

## Review

# Fire public awareness in Oman

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**In an effort to help reduce fire hazards in Oman, an extensive study was conducted for its causes and results in the country. In a previous paper<sup>1</sup>, the authors could establish the severity of fire accidents that took place in the last decade. In continuation, a questionnaire was conducted in order to investigate the public awareness in Oman about fire regulations. The results of this questionnaire will give light as to what extent people are aware about fire safety precautions and the procedures which must be taken in the event of fire, to identify their main weaknesses and areas where they lack knowledge, and to investigate in what way they are interested. In addition to that, statistical data results from this questionnaire will be valuable in understanding the extent of awareness of people about fire regulations and how strict these regulations are complied with. This will be helpful in improving statistics, education, methodologies, design and tools for fire safety.**

**Key words:** Fire, public awareness, fire safety, Oman.

## INTRODUCTION

The Sultanate of Oman is located in the south east corner of the Arabian Peninsula with an estimated population of 2 millions and an area of 309,000 km<sup>2</sup>. In the last three decades and due to the discovery of oil, Oman has witnessed a considerable and rapid development in all aspects of life. This was accompanied by an increase in the number of dwellings, commercial and industrial buildings in different regions. The number of vehicles and road users has also increased very significantly.

Fire accidents in Oman are not as high as in other countries. This is due to less congestion in towns, and the use of non-combustible construction materials. Yet people do not have enough knowledge concerning fire safety. Fire statistics<sup>1</sup> within the Sultanate of Oman reveals that in the last decade there were over 17500 fire accidents and nearly 750 deaths and injuries caused by fire. Beside loss of life, there is an estimated cost of nearly £100 million damage to property.

Over centuries fire safety regulations have been introduced in many countries with two main objectives: to reduce the loss of life and ensure the safety of the occupants and those in the neighbouring buildings; to minimize the financial losses both in the property and its neighbourhood.

Although active and passive fire prevention measures have been implemented in many buildings to prevent as possible fire occurrences and regulations insist that such

precautions must be followed strictly, they can only help in minimising the risk of fire. This can be achieved either by early detection of fire so that fire can be controlled at an early stage and prevented from spreading or by allowing ample time for safe evacuation of occupants and for fire brigade to fight the fire safely before the collapse of the structure. However these measures cannot provide complete immunity against the risk of fire.

People must have enough knowledge with respect to fire safety regulations, precautions and means of fire prevention in order to achieve fire safety objectives and to minimise as possible fire accidents. For that reason, fire authorities in many countries are attempting to improve this knowledge by different means, including but not limited to: distributing and studying fire safety questionnaires to investigate people's awareness about fire safety, using the available media sources, such as TV, radio, and newspapers, providing booklets and posters that make people more familiar with fire safety regulations, and may be fire safety exhibitions.

Occurrence of fire accidents, their repeatability and consequences depend on the public awareness of fire hazards. In this paper, this aspect was investigated in depth, by conducting a survey among the public in the Sultanate of Oman. The results of the survey are presented and discussed, and conclusions are drawn reflecting the need for more work in this area to reduce fire hazards

in order to achieve fire safety objectives

### Public awareness survey

The questionnaire included 20 questions, some of which depended on culture and general information, others on the people's opinion. The questionnaire was designed to gather as much information as possible about the people's knowledge with respect to fire regulations, their behaviour in the event of fire, and their opinion about the role and services offered by the Department Of Civil defence. The questionnaire was distributed among the inhabitants in Muscat area, including: shopping centres mainly in Al-Qurum area, supermarkets, Sultan Qaboos University (SQU) hospital, SQU students and staff. The visitors of these places were of different ages, classes and educational levels.

The size of the sample for the questionnaire was 270 persons, 67% of them were males, and 33% were females. Educational level was divided into two categories: low and high. The low level included: no education, primary, intermediate and secondary school level, while the high level included all post-secondary school education. Results showed that 60% of the sample was of high education and 40% was of low educational level. Table 1 shows survey results based on total population whereas Figures 1 and 2 show the results according to sex and educational level respectively.

## ANALYSIS OF RESULTS

### Familiarity with emergency fire exits

The largest proportion of the population, about 78% males and 67% females were familiar with emergency exits indicating that, more than two third of the sample are familiar with emergency exits in the event of fire. In terms of educational level, this represents 76% with high education and about 73% with low education.

### Taking the correct escape route in case of fire

In the event of fire, 70% males and 58% females would take the correct fire escape route whereas 8% males and 9% females will take the entrance route (the door they entered from). Using the normal door is not the correct way of escape, 22% the males would take the doors compared to 23% females. From this result it can be said that, about 34% of the population have no idea about the fire escape routes (34% were highly educated and 35% were with low education).

### Method of escape to exits

Options are to take the lift or the stairs or to jump to the ground. About 86% males and 87% females said they would take the stairs when they hear fire alarm. Only 11% males and 8% females said they would use the lift,

and about 3% males and 6 % females would jump from the window. Therefore, it can be said that most of the people will use the correct method of escape in case of fire, which is the stairs. This is indicating that most of the population know the danger behind using elevators in case of fire. In terms of education level, 88% of high level and 84% of low education said they would take the stairs in the event of fire.

### Familiarization with fire escape routes in new places

When going into large places like hotels and shopping centres, only 22% males and 10 % females try to familiarize themselves with fire exit routes. In terms of educational levels 15% were of high education and 22% were of low education. Hence, the majority of the population do not anticipate occurrence of fire, thus they do not check the fire escape routes.

### Action on hearing the fire alarm

On hearing a fire alarm in a building, 64% of the sample said they would leave their place and go directly to the nearest safe place. However, almost 32% will think if it is important or not, and only 4% would continue their work without paying attention. The response according to sex was: Will continue their work without paying attention: 4% males and 6% females. Will think if it is important or not: 30% males and 34 % females. Will evacuate the place and go directly to the nearest safe place: 66% males and 60 % females. This majority represents 57% of high education and 74% of low education.

### The main cause of fire fatalities

In the opinion of the people, 38% think the main cause of fire fatalities is the smoke, 51% think it is the heat, and 11% think it is caused by other reasons. The distribution of the results according to sex and educational levels was as follows:

**Smoke:** 43% males and 29% females, (39% with high education and 36% with low education).

**Heat:** 46% males and 61% females, (50% with high education and 40% with low education).

**Other reasons:** 12% males and 10% females, (10% high education and 12% low education).

This shows that, a significant proportion of the population selected the wrong cause (51%), which is heat, indicating that the public is not aware that smoke is the main cause of fire fatalities.

### Keeping fire extinguisher in the house/office

More than half of the population do not keep fire extinguisher in their houses or place of work, 52 % males and

**Table 1.** Survey results according to total population.

No.	Total 270		
Q.1	YES		NO
	201 (74.4%)		69 (25.6%)
Q.2	A.1 32 (11.9%)	A.2 60 (22.2%)	A.3 178 (65.9%)
Q.3	A.1 233 (86.3%)	A.2 26 (9.6%)	A.3 11 (4.1%)
Q.4	A.1 49 (18.2%)	A.2 157 (58.2%)	A.3 64 (23.7%)
Q.5	A.1 12 (4.4%)	A.2 86 (31.9%)	A.3 172 (63.7%)
Q.6	A.1 103 (38.1%)	A.2 28 (10.4%)	A.3 109 (40.4%)
Q.7	YES 122 (45.2%)		NO 148 (54.8%)
Q.8	N/A 42 (15.6%)	Correct. Ans 42 (15.6%)	Wrong. Ans 186 (68.8%)
Q.9	A.1 199 (73.7%)	A.2 53 (19.6%)	A.3 18 (6.7%)
Q.10	A.1 259 (95.9%)	A.2 9 (3.4%)	A.3 2 (0.7%)
Q.11	A.1 20 (7.4%)	A.2 63 (23.3%)	A.3 187 (69.3%)
Q.12	YES 267 (98.9%)		NO 3 (1.1%)
Q.13	A.1 25 (9.3%)	A.2 209 (77.4%)	A.3 36 (13.3%)
Q.14	A.1 241 (89.3%)	A.2 5 (1.9%)	A.3 24 (8.8%)
Q.15	A.1 155 (57.4%)	A.2 93 (34.4%)	A.3 22 (8.2%)
Q.16	A.1 46 (17%)	A.2 69 (25.6%)	A.3 155 (57.4%)
Q.17	A.1 78 (28.9%)	A.2 61 (22.6%)	A.3 131 (48.5%)
Q.18		YES 168 (62.2%)	NO 102 (37.8%)
Q.19	N/A 32 (11.9%)	Correct. Ans 147 (54.4%)	Wrong. Ans 91 (33.7%)
Q.20.A		YES 139 (51.5%)	NO 131 (48.5%)
Q.20.B		YES 140 (51.9%)	NO 130 (48.1%)

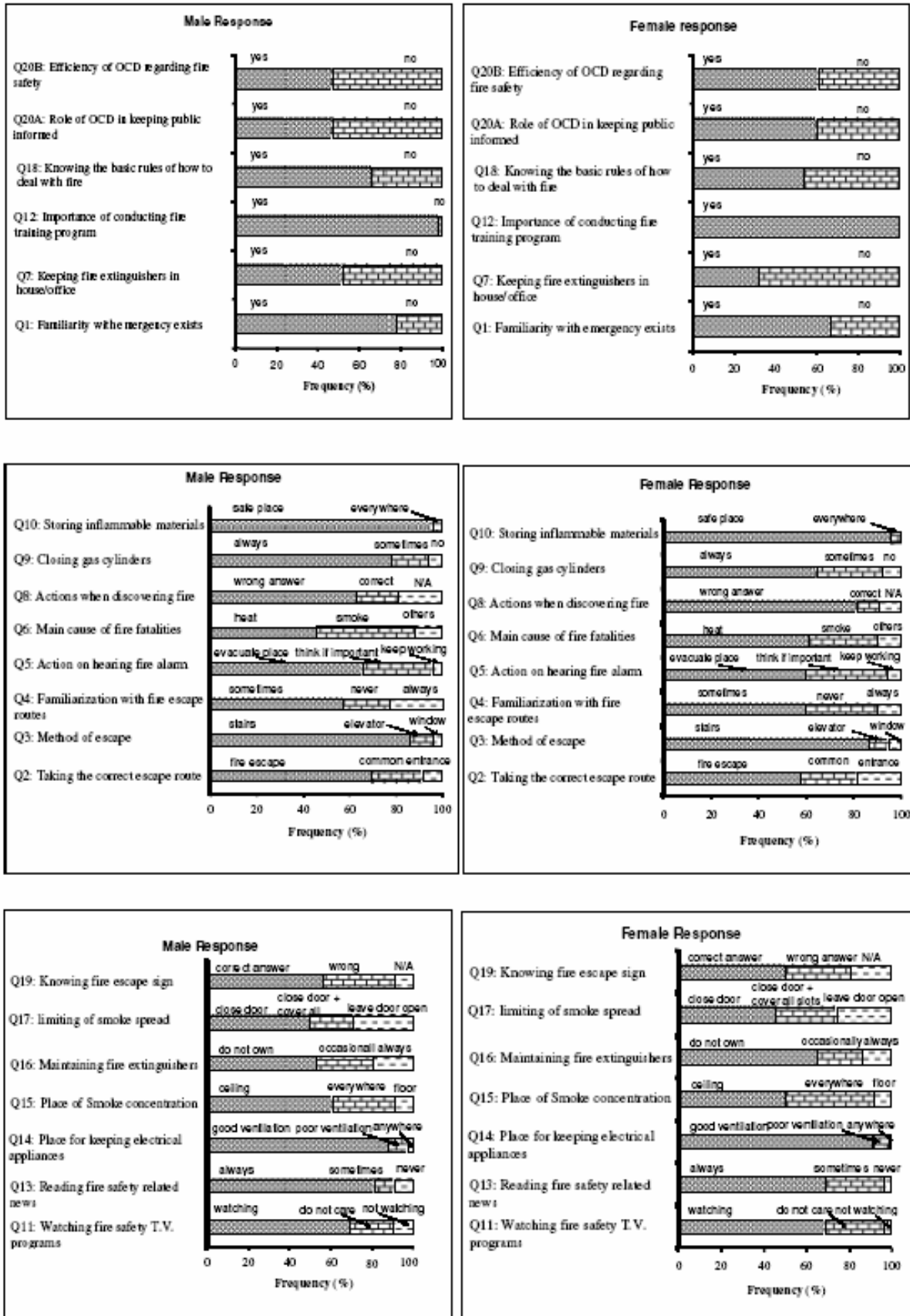


Figure 1. Fire awareness based on sex.

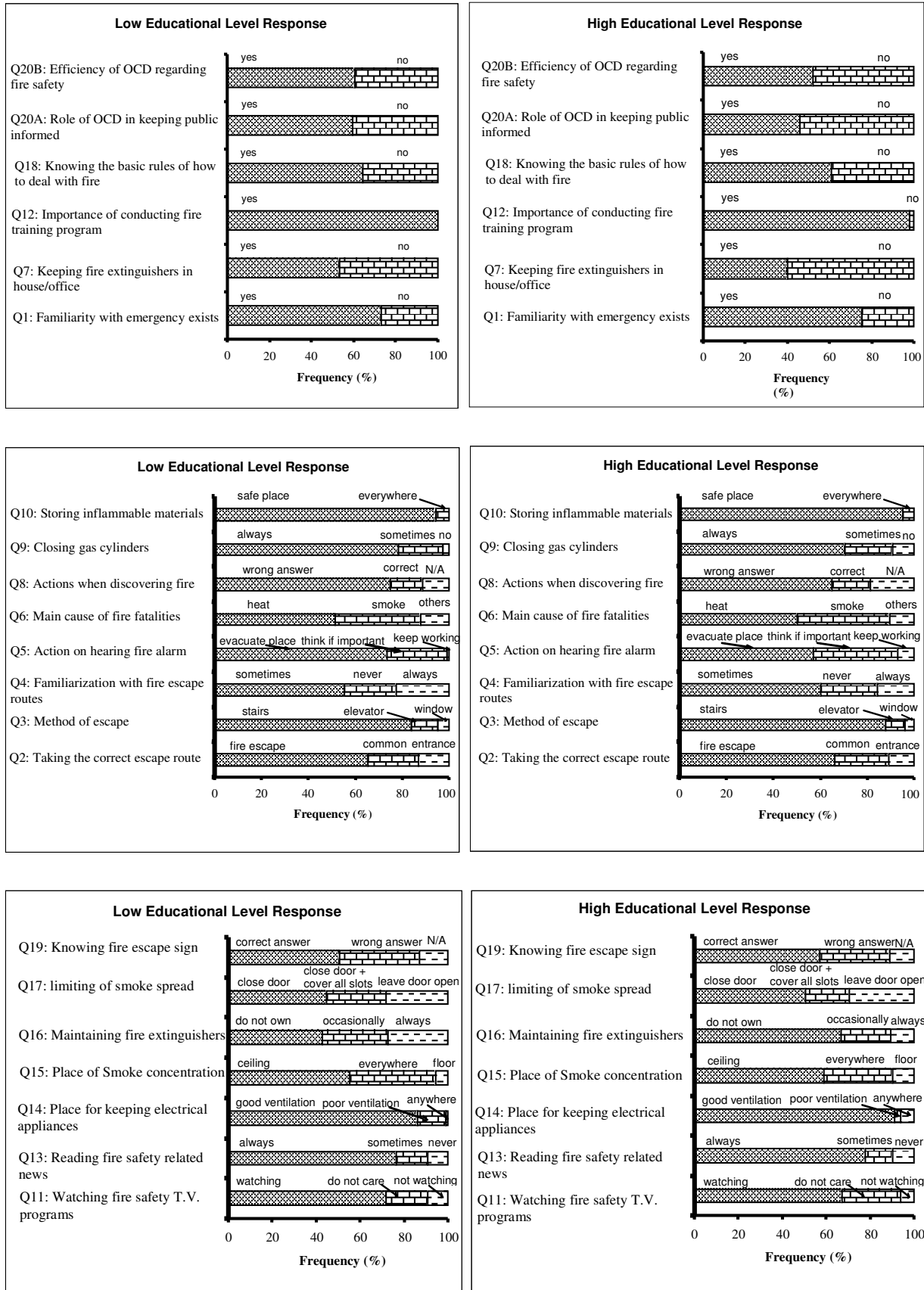


Figure 2. Fire awareness based on educational level.

32 % females do. Educationally, this represents 40 % of high and 53% low education.

### **The actions which must be taken when discovering a fire in a place**

The correct actions, which must be taken in case of fire, are very important; in order to save lives and property and to allow ample time for fire brigade to arrive. The order of actions is as follows: first, raise the fire alarm to attract the attention of occupants to existence of fire. Then, call the emergency number (usually 999) and ask for fire brigade. If it is safe to do so, fight the fire with the available equipment, otherwise, evacuate the building and run to the nearest safe place. Only 18 % males and 10% females got the correct answer. In terms of educational level this represents 17% with high education and 14% with low education. This shows that most people have no or very little idea about the correct actions which must be taken in the event of fire. Their ignorance can be attributed to lack of education and fire training programs which must be organized for public by the civil defence.

### **Closing the gas cylinders**

About 78% males and 64% females were always careful to close the gas cylinders when not in use, 16% males and 28 % females do sometime close them if they were not in a hurry, whereas around 6% males and 8% females do not close them at all. Evidently, most people do care to protect their buildings from gas explosions and are aware that the presence of gas cylinders in a house form a hazard and can be one of the main sources of fire accidents. This behaviour is less common among the highly educated (71%) group than the low educated (79%).

### **Storing inflammable materials**

When storing inflammable materials, about 96% males and 96% females keep such materials in safe places inaccessible to children. Only 4% males and 4% of females would store them anywhere in the house. From the results, it is evident that most people (95% highly educated and 94% with low education) know that keeping inflammable materials in unsafe places lead to dangerous consequences. For example the children may play with such materials and this could cause fire or may be if there is a rise in temperature can lead to fire.

### **Watching T.V programs concerning fire safety**

Watching T.V programs concerning fire and fire safety plays an essential role in understanding fire safety regulation and procedure. Almost 70% males and 69% females keep watching such programs carefully while the rest do not. Of the latter category, 30% males and 31% fema-

les would switch off the T.V. In general, more than half of the population watches T. V. programs concerning fire accidents and fire safety. In terms of educational level, this represents 68% with high education and 72% with low education.

### **The importance of conducting fire training programs**

Fire drills are essential to public as they train them to take the correct action in case of fire, and can minimize the possibility of fire occurrence. Therefore, 98% males and 100% females think that conducting fire training programs for the public is important. The idea is accepted by both categories of education 98% with high education and 100% with low education.

### **Reading fire news in the newspapers**

Reading news related to fire regulations in the newspapers is very useful in increasing the fire culture of public. When asked, 82% males and 69% females said they read such news carefully and 9% males and 10% females do not pay attention to such types of news. However, 9% males and 21 % females do not read newspapers at all. This represents 12% with high education and 14% with low education.

### **Typical place for keeping electrical appliances**

About 91% high education and 86% with low education keep electrical appliances such as fridge and T.V in a well ventilated place. In terms of sex, this represents 88% males and 91% females. About 9 % keep them anywhere and 2 % keep them in poorly ventilated place. Evidently, most people understand that keeping the electrical appliances in a poorly ventilated place may lead to fire accidents.

### **Place of concentration of smoke**

Knowing the places where smoke mostly exists will help in taking the correct decisions in case of fire. About 57% of the population (61% males and 50% females) know that the ceiling is the part of the room where smoke concentrates. This represents 59% with high education and 55% with low education. However nearly 39% males and 50% females do not know the place where most of hot smoke concentrates.

### **Maintaining a fire extinguisher and alarm system**

Keeping a fire extinguisher in the house/office and installing a fire alarm system are important, but keeping this equipment without regular maintenance is just like not having them. 57% of the population does not have fire extinguisher and a fire alarm system. Of the 43% who

have such systems, 17% always maintain their fire extinguisher and alarm system, while 26% maintain them from time to time. In terms of sex and educational level, the distribution was as follows:

19% males and 13% females: always maintain their fire extinguisher and alarm system). This comprise of 10% high education and 27% low education.

28% males and 21% females: maintain them from time to time. In terms of educational level this represents 23% high education and 30% low education.

53% males and 66% females: they do not own such equipment. From educational level perspective, this forms 67% high education and 43% low education. Unfortunately, the major percentage of population does not have fire extinguisher or alarm system in their houses / offices. This may be because some of the population either live in old houses, or may be they do not know about fire alarm systems. It also appears that, even those who own such equipment they do not care to maintain them regularly.

### **The method of limiting the spread of smoke**

In the event of fire break in a room, 29% males and 29% females said they would leave the door open to delay the spread of the smoke, 21% males and 25% females said they would close the door properly. However, the largest percentage (50% males and 46% females) would close the door and make sure that all slots in the door are properly covered, which is the correct reaction. This represents 51% high and 45% low education. About half of the total population (mostly educated) is not perceptive of how to delay the spread of the smoke

### **Knowing the basic rules of how to deal with fire**

More than half the population knows the basic rules to deal with fire. About 66% males and 54% females knows the basic rules to deal with fire, 34% males and 46% females do not. Those who know are 37% with high education and 26% with low education.

### **Knowing the fire escape route sign**

Familiarization of the people with fire signs is very essential, since these acts as guides to safe escape routes during fire. They also indicate the location of fire fighting equipment. About 55% of the population (50% males and 57% females) understand the sign of fire exit. Of these 57% were of high education and 51% were of low education. It is apparent that more than half of the population has the ability to identify the fire escape sign.

### **The role of OCD in keeping the public informed**

About 47% males and 60 % females thought that the Oman Civil Defence (OCD) is keeping the public informed about fire safety, while the rest (53% males and 40%

females) do not think so. In terms of educational background, 46% with high education and 60% of low education think that OCD is keeping the public informed.

### **The appropriate job by OCD regarding fire safety**

When asked if the OCD is doing appropriate job regarding fire safety, about 47% males and 61% females think that Oman Civil Defence (OCD) does the appropriate job, while 53% males and 39% females do not think so. 48% of those with high education and 39% of low education think that Oman Civil Defence is not doing an enough effort regarding fire fighting, minimizing the fire risk, and increasing the public knowledge about fire safety. They expect to see more programs which address the problem of fire safety to be offered by ODC.

### **Conclusions**

A survey was conducted to study the public awareness to fire safety in Sultanate of Oman. The survey included questions about the people's knowledge with respect to fire regulations, their behaviour in the event of fire, and their opinion about the role and services offered by the Department of Civil defence. From the results, it was concluded that males have to some extent a higher degree of knowledge and awareness regarding fire safety, both at home and at work. Furthermore, it was found that the degree of education has negligible influence on increasing the people's knowledge to fire safety. In general it can be said that most of the population in Oman is aware about the dangerous consequences of fires. Theoretically, they possess the basic information regarding fire safety, but practically they do not have enough knowledge concerning the necessary evacuation and safety procedures which must be followed in the event of fire accidents. They also lack the practical experience of how to tackle the fire and fire spread. That knowledge and procedures may be improved through the regular attendance of fire training programs which should be organized by fire safety authorities in the country. Accordingly, it is recommended that: Fire training programs should be organized regularly by fire safety authorities for public and employees. Public awareness can be increased through seminars and exhibitions in commercial and industrial buildings, hotels, restaurants, clubs and houses. Fire safety leaflets, posters and booklets should be provided to public. Fire safety awareness in school children should be increased through exhibitions, programs and competitions. This can also be achieved by introducing fire safety courses in school levels.

Smoke alarms and other devices should be fitted in buildings. Regular and frequent fire safety inspections should be conducted by fire safety authorities to ensure that factories and workshops are abiding strictly with fire regulations.

Practical training must be provided to the employees and students in what to do and how to escape safely in the event of fire.

#### REFERENCES

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