

A SURVEY ON ENVIRONMENTAL SANITATION AND HYGIENE INDICES OF KHOMEINI HOSPITAL OF TEHRAN IRAN

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ABSTRACT

In a thousands beds general hospital affiliated to the Tehran University, long-standing infestations of insects such as cockroches, flies, mosquitoes and rat were found as a result of vicious circles and substandard clearing which are due to not well trained and drilled personnel of contracting agency, out of work condition of two incinerators, quasti-administrative aspects of their program on hospital sanitation and in controlling of hospital infection.

Out of 37 samples collected for bacteriological examination, 21 cases of gram positive cocci and gram negative bacilli were isolated and detected. The intensity of illumination at two operation rooms were substandard level, while the sound level were exceed the recommended standard.

INTRODUCTION

Warning on environmental sanitation and hospital hygiene with great care of the account of the previous hospital episodes is a useful method for prevention and control of hospital infections (1-12).

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Although a clean hospital is safer than a dirty one, but in most Iranian hospital cleaning system is a patchwork.

In Iran like other countries the final responsibility for the cleanliness of a hospital rests with the secretary or administrator. He has the unenviable task of coordinating the work of domestics, kitchen staff, porters, maintenance staff and other groups. All play some part in hospital cleaning. Apparently, the domestics, directed by a domestic manager or superintendents are responsible for indoor and porters, under a forman for all outdoor cleanings.

In practice, tradition or convenience has decided otherwise in many situation, kitchen staff, under the direction of the catering manager or officer, normally clean main kitchens, food equipment and often their own cloak-rooms and lavatories. Maintenance staff, under the direction of the chief technician are responsible for repairment and disinfection.

Laundries, stores, cold rooms, mortuaries, incinerator rooms (if exist) and central sterile supply departments are often cleaned by the staff who work in those sections, under the direction of the head of the section.

To determine problems facing the residents, outpatient and visitors in the hospital and to provide a rapid reliable measure of environmental quality and hygiene in hospital a survey was done in Khomeini Hospital, affiliated to the Tehran University, from February 12, 1977 to September 21, 1978.

MATERIAL AND METHODS

This descriptive exploratory survey, aimed at gathering environmental indices of Khomeini hospital and information about public health attitudes and knowledge about cleaners work, and its degree of safety, as far as the health of people, is concerned.

The data collected by various means, available documents, exterior and interior sidewalk survey (observation), questionnaire (interview) and laboratory assessment.

As the Physiological and Psychological responses of reasonably well-manged visible light are wholly beneficial, so measurement of illumination of 68 different parts of hospital were carried out with a Lux meter.

To evaluate dispersion of bacterial infection through the hospital, 37 samples were collected from different areas and equipments. The sound intensity level was measured by sound level meter at 36 spots in three floors and near sound producing sources.

RESULTS AND DISCUSSION

Contract cleaners do all the hospital cleaning, but 20% cleaners aged less than 18 and 26% more than 50 years old with a daily income of less than 300 Rials and they are not well trained and well drilled.

In general 62% of the porters and cleaners under the study were illiterate and had no exact knowledge about the relationship between sickness and unhealthy environment.

Although most of the porters under the study stated that hand-washing has been shown to make contribution to hospital, but failed to do so regularly.

The contractor staff, clean ward floors first with wet cotton mops and on the other occasion with soapwater and a well chosen chemical. As it were not taken special precautions, it may assumed that cleaning equipment used for wet work is a source of microbes, for, mops don't treat after previous use, but soaked with cold water and squeezed by cleaners shoes. Under this conditions, application of the disinfectant may be inactivated by the mop with which it is applied. It was also found that regular cleaning with soap-water and the chemical disinfectant failed to achieve a permanent reduction in numbers of microbes on the floors. Else where there was no appreciable difference in the reduction of microbes on ward floors treated with either plain water or chemical disinfectant solution (17, 18, 19).

Although effectiveness of disinfection similarly depends on the people who use the heat disinfection or the chemical solutions or who clean the premises, but unfortunately the cleaning and hospital staff cry for more money to buy new equipment and latest costly disinfectant and as we saw in some hospital money rarely provides the final remedy for poor hygiene.

The environmental health activities are poor, although baths may be a source of cross-infection, by which it come into close contact with the patient (13-14-15), but they don't use any recommended chemical disinfectant such as a mixture of liquid anionic or non-ionic detergent with a hypochlorite solution.

Vegetables and raw foods don't clean by a two-step process, that means, the surface is not first cleaned with a detergent and second, disinfected by a chemical solution (16). The hospital members never have done any test condition for checking chemical disinfectant.

In this hospital, nurses incharge of sterilizers well trained and know the sufficient exposure heat and temperatures for sterilization and applies some test for checking sterile equipment according to American Hospital Association.

There are many fire extinguishers in Khomeini hospital in order

to promote and maintain fire safety. The extinguishers are not enough nor staff members and employee know how to handle them.

Refuse containers are not suitable and adequate in numbers, and in some case plastic bages punctured as a result of over loading. Refuse is temporarily stored on the premises near to infectious ward and it may cause some health hazards.

Although there are two incinerators for solid waste disposal but both are out of working condition and hospital refusal add to municipal solid wastes without proper full-time supervision, load on a open-body truck, by which wind blowing spread it along the street and finally refuse unloaded in a primitive way of sanitary land fill in the expected area outside the city.

Out of 37 samples for bacteriological examination collected from different parts of hospital 7 case gram negative bacilli (*Bacillus subtilis*), 3 cases and *Pseudomonas aeruginosa* 4 cases) and 14 case gram positive cocci (*Staphylococcus Aureus* coagulase positive) were isolated and detected.

The hospital lighting measurement of 68 different parts, showed that the intensity of illumination of some areas like operation room, restaurant, linen room, sewing room and kitchen were below the standard level, for example the orthopaedy and No. 6 operation rooms located in fourth and third floor, the intensity of illumination were 80 and 90 Foot-candle below the recommended standard (20).

The sound level ranged from 50 to 60 decibles and near sound producing sources it reached up to 97 decibles. while the maximum for average frequency bands between 600-1200 CPS should not exceed than 38 dbs (21).

The exterior and interior sidewalk observation, showed 35 places having litter, cockroaches (*Blattella Germanica*), rats (*Ratus-Ratus*), flies (*Musca Domestica*) and mosquitoes (*Culex Culex*) as a results of vicious circles and substandard cleaning in this hospital.

RECOMMENDATION

This survey emphasize the view that an administrative program on hospital sanitation, is vital to the safety of the patient and of the institution which accepts responsibility for his care and cure. And to provide for a fire safety Khomeini Hospital authorities should establish a managerial safety committee consisting of the chief executives.

This committee should present a general cross section of all departments including the medical staff and the maintenance and repair staffs.

The substandard and inadequate of hygiene indices of Khomeini Hospital, indicate the hospital authorities should establish and maintain a comprehensive plan for the complete and continuous control of the sanitary environment of the institution.

On other words it is necessary to establish a new department. The Department of Hospital Sanitation, with the head of the department, a Director of Hospital Sanitation, responsible directly to the executive officer of the institution. His function would be to secure a bacteriologically controlled environment through his knowledge of (a) administration (b) microbiology and (c) sanitary engineering in its broadest sense, and should prepare an administrative microbiology program for the entire hospital, including a method involving continuous inspections, conferences, inservice training programs, environmental culture-monitoring programs and evaluation studies of all the infection-control chemicals used in the hospital.

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