcher. The researcher also discussed with respondents in order to collect primary data. The secondary data for this study have been collected from various research journals, books and websites to add appropriate significance for the study.

iv) Instrumentation

The questionnaire employed to collect primary data consists of two parts. Part 'A' that talks about profile of the respondents and part 'B' that deals with impact of occupational hazards on health of the medical laboratory technicians. The questionnaire (part B) has been done based on Likerts five points scale which range from Strongly Agree, Agree, No Opinion, Disagree and Strongly Disagree. The points have been allocated for them as 5, 4, 3, 2 and 1 respectively.

v) Tools of Analysis

Both mean and standard deviation have been administered to examine and differentiate the impact of occupational hazards and also to find out the extent of perception of medical laboratory technicians towards impact of occupational hazards

4 RESULTS AND DISCUSSION

4.1 Analysis and Results

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Table 4.1 Profile of the Respondents

S.No..	Measure	Item	Hospitals		Diagnostic Centres	
			Frequency	Percentage	Frequency	Percentage
1	Sex	Male	16	26.67	18	30.00
		Female	44	73.33	42	70.00
3	Age	Below 20 years	07	11.67	04	06.67
		Between 20 and 25 years	14	23.33	12	20.00
		Between 25 and 30 years	27	45.00	29	48.33
		Above 30 years	12	20.00	15	25.00
3	Marital Status	Married	38	63.33	40	66.67
		Unmarried	22	36.67	20	33.33
4	Educational Qualification	DMLT (1 year)	46	76.67	40	66.67
		DMLT (2 year)	14	23.33	20	33.33
5	Year of working experience	Below 2 year	09	15.00	07	11.67
		Between 2 and 4 years	22	36.67	22	36.67
		Between 4 and 6 years	17	28.33	17	28.33
		Above 6 years	12	20.00	14	23.33
6	Salary	Below 5000	12	20.00	09	15.00
		Between 5000 and 7000	26	43.33	22	36.67
		Between 7000 and 9000	13	21.67	17	28.33
		Above 9000	09	15.00	12	20.00

Source: Primary data

It would be understood from table 1 that among the respondents of hospitals, 26.67% were male and 73.33% were female. Of them, 11.67% were below 20years of age, 23.33% between 20 and 25 years, 45% between 25 and 30 years and 20% were above 30 years of age. Furthermore, among them, 63.33% were married and 36.67% were unmarried. Of them, 76.67% were qualified with Diploma in Medical Laboratory Technology (DMLT) 1 year course and 23.33% were qualified with Diploma in Medical Laboratory Technology (DMLT) 2 years course. In all, 15% had below 2 years of work experience, 36.67% between 2 and 4 years, 28.33% between 4 and 6 years and 20.00% had above 6 years of work experience. Among them, 20% were drawing below Rs. 5000 of salary,43.33% between Rs. 5000 and 7000, 21.67% between Rs. 7000 and 9000 and 15% were drawing above Rs. 9000 salaries.

It would be understood from table 1 that among the respondents of diagnostic centres, 30% were male and 70% were female. Of them, 06.67% were below 20years of age, 20.00% between 20 and 25 years, 48.33% between 25 and 30 years and 25% were above 30 years of age. Furthermore, among them, 66.67% were married and 33.33% were unmarried. Of them, 66.67% were qualified with Diploma in Medical Laboratory Technology (DMLT) 1 year course and 33.33% were qualified with Diploma in Medical Laboratory Technology (DMLT) 2 years course. In all, 11.67% had below 2 years of work experience, 36.67% between 2 and 4 years, 28.33% between 4 and 6 years and 23.33% had above 6 years of work experience. Among them, 15% were drawing below Rs. 5000 of salary, 36.67% between Rs. 5000 and 7000, 28.33% between Rs. 7000 and 9000 and 20.00% were drawing above Rs. 9000 salaries.

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Table 4.2: Impact of Occupational Hazards on General Health

S. No.	Organization	Hospitals					Diagnostic Centres				
		Mean	SD	Extent of Perception			Mean	SD	Extent of Perception		
				Low	Medium	High			Low	Medium	High
1	Pain in neck, shoulder, upper and lower back, waist, leg and joints	27.64	3.58	15.00	68.33	16.67	27.43	2.47	21.67	54.00	24.33
2	Eye problem (e.g. dry eye, eye trauma and irritation due to high level of concentration and use of chemicals)	26.67	3.55	23.33	55.00	21.67	26.58	3.63	21.00	60.67	18.33
3	Tiredness	26.13	3.02	18.33	61.67	20.00	23.54	2.50	17.67	70.00	12.33
4	Fatigue	25.67	4.71	13.33	68.33	18.33	24.57	3.75	17.00	64.33	18.67
5	Weight loss (due to night shift and long working hours)	25.56	4.83	15.00	70.00	15.00	24.48	2.07	11.33	73.67	15.00
6	Stomach ulcer	25.49	4.54	13.33	70.00	16.67	23.44	3.86	17.33	69.33	13.33
7	Loss of appetite or changes in appetite	15.19	4.27	18.33	70.00	11.67	15.16	4.93	20.67	63.67	15.67
8	Anxiety and depression	19.06	4.23	11.67	68.33	20.00	17.22	1.11	16.00	70.00	14.00
9	Digestive problem (constipation)	19.01	4.21	09.67	71.00	19.33	19.00	2.47	20.00	66.33	13.67
10	Hair loss (due to stress)	19.40	3.57	16.33	67.67	16.00	19.13	3.63	11.67	69.00	19.33
11	Lack of energy	23.04	4.73	14.67	66.00	19.33	22.12	2.07	18.33	66.33	15.33
12	Difficulty paying attention	20.13	3.60	21.67	61.33	17.00	19.93	3.86	16.67	66.33	17.00
13	Stress and irritation	21.52	4.85	14.67	67.67	17.67	21.43	5.89	15.67	69.33	15.00
14	Minute injuries (e.g. needle stick injuries)	24.67	3.17	13.00	71.00	16.00	24.27	5.45	20.67	56.00	23.33
15	Skin allergy e.g. irritation (due to use of chemicals)	21.74	4.96	12.67	67.33	20.00	21.73	4.42	19.00	62.67	18.33
16	Ear pain due to prolonged exposure to air condition	21.69	6.03	18.33	70.00	11.67	21.67	5.89	17.33	67.33	13.33
17	Breathing difficulties due to excessive cold (air-conditioning)	22.07	2.21	13.33	67.33	19.33	22.05	3.58	14.00	71.00	15.00
18	Sleeping disorder (due to long working hours and shift work)	20.40	3.57	16.00	67.33	16.67	20.38	5.70	15.67	71.00	13.33
19	Menstrual irregularities (due to long working hours and irregular shift work)	22.04	4.73	23.33	55.00	21.67	21.98	3.41	10.67	71.00	18.33
20	Low spirit	19.17	3.17	17.33	62.67	20.00	19.04	5.14	19.00	69.33	11.67
21	Appendicitis	22.74	4.96	11.33	71.00	17.67	11.03	2.10	18.33	72.00	9.67
22	Tuberculosis and other respiratory	20.37	3.60	17.67	63.33	17.00	18.65	2.08	15.00	68.67	16.33

	infection										
23	Hepatitis B	08.52	1.85	14.00	73.67	12.33	06.35	2.93	18.33	67.00	14.67
24	Varicose vein	06.04	0.73	12.33	68.33	17.33	04.43	3.89	16.00	62.33	21.67

Source: Computed from primary data

It could be indicated from mean score of table 4.2 that the factors, pain in neck, shoulder, upper and lower back, waist and leg and joints, eye problem (e.g. dry eye, eye trauma and irritation due to high level of concentration and use of chemicals), loss of appetite or changes in appetite, digestive problem (constipation), stress and irritation, minute injuries (e.g. needle stick injuries), skin allergy e.g. irritation (due to use of chemicals), ear pain due to prolonged exposure to air condition, breathing difficulties due to excessive cold (air-conditioning), sleep disorder (due to long working hours and shift work), low spirit, menstrual irregularities (due to long working hours and irregular shift work have equally been perceived by medical laboratory technicians working in both kinds of organizations.

The most importance given to these factors by laboratory technicians working in both kinds of organizations may be due to poor infrastructure such as design of the departments, seat arrangement, absence or lack of ergonomics related training, high work load, inability to take food in time, long working hours and unhealthy shift work system. In light of the preference given to these factors, it could also be understood that they are in need of well equipped infrastructure, health education in terms of ergonomics aspects, balanced diet, health education with regard to stress relieving techniques, modification of working hours and shift system.

Whilst, the factors, tiredness, fatigue, weight loss (due to night shift and long working hours), anxiety and depression, lack of energy, difficulty paying attention, appendicitis, tuberculosis and other respiratory infection, hepatitis B and varicose vein have highly been experienced by medical laboratory technicians working in hospitals than diagnostic centres. Though the medical laboratory technicians working in hospitals experienced these factors highly than medical laboratory technicians working in diagnostic centres, the level of difference is less. From the table it could also be demonstrated that all factors have been perceived at medium level by medical laboratory technicians working in both kinds of organizations.

4.2 Discussion

The present study has proved that hepatitis B is one of the impacts of occupational hazards among medical laboratory technicians. This finding coincide with the study of Gestal (1987) who advocated that paramedics had direct interaction with patients which made them more vulnerable to occupational health hazards and danger of contacting with Hepatitis B was more common in departments in where is frequent interaction with blood at hospitals. The present study has also identified that pain in neck, upper and lower back, waist, leg and joints are the impact of occupational hazards among medical laboratory technicians. These findings are consistent with the studies of Hamann C et al., (2001); Miller DJ, (1987); Lehto TU, (1991); Rucker LM et al., (2002) and Boal et al., (2008) who highlighted that pain in neck, low-back and other musculoskeletal problems were the impact of occupational hazards among dentist and these impacts arise as a results of insufficient or inappropriate equipment, inappropriate work-area design, direct injuries, improper body posture; physical hazards from light, noise, and trauma, biological risks from irradiation and microorganisms, chemical detrimental sources, repetitive movements from working with dental instruments or sitting for extended times with a flexed and twisted back are sources of occupational hazards.

The result of the present study also found that stress is one of the impacts of occupational hazards among medical laboratory technicians. This finding go in par with the study of Landsbergis (1988) who identified that job strain and stress, physical exertion, hazard exposure among health care workers. He also reported that jobs in hospitals were combined with high level of job demand and excessive work load which produce job strain and stress among health care workers. The present study has also found that pain in back, neck, joints, leg and joints and also stress are the impacts of occupational hazards of medical laboratory technicians. These findings are consistent with the study of Miguel Angel MA et al., (2012) who study reported that majority of agricultural and construction sector employees had musculoskeletal complaints and suffered with stress. They had symptoms in three or more parts of the body such as lower part of the back, nape, neck and the upper part of the back. Construction and manufacturing companies had higher rates of work related to accidents and injuries.

5 SUGGESTION AND CONCLUSION

5.1 Suggestions

The researcher presents the following suggestions based on the findings of the research in order to protect the health from occupational hazards.

i. The management of hospitals and diagnostic centres should take necessary steps to create awareness among medical laboratory technicians through proper training and development programme. The training and development programme should contain rich health education including various impact as well as causes of occupational hazards and also various precautionary measures to be followed to protect health. Guidelines about safety precautions such as use of handling infectious patients, handling of needles, operating procedures of equipments which are functioning on electricity should be provided and it should be marked in notice board in written form also. Guidelines should also consist of safety devices such as face masks, shoes, and hand glows being used during working hours.

ii. Ergonomics training with regard to bending, sitting and standing activities accompanied with relaxation exercises such as breathing exercises, stretching exercises which can be done for neck, knee joints, hip joints, shoulder, elbow, wrist and trunk. Education about the importance of balanced diet, self hygiene, cleanness, adequate sleeping, yoga, rest, way of taking care of eyes (e.g., washing eyes with cold water at frequent intervals) and physical exercise should be provided.

iii. Vaccination such as Hepatitis B and Tetanus Toxoid should be provided as per schedule at free of cost and they should also be instructed to avail these facilities without fail. Moreover, the hospital management should concentrate to strengthen infrastructure facilities such as sufficient space, comfort chair and enriched ventilation and lighting facilities. Functioning of equipments, electrical wirings and sterilization of the instruments should be ensured at frequent intervals.

5.2 Limitations of the Study

The present study has been limited to Tirunelveli city only and it has not focused entire district. The study has included medical laboratory technicians who have been qualified with Diploma in Medical Laboratory Technology 1 year and 2 years courses and working in private multi speciality hospitals and private diagnostic centres. The study has not focused laboratory technicians working in single speciality hospitals and government hospitals. The other limitation of this study is its small size of sample and sampling technique. The study has sampled only 120 respondents (60 from hospitals and 60 from diagnostic centres) using judgement sampling. The research has focused only limited number of variables analysing the impact of occupational hazards and it has not examined causes and awareness of occupational hazards. As a result of these limitations, there should be a caution in generalising the results of the study to entire district, other districts and other types of hospitals such as single speciality hospitals and government hospitals as the nature and practice of the hospital vary from organization to organization.

5.3 Directions for Future Research

The present research gives way for future research scholars in many ways. The future research can be undertaken covering entire district with large samples. Besides, the impact of occupational hazards of medical laboratory technicians can be compared with other paramedical groups such as radiographers, pharmacists and nurses.

5.4 Conclusion

This survey based descriptive research sampled 120 medical laboratory technicians (60 from private multi speciality hospitals and 60 from private diagnostic centres) in Tirunelveli city, Tamilnadu by simple random sampling after stratified the subject into medical laboratory technicians working in private multi speciality hospitals and diagnostic centres using stratified random sampling to examine and differentiate impact of occupational hazards on health of medical laboratory technicians. A total of 24 factors related to the health were examined and differentiated to understand the effect of occupational hazards on health of medical laboratory technicians working in both kinds of organizations. The primary data were collected using questionnaire method. The secondary data were collected from books, journals, and websites. The study applied both mean and standard deviation analyse the data.

The result of the study proved that pain in neck, shoulder, upper and lower back, waist and leg and joints, eye problem, loss of appetite or changes in appetite, digestive problem, stress and irritation, minute injuries, skin allergy, ear pain due to prolonged exposure to air condition, breathing difficulties due to excessive cold, sleep disorder and menstrual

irregularities have equally been perceived by medical laboratory technicians working in both kinds of organizations. Whilst, tiredness, fatigue, weight loss, anxiety and depression, lack of energy, difficulty paying attention, appendicitis, tuberculosis and other respiratory infection, hepatitis B and varicose vein have highly been experienced by medical laboratory technicians working in hospitals than diagnostic centres. The extent of perception of the respondents towards these factors has been at medium level.

It is the responsibility of the hospital management, diagnostic centres and other organizations offering similar services taking necessary steps to educate their employees about the way of protecting their health from occupational hazards. It is also the responsibility of the medical laboratory technicians developing adequate knowledge about various impacts of occupational hazards arising as a result of their occupation and follows the guidelines given by the management strictly so as to protect their health. By enhancing awareness level about the various impacts of occupational hazards, the medical laboratory technicians can protect their health and provide the patients better service.

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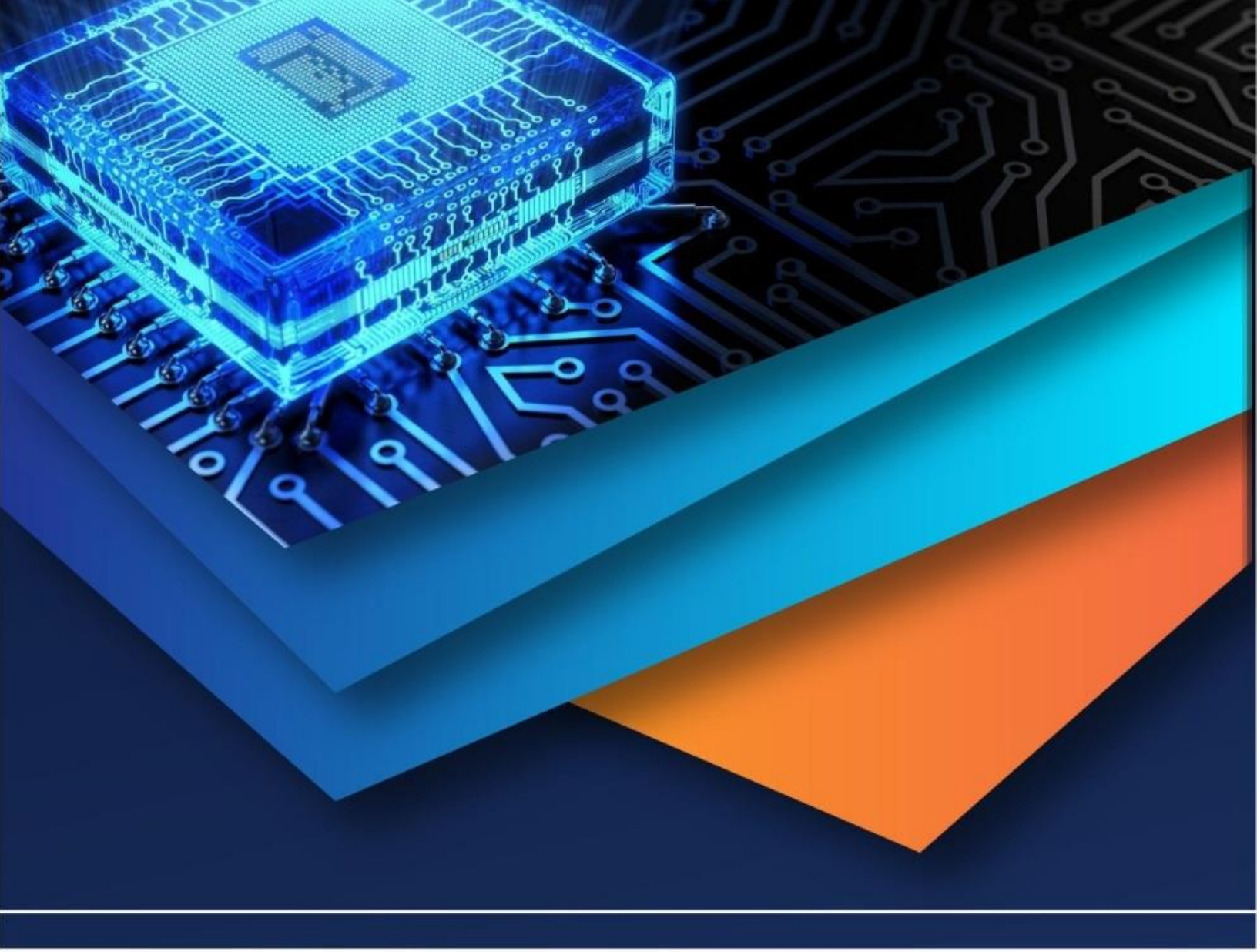

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