

**SHIFT WORK
and
OCCUPATIONAL ACCIDENTS**

THESIS

**Submitted In Partial Fulfilment of the
M.Sc. Degree**

In

Industrial Medicine & Occupational Diseases

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1994

بسم الله الرحمن الرحيم



**TO
MY
FATHER**

ACKNOWLEDGMENT

It gives me a great pleasure to express my special gratitude and thanks to my supervisor Professor Dr. **Yehia Ahmed Zakaria**, Professor of Industrial Medicine and Occupational Diseases. Cairo University, for his Valuable guidance, during various phases of this work that facilitated its completion.

In addition, I am grateful to Professor Dr. **Mohamed Samir El-Attar**, Professor of Industrial Medicine and Occupational Diseases. Cairo University, for his helpful advice and Co-operation throughout the whole work.

My Sincere thanks to Dr. **Mona Sobhy Siha**, Lecturer of Industrial Medicine and Occupational Diseases. Cairo University for her helpful collaboration, constant encouragement and valuable suggestions and without whom I would have not been able to go through and complete this work.

I owe many thanks to staff members of the industrial health and safety department in Tora Company for cement and National Company for Cement Production who assisted me throughout this work.

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INTRODUCTION

INTRODUCTION

The human vulnerability for accidents is almost unique. The pathway through a working life will often be dangerous, as a result of human's mistakes. Man has been exposed to accidents in all times of his life and in all climates. Now, despite the great success of medical science and its more recent analogue - social science, men, women, and children continue to suffer from accidents more than any other illness (*Patterson, 1993*).

Occupational injuries constitute a major health problem for working population. It has been estimated that over 15 million occupational accidents occur all over the world every day (*Monteau, 1983*). An occupational accident may be defined as unexpected, unplanned controllable event in which the action or the reaction of human, tool or environment can result in an injury arising out of and in the course of employment (*Evans, 1983*).

Shift work related accidents is the concern of our study. Shift workers form a great bulk in the labor force in any country (*Rutenfranz and Knauth, 1988*). Shift work is generally defined as working at times other than normal day light hours. This definition can be applied to those who have to work permanently on night work and also for those who work on irregular hours (*Akerstedt, 1990*).

The best documented health consequences of night and rotating shift work are disorders of sleep and digestion. Field studies have indicated that night and rotating shift workers are at excessive risk for involvement in accidents and serious injuries on the job (Gordon et al., 1986).

REVIEW OF LITERATURE

Shift work

Introduction :

Shift work is one of the most apparent and dramatic components of the work environment. It had been existed even in ancient Rome. Workers were suffering during the night to bring goods and supplies into Rome, since traffic on city streets was limited to the night time hours only. With the advent of Industrial Revolution and the discovery of electricity, continuous processes were employed to produce goods and supplies and to use expensive machinery. This necessitated work to be done all through the 24 hours (*Glanzer, 1991*).

During the last decade, shift work began to be practiced on wide scale especially at the time of world war I and then, it proliferated during world war II (*Winget and La Dou, 1980*).

Now, shift work has become a way of life for approximately 21% of the U.S. labor force (*Bosch and DE Lange, 1987*). Any way the prevalence of shift work varies from country to country and year to year. 21.4% of labor force in France, 22% in Netherland, 20.4% in Norway and 37% in Japan, 13% in Denmark, has to work in shift system (*Harrington, 1978*). Summing up, shift work has been growing to make up about one fourth of the working population in most industrialized countries (*Vidacek et al., 1986 and Akerstedt, 1990*).

Employment and production capabilities can be maximised if shift work is adopted which is a point of great economic importance especially in developing countries. Moreover, the high costs of capital equipment and the demand of the world market has forced the industry to operate 24 hours a day (*Siebenaler and Mc Govern, 1991*).

One common circumstance in almost all shift work is that men constitute the majority of shift workers in the public and private sectors. One glaring exception is in the health field, where the majority of shift workers are women (*Glanzer, 1991*).

These individuals working in shift system, live in an abnormal time frame. They sleep when most of the community is awake, they breakfast when others are dining, they have time to play only when most of society is working. They are forced to adapt their times of sleep and leisure to family and community if they wish to spend time with their wives and children. These sociological pressures create dissatisfaction in the worker and restrict his ability to adapt to his abnormal work schedule (*Winget and LaDou, 1980*).

Definition :

Shift work is generally defined as working at times other than normal day light hours of approximately 7:00 AM to 6:00 PM (*Rosa and Colligan, 1992a*). In other words, shiftwork is the arrangement of work hours which employs two or more teams (Shifts) of workers in order to extend the hours of working beyond that of conventional office hours. The definition can be applied to those who have to work permanently on night work and also for those who work on irregular hours (*Akerstedt, 1990*).

The terms shift work and night work often are used interchangeably. Night work is defined as working between 11.P.M. to 5 A.M. or some part of that period (*Rutenfranz, 1983*). It is just one type of shift work. Historically, night work has been regarded as undesirable and only permissible when strictly necessary. Now, it is not always considered as a problem. In fact, some workers even choose working night to solve problems in their social life or to match work with other important lifestyle concerns. Some, nurses choose the night shift permanently to maximize time between school, work and home responsibilities (*Glanzer, 1991*).

The purpose of this method of organization of work is to maintain continuous production by means of series of teams relaying one another without a break at the place of work. The need for continuity of production may stem from the following :

a) Technologic Reasons :

As in Iron and steel industry, where the high furnaces need long time (months) to reach the desirable heating temperature. Shift work is a must in such industrial processes which need continuous working hours for its completion.

(b) Economic Reasons :

High costs of capital requirements necessitate shift work for better getting the most use out of machinery so it can increase revenues.

(c) Social Reasons :

Society has come to expect continuous coverage for health, and safety services. Also it is expected to have overlapping shifts in other services as transport and communications. Consequently, medical health care workers, safety personnel as firemen and policemen, and workers of media as T.V. and presses, all have to work on shift system (Rutenfranz and Knauth, 1988).

Types of Shift work :

shift work can be of infinite variety in terms of :

- (1) Hours worked (2) time of day (3) Frequency of change

Nevertheless in broad terms, they can be classified as

- A. Two shifts (12 hour/shift) or three shift system (8 hour/shift), on the basis of the number of worked hours (*Harrington, 1978*).
- B. According to Continuity : Principal characteristic of shift work is the continuity so it is classified into.

(a) Continuous :

Shift working involving alternating or successive teams is said to be continuous when it is kept up 24 hours a day, everyday including holidays and Sundays. This requires a minimum of four teams of workers (Three teams working 8 hours shifts and one team is resting. It is usually known by 4x8 continuous shift work (*Andlauer, 1983*).

Continuous shift working affords the greatest opportunity for permutations and combinations of rotas. Current thinking seems to be concerned with the advantages and disadvantages of the rapid and slow rotations that is changing shift every few days or at intervals of a week or more. The social and domestic disruption seems to be greatest with rotating continuous shift and least with stabilized two shift system (*Bosch and DE Lange 1987 and Wilkinson et al., 1989*).

(b) Semi Continuous :

When shift working is interrupted at the end of the week, this system requires at least 3 teams and called 3x8 semicontinuous shift work (*Andlauer, 1983*).