Fire Safety: Awareness Of Fire Risk Among Students At The Medical School Of The University Of Nairobi: A Preliminary Study

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Background: The objective was to evaluate awareness of fire safety among medical students at the University of Nairobi Medical School.

Methods: A cross sectional survey by self-administered questionnaires was undertaken. All medical school students that come to the medical school campus of the University of Nairobi, Kenyatta National Hospital were eligible. The study took place in May 2002.

Results: Two hundred questionnaires were sent out with an 88% response rate. The mean age of respondents was 22.3 years with a male to female ratio of 1.2: 1. Of the respondents, 46.5% were accommodated in the halls of residence of the University of Nairobi while 94% felt there was risk of a fire outbreak with 71% indicating that they felt the risk was greatest from electrical appliances. Cookers, the majority of which were electrical but with some gas ones, were singled out as being a leading risk of fire within the halls of residence. A total of 59% indicated that the fire exits they were aware of were either locked or barred. 95% were not happy with this state of affairs.

Introduction

Fire is the state of combustion in which inflammable material burns, producing heat, flames and often smoke. It can be destructive and uncontrollable causing loss of life and property. Historically in England, one of the first fire prevention measures was a requirement to extinguish all fires before nightfall. In 1872 in Oxford, England, authorities ordered a curfew bell to be rung at sunset to remind citizens to extinguish all indoor fires for the night (Bugbee 1978).

In the last few years there have been many fire outbreaks in Kenya. These have involved business premises as well as residential areas especially the slums of Nairobi. Institutional fires have affected both secondary and tertiary institutions. In March 25th 1998, a dormitory at Bombolulu girls Secondary School exploded in flames with 26 girls losing their lives with immense destruction of property. Among secondary school institutions the Kyanguli fire disaster stands out. In March 2001,more than 60 students died in a fire at Kyanguli Secondary School in Machakos District, Eastern Province of Kenya.

Among tertiary institutions a good number of Universities in the country have at one time or another been affected. As recently as 9th June 2002, a fire razed downs a hall of residence at the University of Nairobi Kikuyu campus. Fortunately there were no major injuries in this incident. Could the effects have been lessened? We feel that not enough is done to prevent and or minimize the effects of fires as recently as June 9th 2002, a fire razed down a hall of residence at the University of Nairobi, Kikuyu campus. Its cause remains unknown.

Methodology

Cross sectional survey by self-administered questionnaire method was used.
The study was carried out at the medical school of the University of Nairobi at the Kenyatta National Hospital, which is a National referral hospital in Nairobi, Kenya. Data collected was analyzed on SPSS computer software.

Results

A total of 200 two-page self-response questionnaires were administered; 176 were filled sufficiently well for data entry. This was an 88% response rate. The ages of the respondents ranged from 20 to 36 years (Table 1). The most frequently appearing age was 22, with 50 respondents at this age. This was 31.1 % of all the respondents to this question. The mean age was 22.3 years. The older individuals were postgraduate students. The sex ratio of the respondents was: Male: Female 1.2:1

A total of 92.6% of respondents were in their 2nd, 3rd or 4th year of study (Fig. 1). The majority (63.1%) were MBChB students (table 2). Postgraduate students and staff comprised approximately 2% of respondents

Only 46.5% of respondents indicated that they were accommodated within the various halls of residence of the University of Nairobi. These included the halls at the Medical School, Kenyatta National Hospital, and Chiromo and campus.

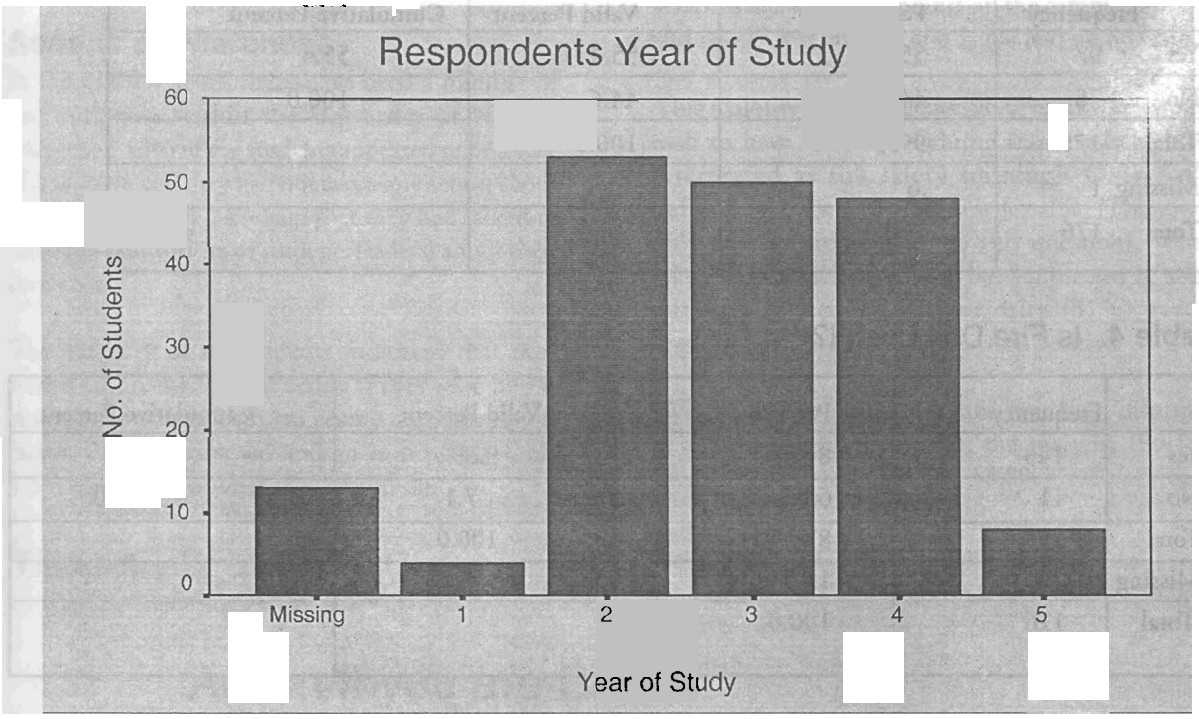
Table 1. Age distribution of respondents

Age	Frequency	Percent	Valid Percent	Cumulative Percent
20	12	6.8	7.5	7.5
21	33	18.8	20.5	28.0
22	50	28.4	31.1	59.0
23	36	20.5	22.4	81.4
24	15	8.5	9.3	90.7
25	9	5.1	5.6	96.3
26	1	.6	.6	96.9
27	1	.6	.6	97.5
30	1	.6	.6	98.1
31	1	.6	.6	98.8
35	1	.6	.6	99.4
36	1	.6	.6	100.0
Total	161	91.5	100.0	
Missing	15	8.5		
Total	**176**	**100.0**		

Table 2. Course of Respondents

Respondent	Frequency	Percent	Valid Percent	Cumulative Percent
MBChB	111	63.1	65.3	65.3
BDS	2	1.1	1.2	66.5
BSc Nursing	29	16.5	17.1	83.5
BPharm	25	14.2	14.7	98.2
MPH	3	1.7	1.8	100.0
Total	170	96.6	100.0	
Missing	6	3.4		
Total	176	100.0		

Figure 1:



Fire Risk

Fire was considered a definite risk within the medical school and halls of residence by 94.3% of respondents; of these 63.2% felt the risk of fire was either high or very high and 10.3% regarded the risk as being low. Only 1.7% felt there was no risk of fire. The majority (71.1%) of respondents felt that electricity posed the greatest hazard in form of faulty electrical appliances, gadgets and electric cookers.

Cookers whether electrical or gas were considered to pose the risk of fire especially in the halls of residence by 16% of respondents. Risk from electric cookers accounted for 2/3 of this risk and the remaining 1/3 to gas cookers. Over 95. % of respondents were not happy with this state of affairs. Electricity clearly stood out as a potential cause of fire.

Figure 2.

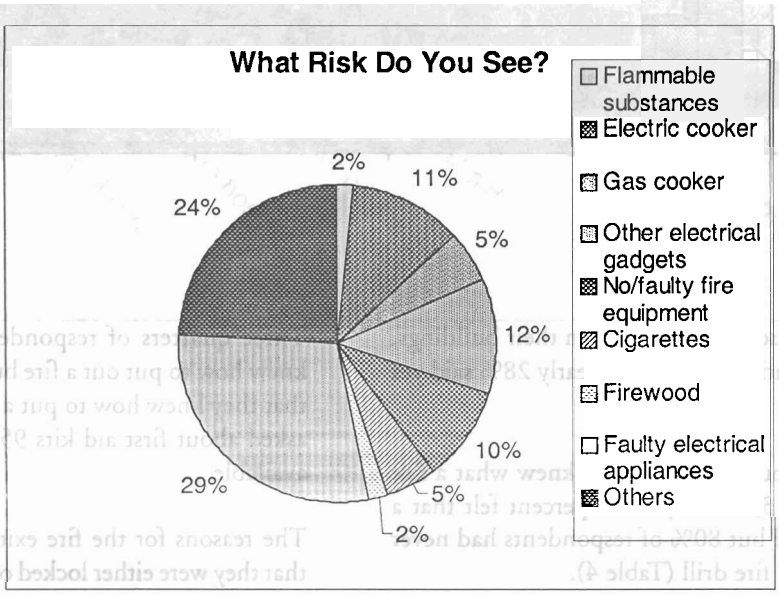


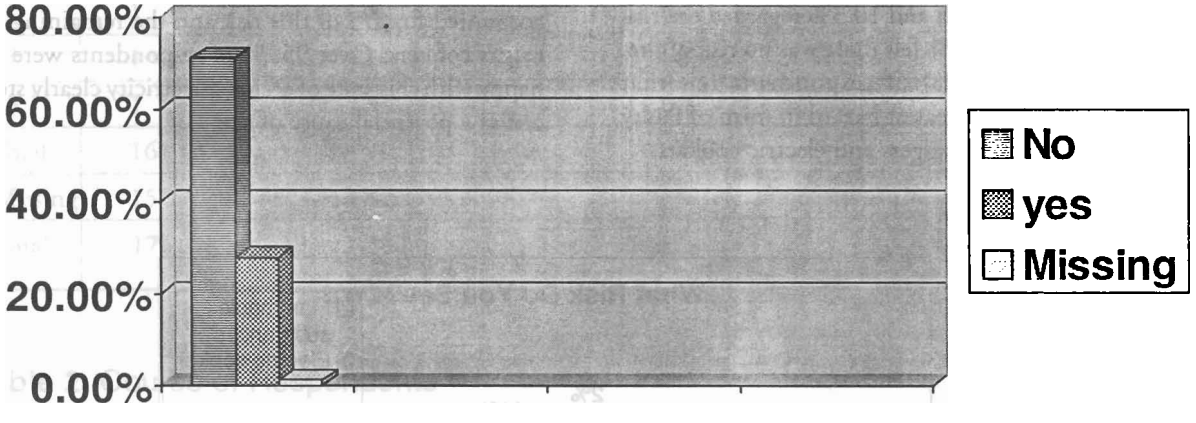
Table 3: Do You Know What Fire Drill Is?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	97	55.1	55.4	55.4
No	78	44.3	44.6	100.0
Total	175	99.4	100.0	
Missing	1	.6		
Total	176	100.0		

Table 4. Is Fire Drill Useful?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	143	81.3	92.9	92.9
No	11	6.3	7.1	100.0
Total	154	87.5	100.0	
Missing	22	12.5		
Total	176	100.0		

Figure 3. Does Your Building Have Fire Exits?



Asked about presence of fire exits in their buildings, 71% gave a negative answer and nearly 28% said yes (Figure 3).

When asked about fire drills 55% knew what a fire drill was (Table 3). Ninety three percent felt that a fire drill is useful but 80% of respondents had never participated in a fire drill (Table 4).

Three quarters of respondents indicated that they knew how to put out a fire but only 44% of them felt that they knew how to put a fire out correctly. When asked about first aid kits 95% said there were none available.

The reasons for the fire exits not being usable were that they were either locked or barred (58%). Of those

who knew of the existence of fire exits, only 30% said that the exits were identifiable.

Actions & Awareness

In the last few years, there have been a number of fire outbreaks within the University of Nairobi properties. 53% of the students appeared to be aware of this. 76% said they had not taken any action about it. Approximately 24% said that they had talked to someone (authorities or students leaders) about their concerns.

The majority of respondents indicated that they would take some form of action if they were burnt. Among the actions being to pour cold water on the burns, do some first aid and go to hospital. Only 1.5% didn't know what they would do.

ARE THERE FIRE POINTS ON CAMPUS?

When asked about fire points on the campus, 70.5 % said no, 27.3% said yes and 2.2% had no opinion.

A big majority of respondents (96.6%) said they would wish to have basic fire fighting training (which we interpreted as fire safety training). Only 3.4% indicated they would not wish for this. (There was only one non-respondent to this question). When asked whether they had ever been informed of a fire outbreak procedure, the majority (81%) gave a negative response and 18.8% were positive.

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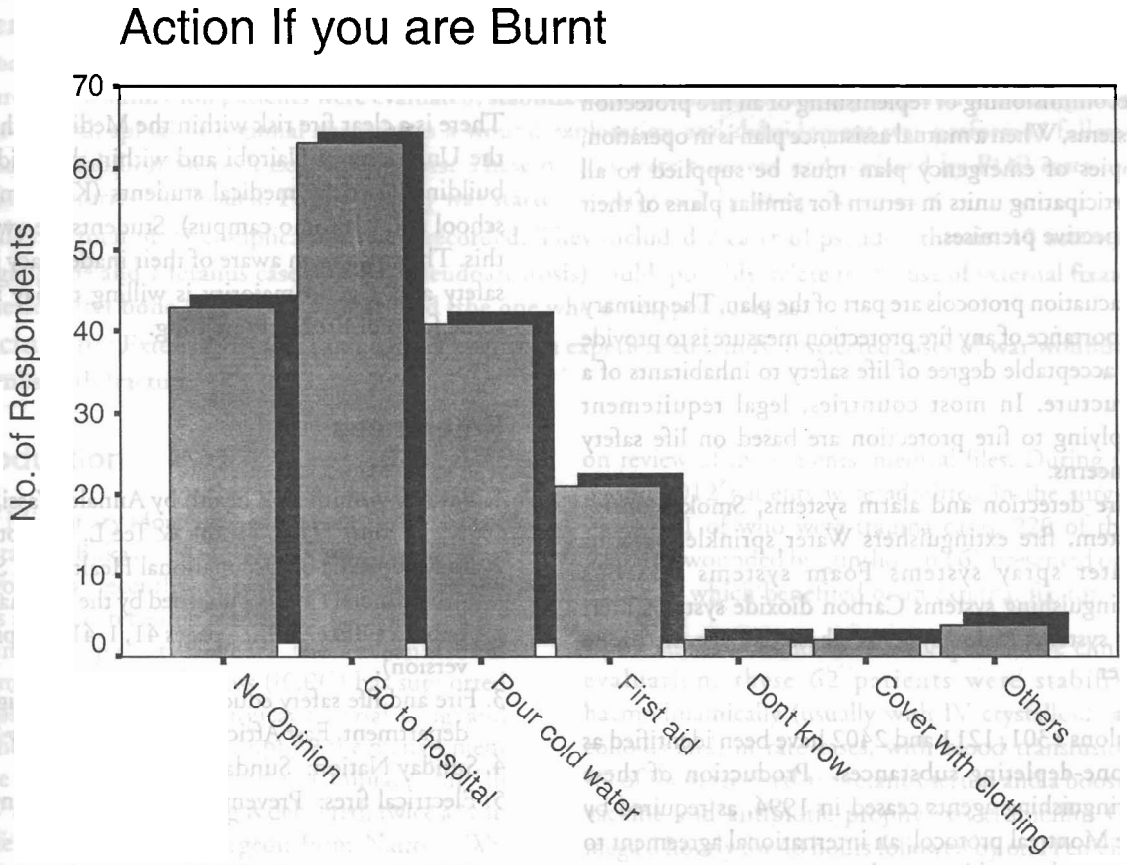
Figure 4.



Discussion

The different types of fire arise from bomb blasts, electricity and electrical gadgets, explosives, gas, fuel such as petrol and others such as cigarettes, and candles.
As previously mentioned, fire can and does cause immense tolls on life and property. Arguments such as "---this is covered by insurance" are myopic

Managing the emergency

To avoid confusion at the time of an actual emergency, it is essential that everyone in the organization knows the precise part that he (she) and others are expected to play during the emergency. A well-thought out emergency plan must be prepared and promulgated for this purpose, and all concerned personnel must be made fully familiar with it. The plan must clearly and unambiguously lay down the responsibilities of all concerned and also specify a chain of command. As a minimum, the emergency plan should include the following: -

Recommisioning or replenishing of all fire protection systems, When a mutual assistance plan is in operation, copies of emergency plan must be supplied to all participating units in return for similar plans of their respective premises.

Evacuation protocols are part of the plan. The primary importance of any fire protection measure is to provide an acceptable degree of life safety to inhabitants of a structure. In most countries, legal requirement applying to fire protection are based on life safety concerns.
Fire detection and alarm systems, Smoke control system, fire extinguishers Water sprinkler systems Water spray systems Foam systems Gaseous extinguishing systems Carbon dioxide systems Inert gas systems Halon systems (these damage the ozone layer

Halons 1301, 1211 and 2402 have been identified as ozone-depleting substances. Production of these extinguishing agents ceased in 1994, as required by the Montreal protocol, an international agreement to protect the earth's ozone layer.

Halocarbon systems+

Awareness and preparedness are important components of minimizing the damage, loss of life and property of any disaster

Fire drills are very important in preparing people on what actions to take in the eventuality of a fire outbreak.

A huge majority felt there was significant risk of fire within the university buildings more so the halls of residence.
Electricity was the most pointed out hazard especially the cooking and other electrical gadgets used within the halls of residence.

It was clear from the responses that the buildings had no adequate provision for fire fighting or escape in case of fire.

There were also no first aid kits available. The respondents had relatively good knowledge of the causes of fire with heavy subscription to the more obvious causes such as electricity, gas, and fuel oil. (As would be expected). There was apparently less awareness of other possible causes such as cigarettes, candles or even arson.

Conclusion

There is a clear fire risk within the Medical School of the University of Nairobi and within the residential buildings used by medical students (KNH medical school and Chiromo campus). Students are aware of this. They also seem aware of their inadequacy in fire safety and a good majority is willing to pay to get some form of fire safety training.

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