

Work environment in Mosul City hospitals

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Abstract

Objectives Investigating the vision of health-care workers about their work environment.

Methods: A cross-sectional study design was done in eight hospitals in Mosul city for a period extended for 10 months duration from 01 Jan to Nov 2018 including 673 health-care workers. They were chosen by simple random selection, using standardized questionnaire form consisting of three items psycho-social, physical condition of workplace, and practicing of personal protective equipment. Data were presented in suitable tables and figures. Percentage were calculated for the various group variables using Chi-Square for Goodness of Fit, Mean \pm SD, *p*-value at a level of significance equal to or less than 0.05 was considered.

Results The mean age \pm SD of study sample was 38.28 \pm 9.71 as 57.1%, 42.9% male and female, respectively. The study revealed overall percentage of agreement regarding psychological and social, physical condition of work environment was 29.1% and 41.6%, respectively. Compliance with practicing personal protection equipment was low (29.4%). The grand mean assessment of all over work place condition it was 1.8 below the cut-off point (cut-off point = 2).

Conclusions The study concluded that work environment (psychological, social, and physical) condition and compliance to practicing standard precaution were unacceptable to the health worker in Mosul City Hospital 2018.

Keywords Workplace, health institutions, health-care workers, health services, health occupations

Introduction

Work environment refers to the location where a specific task is completed.¹ Every employee wishes to work in the environment that he feels is suitable for him.^{2,3} Worldwide, the health-care workforce represents 12% of the working population.⁴ Health institutions are considered to be one of the most hazardous occupational settings.^{5,6} The most common hazardous hospital environments are psychosocial, physical, chemical, or biological nature etc.⁷ Physical risk factors include heat, cold, humidity, noise, poor lighting, harmful radiation, or an increase or decrease in the atmospheric pressure, which leads to confusion, stress and reduce psychological and health vitality of health-care workers.⁸

Biological risk factors include bacteria, fungi, viruses, parasites, etc. affect technical and non-technical health-care workers and because of its great danger, to the safety of health-care workers, the Scientific Research Foundation has provided guidelines to protect health worker,⁹ by using appropriate preventive measures and infection control procedures through adherence to standard and infection prevention precautions.¹⁰

Social and psychological factors are among the most important effect on the health and safety of individuals in work environment which make them affected by the risk of the profession.¹¹ The health worker during the profession of the services is affected by patients, doctors, colleagues, community, and himself.^{12,13} Social care is an important complement to medical remedial efforts. This is agreed by researches in order to get best results.¹⁴ International Work Organization recommended in 1950, to protect workers from the dangers of the profession, and raise the health level of them, which is reflected in the productive efficiency.¹

Aim

To identifying the vision of health-care worker about their work environment.

Materials and methods

All work is approved by the ethical and scientific committee of Nineveh Health Directorate / MOH / Iraq by licenses' Number (5468) in date (6 / 3 / 2018).

The study was carried out in (eight hospitals) Mosul City hospital in (Al-Salam, Ibn-Sena, Al-Jamhory, Al Batool, Al-Khansaa) Teaching Hospital, Ibn-Atheer Children Hospital, Al-Shifa Hospital, Oncology and Nuclear Medicine Hospital, and General Mosul Hospital. The study extended for 10 month duration from 1 Jan to Nov 2018, choosing 673 (4.0%) health-care workers of total 16,631 in Nehnawa Health Directorate 2018. They were selected by simple random selection regardless of specialty and grading (doctors, dentist, pharmacist, chemists, biologist, nurse, laboratory assistance, technician, and employee) using standardized data collection methods from three parts as follows.

Part I - psychological and social condition consist of 16 items including: choosing your job to make money and serve the community, carry out your daily job tasks without obstacles, your salary, without additional fees meet the needs of your life and achieve your future ambitions, the relationship between you and your colleagues and officials and attendants is appreciated and understood, effective understanding and communication prevails in your relationship with your colleagues and officials and attendants, feel the spirit of belonging to your work, be appreciated and honored for your creativity in work by your officials, upon creativity by work, you will be officially documented by your officials, when you neglect

the work you are formally punished directly by your officials, accept the evaluation of your responsibilities for your work, your direct administrator requests your evaluation periodically, your direct administrator accepts your evaluation, work with your direct administrator in a team style to perform the required tasks, the workload is appropriate with your daily life requirements, you have had the opportunity to develop your educational, professional and communicative level, and there are social activities with your co-workers and officials at times of work and outside.

Part II - physical conditions consist from five items that include: There is comfort and you are free to arrange your workplace, the lighting in your workplace is comfortable and adequate, your workplace is characterized by cleanliness and beauty, drinking water is available during working hours, and available air conditioning achieves 24°C.

Part III - compliance with practicing standard precautions consist from five items that include: Rub your hands with an alcohol cleanser to take care of hand hygiene before and after giving the patient health service, wash your hands only after touching blood, discharge, or visible dirt, using disposable personal protective equipment is, committed to implement the vocabulary of pollution prevention methods, it is committed to using the correct methods for disposal of waste and contaminated materials according to the central instructions).

Statistical analysis:

The information regarding each women was transferred into a code sheet. Data were tabulated, categorized, and analyzed using SPSS (version 23) software program. Simple percentage was calculated for various group variables. The answers were scaled according to 3-point Likert scale as (yes, uncertain, no). Mean \pm SD and Chi-Square for Goodness of Fit were calculated, *p*-value at a level of significance equal to or less than 0.05 was considered. The mean score was calculated as follows:

(No. of participant said correct answer \times 3 + No. of participant said uncertain answer \times 2 + No. of participant said incorrect answer \times 1) / 673 which is the total No. of sample size. The deviation of the score using the following formula: Cut-off point $(3+2+1)/3=2$.

Results

The present study carried out among 673 health worker working in hospital in Mosul city aged between 20 and 60 years. The mean age \pm SD was 38.28 \pm 9.71 and this is shown in Fig 1 as 57.1%, 42.9% of male and female, respectively.

Table 1 shows the vision of the health workers regarding psychosocial condition as there are social activities with the co-workers and officials at times of work and outside, direct administrator requests the evaluation periodically and carry out daily job tasks without obstacles in 69.8%, 52.6%, and 43.4%, respectively, while only 8.3% of participant agree that effective understanding and communication prevails in the relationship with colleagues and officials and attendants and accept the evaluation of the responsibilities for their work (*p*-value = 0.000).

Physical condition in work environment was seen in Table 2. Availability of drinking water during work was 51.6% among study sample, 45.0% revealed that work place was comfortable, adequate, and comfortable lighting was 31.8%. *p* value (0.000).

Table 3 revealed that nearly half of the participants (47.8%) use disposable personal protective equipment, one-fourth of participant use the correct methods for disposal of waste and contaminated materials according to the central instructions and implement the pollution prevention methods as 25.0%, 24.7%, respectively. In general, more than half of health workers did not implement standard precautions methods (59.5%), *p* value highly significant.

Condition of work place in general was seen in Table 4 as mean of score for psychological and social conditions,

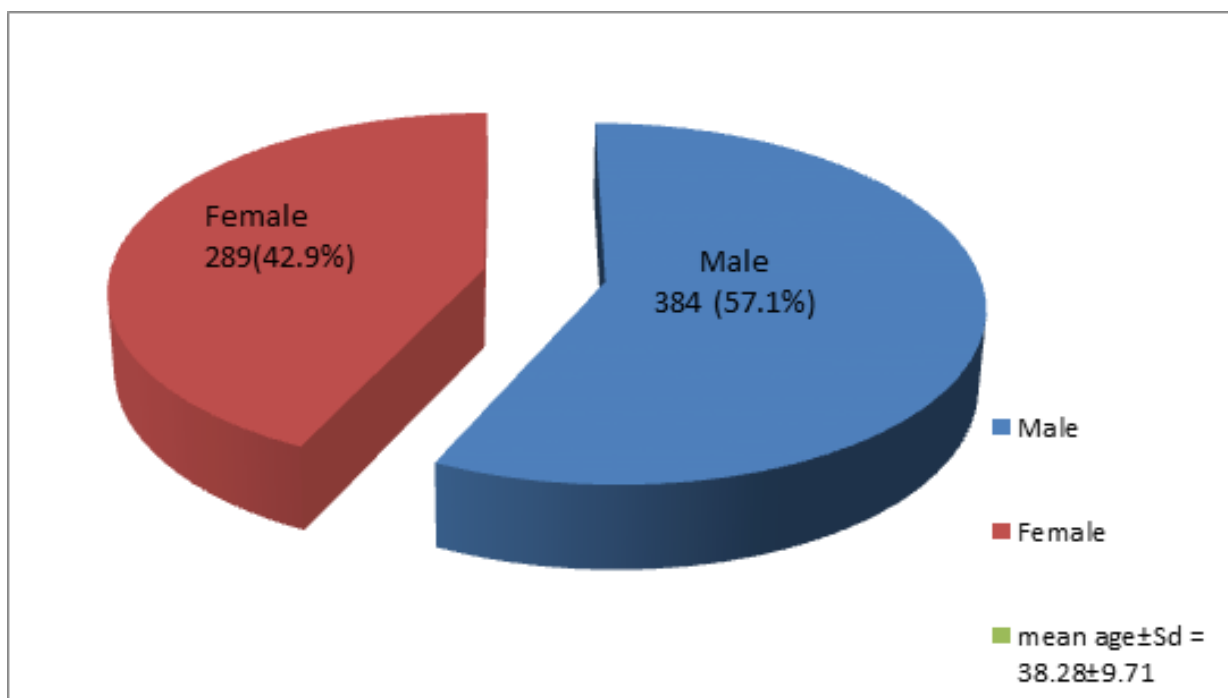


Fig 1. Distribution of study sample according to gender.

physical conditions, and compliance with practicing standard precautions were 1.7, 2.1, and 1.6 respectively. The grand mean assessment was 1.8

Discussion

A workplace is a location where someone works can range from a home office to a large office building or factory. Monitoring the work environment is very important and must meet the health conditions that are compatible with the World Health

Organization and the Occupational Health and Public Safety in order to maintain health and increase their productivity and accuracy.¹

The present study was carried out among 673 health workers with mean age \pm SD of 38.28 ± 9.7 , as 57.1%, 42.9% of male and female, respectively. A similar finding was seen among study done among 164 workers in Naibory City in 2015. The study sample consists of 55% male and 45% female and most of participants are aged below 40 years, in other word no gender bias.¹⁵

Table 1. **The vision of health workers in work environment regarding psychosocial conditions.**

Psychological and social conditions	Total no. = 673			p-value
	% of Yes	% of I don't know	% of No	
1. There are social activities with your co-workers and officials at times of work and outside.	69.8	8.8	21.4	0.000
2. Your direct administrator requests your evaluation periodically.	52.6	20.4	27.0	0.000
3. Carry out your daily job tasks without obstacles.	43.4	11.0	45.6	0.000
4. When you neglect the work, you are formally punished directly by your officials.	43.7	16.8	39.5	0.000
5. You have had the opportunity to develop your educational, professional and communicative level.	40.4	12.9	46.7	0.000
6. Your salary, without additional fees. Meet the needs of your life and achieve your future ambitions.	39.4	14.4	46.2	0.000
7. Choosing your job to make money and serve the community.	38.0	11.8	50.2	0.000
8. The workload (number of hours) is appropriate with your daily life requirements.	29.7	17.8	52.5	0.000
9. Upon creativity by work, you will be officially documented by your officials.	23.2	16.9	59.9	0.000
10. Your direct administrator accepts your evaluation.	17.8	36.0	46.2	0.000
11. Feel the spirit of belonging to your work.	15.0	16.2	68.8	0.000
12. Be appreciated and honored for your creativity in work by your officials.	13.7	21.4	64.9	0.000
13. Work with your direct administrator in a team style to perform the required tasks.	12.0	15.0	73.0	0.000
14. The relationship between you and your colleagues and officials and attendants is appreciated and understood.	10.0	12.1	77.9	0.000
15. Accept the evaluation of your responsibilities for your work.	8.3	18.3	73.4	0.000
16. Effective understanding and communication prevails in your relationship with your colleagues and officials and attendants.	8.3	13.4	78.3	0.000
Total	196 (29.1)	111 (16.5)	366 (54.4)	0.000

Table 2. **Vision of health workers regarding the physical conditions in their work environment.**

Physical conditions	Total no. = 673			p-value*
	% of Yes	% of I don't know	% of No	
1 Drinking water is available during working hours	51.6	16.0	32.4	0.000
2 There is comfort and you are free to arrange your workplace.	45.0	13.2	41.8	0.000
3 Your workplace is characterized by cleanliness and beauty	43.7	17.1	39.2	0.000
4 Available air conditioning achieves 24°C	36.1	21.2	42.7	0.000
5 The lighting in your workplace is comfortable and adequate	31.8	14.6	53.6	0.000
Total	280 (41.6)	111 (16.5)	282 (41.9)	0.000

Table 3. Compliance of health worker to practice standard precautions.

Compliance with practicing standard precautions	Total no. = 673			p-value
	% of Yes	% of some what	% of No	
1 Single-use personal protective equipment is used.	47.8	9.7	42.5	0.000
2 Wash your hands only after touching blood, discharge, or visible dirt.	28.8	6.5	64.6	0.000
3 It is committed to using the correct methods for disposal of waste and contaminated materials according to the central instructions.	25.0	15.6	59.4	0.000
4 Committed to implement the vocabulary of pollution prevention methods.	24.7	13.8	61.5	0.000
5 Rub your hands with an alcohol cleanser to take care of hand hygiene before and after giving the patient health service.	21.0	10.0	69.1	0.000
Total	198 (29.4)	75 (11.1)	400 (59.5)	0.000

Table 4. Percentage distribution of study sample regarding condition of work place in general.

*Work environment condition	Total no. = 673			Mean of score	Grand mean assessment
	Response				
	Yes	Unknown	No		
Psychological and social conditions	196 (29.1)	111 (16.5)	366 (54.4)	1.7	
Physical Conditions	280 (41.6)	111 (16.5)	282 (41.9)	2.1	1.8
Compliance with practicing standard precautions	198 (29.4)	75 (11.1)	400 (59.5)	1.6	

*Multiple response.

The work environment where a task is completed and the most common five characteristics of it are transparent and open communication, work-life balance, training and development-focus, recognition for hard work, and strong team spirit. These factors are what we call psychosocial factors.¹⁶

Psychosocial condition of work environment

The study revealed that overall percentage agreement regarding psychosocial condition of work environment in Mosul hospital 2018, was as low as 29.1%. This low level was as a result of damaging infrastructure of all city including hospital after military operations to expel Daesh and liberate Mosul.

The study sample revealed that 45.6% of them carry out daily job tasks with obstacles and 52.5% of them reported that workload was inappropriate with daily life requirements.

This finding is agreed by study done in Nakuru, 2015, as 47.2% of study sample cited their work produce strain which makes it difficult to fulfill extracurricular activities and 62.2% of them reported the long time job interfere with home responsibility. At the same time, 76.1% of study sample said the supervisor and line manager help them in resolving and minimize obstacle.¹⁷ While a study Naibory 2015 showed that rigidity of management and leadership style, work-life balance was unacceptable. The study concluded the importance of flexibility of leadership style to allow good communication between superior and other employee, involves staff in decision-making, avoid punishment, and provision of leave in order to give employees time off work to relax and attend to personal issues to make balance between work and personal life.¹⁵

The present study showed the feel the spirit of belonging to work was 15%, work with your direct administrator in a team style to perform the required tasks 12%, be appreciated and honored for your creativity in work by your officials 13.7%. When you neglect the work, you are formally punished directly by your officials is 43.7%. Unlike study done in Philippines 2018, among 270 participant to assess and explain the level of employer-employee relationship, employee-employee relationship, and its effect on the job satisfaction. The result indicates that overall there is a good relationship between employer-employees and employee-employee as reflected by its overall mean of 3.70, 3.72, respectively.¹⁸

This study depicts that the social activities with co-workers and officials at times of work and outside was 69.8%. Friendship is a relationship between two individuals that is entered into voluntarily, develops over time, and has shared social and emotional goals. These goals may include feelings of belonging, affection, and intimacy. Due to the great deal of time co-workers spend together, approximately 50 h each week, friendships start to emerge through their shared experiences, and their desire for a built-in support system.¹⁹

Physical condition of work environment

Fifty percent of study sample agreed that availability of drinking water during works' hours. This is a low percentage as drinking water is essential for life. Performing any physical activity whether occupational or non-occupational leads to dehydration. Dehydration can adversely affect worker productivity, safety, and morale. Occupational Safety and Health Administration recommend replacing fluids frequently when

exposed to heat stress, such as one cup (250 ml) every 20 min when working in warm environments.²⁰ A study in 2007, regarding effect of deficient water in work place, revealed that it not only affect productivity of worker but also has adverse influence of decision-making and cognitive behavior resulted in increased work-related accident.²¹

This study showed that less than one-third (31.9%) of participants reported adequate and proper lighting in their work place. Bad indoor environmental quality has a negative effect on human health because its affects worker performance. This finding is seen in a study done in Tanzania 2019, that reported that workers are less satisfied with their offices' lighting environment which resulted in occupationally induced health symptoms such as eyestrain, headache, teary eyes, back pain, shoulder pain, neck pain, and lack of concentration, all these will affect work accuracy.²²

A cross-sectional study design done among 1200 women in child bearing age in Mosul city, 2008 found that women worked in hot, noisy and dirty environmental condition as 47.0%, 40.3%, 38.7%, respectively. 12.8% of study sample were exposed to chemical substances such as mercury, chalk, and chemical agents and 3.5% of them were smokers. The main complaints were generalized tiredness, backache, headache, and gastrointestinal tract problems.²³

Compliance with practicing standard precautions

Overall percentage regarding non-compliance with practicing standard precautions among health workers was 59.5% Compliance with application standard precautions is very important to prevent transmission of infection to other patient, colleague, family, and friends and all contact in addition to protect themselves. Causes of non-compliance are many such as: Shortage of supply, carelessness, discomfort with use, might cause fear in patients, lack of follow-up and supervision etc.²⁴ Practicing single-use personal protective equipment is 47.8%, while simplest and most important precaution method which is to rub hands with an alcohol cleanser and to take care of hand hygiene before and after giving the patient health service was 21.0%. Hygienic disposal of waste and contaminated materials according to the central instructions is 25.0%. A similar finding regarding the level of knowledge and implementation of standard precaution was seen among 276 health worker in North Eastern Nigeria 2012, is unacceptable as it is below standard for safety to health workers and patients.²⁵

Another study in Ethiopia 2019 revealed that hand hygiene practice, PPE practice, and instrument processing and waste management were 58.0%, 87.2%, and 80.8%, respectively, but the study concluded that health worker non-compliance with standard precaution practices.²⁶

The grand mean assessment of all over work place condition was 1.8 below the cut-off point (cut-off point = 2). Among 200 health-care workers in Kampala 2015, 50.0% of respondents reported experiencing an occupational health hazard, 31.5% experienced non-biological hazards (psychosocial and physical) due to limited supply of necessary personal protective equipment, working overtime, job-related pressures, and working in multiple facilities.²⁷

Limitation

The study takes into account the effect of personal history and limit generalizability to small and rural health institutions.

Conclusions

The study concluded that work environment (psychological, social, and physical) condition was unacceptable to the health workers and compliance to practicing standard precautions was bad, grand mean assessment of work place was below cut-off point = 2 in Mosul City hospital 2018.

Recommendations

- 1 Requirement of collaboration between local, central authorities, and decision-makers in Ministry of Health to improve the quality of health workers' environment.
- 2 Further researches required to compare vision of health workers with their line manager including different socio-demographic characters of participant and study the association of patient satisfaction with health-care services provided to them

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Conflict of Interest

The authors of this study declares no conflict of interest.

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