

Knowledge and practice of preventive measures in small industries in Al-Khobar

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ABSTRACT

Objective: The specific objective of this study was to assess the knowledge and practice of workers in small industries regarding preventive measures of occupational hazards.

Methods: Three workshops were randomly selected from each of the 8 types of industries in the industrial area. This gave a total sample of 24 workshops. From each of these, at least one worker was selected giving a total of 33 workers. All selected workers were interviewed using a standard questionnaire. A checklist on the conditions of the shop and availability of essential safety equipments was also designed.

Results: All workers were young non-Saudis. More than half of them (58%) were smokers. Nine percent of the

workers had no knowledge of preventive measures. About 12% used personal protective measures all the time while 60% did not use any. Workers were exposed to a variety of occupational hazards with injuries and accidents forming the majority (39%).

Conclusions: Knowledge of workers in small industries about occupational hazards and their use of protective measures was inadequate. Workers were exposed to a variety of occupational hazards mainly accidents and injuries.

Keywords: Small industries, occupational hazards, injuries, knowledge.

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The small industries (workshops) in Al-Khobar, Eastern Province, lie south-west of Al-Khobar town and occupy a narrow area of land. Despite their large numbers, the premises are small, overcrowded and haphazardly arranged. The common activities include motor vehicle repair and servicing garages, welders, car painters, metal-shaping and forming garages, aluminium, wood and furniture industries. Workers of different ages and nationalities are engaged in these activities. Workers of small industries are now being exposed to processes, physical and chemical agents that pose serious hazards to their health. Several studies in developing^{1,2} and developed³ countries have shown that accidents emerge as a significant occupational health problem. The main reasons were low levels of

education of workers, inadequate knowledge of health hazards and unavailability of preventive measures. Workplace accidents result in considerable economic and human losses due to absenteeism, low productivity, compensation and handicap. Occupational health services, especially health education, for workers are often limited or non-existing. Furthermore, there might be no notification or registration system for occupational hazards. Workers in auto-mechanics, including welders, are exposed to asbestos, metal dust, organic solvents, paint pigments and automobile exhausts, which pose serious risks to their health.⁴⁻⁹ Exposure to wood dust is associated with increased risk of respiratory conditions¹⁰⁻¹⁴ (eg woodworker's asthma). The aims of this study are to determine knowledge and practice

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regarding the preventive measures of occupational hazards among workers in small industries.

Methods. This cross-sectional study was carried out in December 1993G. The study population consisted of male workers in the small industries in Al-Khobar industrial area. The exact number of workers is unknown as there is a rapid turnover of workers and not all workshops are registered under Civil Defence protection. Workshops are arranged in 8 major building blocks. Four blocks were randomly selected using tables of random numbers. Workshops were stratified into 8 groups. These were: auto-mechanics, car electricians, welders, car painters, metal shaping and forming, home-appliances steel manufacturing, aluminium workshops and wood and furniture workshops. Three workshops were subsequently randomly selected from each group in the 4 selected blocks using random number tables. This gave a total sample of 24 workshops. From each of these 24 workshops at least one worker was included in the sample giving a total of 33 persons. All selected workers were interviewed by the author using a standardized questionnaire. The non-arabic speaking workers completed the questionnaire with the help of a translator/interpreter. The questionnaire (Figure 1) contained information on demographic data, duration and type of work, smoking habit, knowledge and use of preventive measures. An observation checklist on the conditions of the shop and availability of essential safety equipments was also designed. Data was entered and analyzed using the EpiInfo-version 6 statistical package.

Results. Table 1 shows some demographic characteristics of the studied workers. The important findings were: a) all workers were non-Saudis b) the majority were of younger age groups 20-40 years with a mean age of 32.7 ± 6.6 (ISD) c) About 33% completed only primary school while 9% had no school education d) more than half (58%) were smokers e) one-fifth were less than one year in employment. Table 2 shows that safety glasses and gloves were the main personal protective equipment (PPE) mentioned by the workers (42% and 39%). Nine percent of the workers had no knowledge of preventive measures. Although a variety of preventive measures and PPE were mentioned, their use was unsatisfactory as shown in Table 3. About 61% of workers did not use any kind of PPE while only 12% used them all the time. The main reasons given for not using PPE were non-availability of equipment and that the equipment was too heavy causing inconvenience. Only nine (27%) workers knew how to carry out first aid measures while 20 (61%) of them knew how to use fire extinguishers. The employees in these workshops were exposed to a variety of occupational hazards as shown in Table 4.

Table 1 - Some demographic characteristics of workers in small industries in Al-Khobar (N=33).

Variable	No.	%
Nationality: Non-Saudi	33	100.0
Age Group (in years):		
20-29	11	33.0
30-39	17	51.5
40-49	5	15.0
Educational Level:		
Illiterate	1	3.0
Read and write only	2	6.0
Completed primary school	11	33.0
Completed intermediate school	5	15.0
Completed secondary school	8	24.0
Diploma after secondary school	6	18.0
Marital status:		
Single	10	30.0
Married	23	70.0
Duration of work (in years):		
<1	7	21.0
1-3	14	42.0
>3	12	36.0
Smoking habit:		
Non-smokers	14	42.0
1-10 cig/day	10	30.0
	9	27.0
cig - cigarettes No. - number		

Table 2 - Knowledge of workers of preventive measures and personal protective equipment (N=33).

Preventive measures mentioned	No.	%
Safety glasses or goggles	14	42.0
Gloves	13	40.0
Masks	5	15.0
Ear plugs or ear muffs	5	15.0
Safety shoes	5	15.0
Helmets (Hard hats)	4	12.0
Fire extinguishers, sand buckets	2	6.0
Protective coverall	1	3.0
Airconditioning for heat stress	1	3.0
Do not know any preventive measure	3	9.0
No. - number		

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١٣ . هل لديك معرفة أو إلمام بالآتي؟

أ- الإسعافات الأولية كالنفس الاصطناعي أو إيقاف النزيف؟ نعم لاب- كيفية إطفاء الحريق؟ نعم لا

١٤ . هل حضرت أو شاركت في أي ندوة أو شأفت أي برامج للتوعية عن المخاطر المهنية وسبل السلامة

منذ بداية هذه السنة؟ نعم لا

إذا كانت الإجابة بنعم ما هي؟

١٥ . هل لديك أي المقترحات لتحسين وسائل السلامة والوقاية في الورش أو المنطقة الصناعية عموماً؟

كشف معدات وأجهزة السلامة في الورش الفنية بالمنطقة الصناعية بالخبر

التاريخ:

الرقم التسلسلي:

اسم المحل:

نوع العمل:

هل توجد الأشياء التالية بالمحل:

١ . طفاية حريق نعم لا٢ . جهاز كشف أو إنذار عن الحريق نعم لا٣ . صندوق إسعافات أولية نعم لا٤ . إضاءة كافية نعم لا٥ . المحل نظيف ومنظم بشكل مرضي نعم لا٦ . توجد إشارات أو لافتات سلامة نعم لا

ما هي:

Figure 1

إستبانة لتحديد المعرفة وطرق الوقاية من الأخطار المهنية عند العاملين
في الورش الخشبية بالمنطقة الصناعية بالخبر

الرقم المسلسل: تاريخ تعبئة الإستبانة:

اسم الورشة: نوع العمل:

١. العمر: ٢. الجنسية: سعودي غير سعودي

٣. المستوى التعليمي: لثي بطلا وبيكبل ابتدائي متوسط ثانوي

..... جامعي أخرى:

٤. الحالة الاجتماعية: متزوج أعزب أخرى:

٥. عدد سنوات عملك هذه الورشة:

٦. نوعية العمل الذي تقوم به في الوقت الحالي:

٧. هل تدخن؟ لا . نعم كم سيجارة في اليوم؟

٨. هل تعرض لأي مخاطر مهنية (صناعية) أثناء تأدية عملك؟ نعم لا لا أعرف

إذا كانت الإجابة بنعم أذكر هذه المخاطر:

٩. هل أصبت بمرض أو إصابة أو مرض أثناء عملك منذ بداية السنة؟

لا . نعم نوع الإصابة:

السبب المحتمل لتلوع الإصابة:

١٠. هل حدثت حادثة بالخل منذ بداية السنة؟ لا . نعم نوع الحادثة:

١١. ما هي الطرق الوقائية المستخدمة في تجنب أو منع المخاطر أثناء العمل حسب معرفتك؟

.....

.....

١٢. هل تستعمل طرق وقائية خاصة بلك؟ لا . نعم

إذا كانت الإجابة لا، ما هي الأسباب؟

..... إذا كانت الإجابة نعم: أ - ما هي الوسائل التي تستخدمونها؟

ب - هل تستخدمها: كمل الوقت في بعض الأحيان

Table 3 - Use of personal protective equipment by workers in small industries.

Use of PPE	No.	%
Yes, all the time	4	12
Yes, occasionally	9	27
Not at all	20	61
Total	33	100
PPE - Personal Protective Equipment No. - Number		

Table 4 - Occupational accidents/hazards experienced by the workers in studied workshops.

Occupational Accidents/Hazards	No.	%
Injuries (abrasions, lacerations, cut-wounds, fall off forklift & heavy wood, sharp flying metal particles)	13	39.0
Injuries from fast-revolving machines and saw-cuts	2	6.0
Burns (flames, electric burns)	6	18.0
Noise and hearing-impairment	1	3.0
Not exposed to any occupational hazard	15	45.5
Do not know or unwilling to answer	8	24.0
No. - Number		

Table 5 - Assessment of workshop environment and availability of essential equipment in the 24 workshops.

Equipment available	No.	%
Fire extinguishers	22	92
Fixed fire alarms	17	71
First aid box or equipments	22	92
Visual materials and slogans on occupational health and safety	8	33
Workshop clean and objects in order	8	33
No. - Number		

Injuries and accidents formed the majority (39%). However, 45.5% of the workers stated they were not exposed to any hazard and 24% refused to answer this question. Cut-wounds on the hands and fingers and burns were the main accidents reported. Table 5 shows the availability of essential safety equipment in the 24 workshops visited. Fire extinguishers and first-aid boxes were the ones available in the majority of shops. The majority of shops were unclean with objects scattered everywhere on the floor (i.e. low standards of housekeeping).

Discussion. Of all the workers, 24 (73%) were non-Arabic speaking. This is reflected in lack of communication and understanding of hazards and preventive measures. This, together with the low level of education, will also form a barrier to effective health education messages. The low level of education may have also contributed to the inadequate knowledge and the non-use of personal protective measures. These workers do not appreciate the importance and benefits of PPE. All the workers who used PPE had secondary school or diploma education.

The smoking habits of workers should be seriously considered. Smoking might have contributed to the non-use of PPE all the time, to burns and other accidents. It is also associated with an excess of sick leave in industries¹⁵ due to respiratory diseases and other conditions. Smoking may have a synergistic effect with other occupational hazards like asbestos, exhaust fumes, and petrochemicals, thus increasing the incidence and severity of acute respiratory diseases and chronic conditions such as cancer. Several studies have shown that smoking is an important hazard for lung and bladder cancers.¹⁶⁻¹⁸

Accidents and cut injuries were the main hazards in small industries. The contributing factors to the high rates of accidents and injuries include low levels of education, lack of health education and the non-use of PPE. Other possible reasons include passive attitude and negligence of employers and workers, non-availability of PPE and inadequate legislation. In addition, workshops are small, overcrowded with machines, scattered instruments and wires. Accidents result in human sufferings, absenteeism and economic loss.^{1,19} A possible reason for the majority of workers not mentioning, or unwilling to mention, any occupational hazard is the fear of losing their jobs if it happens to be known by their employers. Vehicle-repair workers, welders, and car painters in the industrial area work in direct contact with gasoline and diesel exhausts, welding fumes, mineral oil, and organic solvents. Absorption of these toxic substances^{4,8,20} can occur through inhalation, ingestion and direct skin contact. The health effects of exposure to these substances and chemicals include lung diseases, dermatitis and eczema, malignant mesothelioma and cancers (lung and bladder). These

have been reported in several studies.^{6,21-25} The majority of shops do not have health education slogans. Although the only available one is the 'No smoking' sign, the majority of workers still smoke.

This study has shown that workers in small industries in Al-Khobar industrial area had inadequate knowledge about occupational hazards and protective measures. The majority of them do not use PPE. Workers were exposed to a variety of occupational hazards mainly accidents and injuries. Occupational health services provided were inadequate. There is a need for training and health education in occupational health and safety for employers and workers through a joint program between the Ministry of Health, King Faisal University, and Civil Defence in Al-Khobar. These organizations can also be responsible for periodic monitoring of physical and biological hazards. These measures should be supplemented by legislation from the Civil Defence to ban smoking in shops and to provide the minimum essential safety equipment. A health care facility can be established at the industrial area to provide primary care for workers.

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