

LABORATORY EMPLOYEES' PERCEPTION ABOUT THEIR WORKLOAD AND WORKING ENVIRONMENT IN GOVERNMENTAL PRIMARY HEALTH CARE MEDICAL LABORATORIES, GAZA STRIP (PALESTINE)

Reem Abu Shomar, Yehia Awad Abed

Al Quds University-School of Public Health, Gaza, Palestine

Correspondence to: Reem Abu Shomar (rabushomar@yhao.com)

DOI: 10.5455/ijmsph.2013.020720131

Received Date: 13.05.2013

Accepted Date: 02.07.2013

ABSTRACT

Background: Primary health care medical laboratories play a vital role in providing a high quality service to meet needs of the clients, community and health staff. To ensure a high quality of laboratory service it should be well managed in term of human and physical resources.

Aims & Objective: To determine employees' perception about their workload and working environment.

Material and Methods: A cross sectional study was carried out on the governmental primary health care medical laboratories in the Gaza Strip. Data had been collected using a self-administered employee questionnaire to get information about employees' perception, and an observational checklist to get information about staff distribution and their working environment.

Results: The research findings indicate that, PHC laboratories employees' knowledge about the definition of workload and its measurement tends to be low. According to the findings, 66% of employees believed that over-workload exists in PHC laboratories and they attribute their feeling of being overloaded to factors such as inadequacy of staff, increasing work intensity, increasing paperwork, frequent equipment failure and absence of clear job descriptions. Regarding staffing decisions, 45% of employees have negative perceptions regarding staffing decisions in the sense of being fair, transparent and objective. Also, about 45% of the employees have a negative perception about their working environment which may be attributed to improper working conditions such as unavailability of sufficient working area. In addition, 55% of employees were dissatisfied of the service provided by maintenance department since 50% of the laboratories have at least one disrupted instrument.

Conclusion: More involvement of the laboratory staff in decision making and improvement of both working environment and management of laboratory instruments were recommended. Moreover, the need for developing a reliable workload measurement system was recommended for better staffing decisions.

Key-Words: Workload; Perception; Medical Laboratories

Introduction

Providing good quality laboratory result is one of the high priorities at primary health care governmental medical laboratories and to ensure a high quality of laboratory services it should be well managed. Since the laboratory staff could be perceived as the most valuable asset in laboratories, they should be evaluated and distributed effectively.^[1]

Laboratories' managers need to be interested in their employees' perceptions because perceptions give warnings of potential problems and because they influence behaviour. Satisfied and committed employees have lower rates of turnover and absenteeism.^[2-6] Obtaining employees feedback could be used as a

management tool to improve work processes, the work environment and morale.^[7] Leadership, management, communication, working conditions, workload, team or individual work, and education opportunities play their part in an individual's job satisfaction.^[8] Effective communication is important to achieve organizational goals. Ignorance of its importance can derail the best management efforts.^[9]

Work conditions and design variables such as temperature, work space size, and interior layout and arrangement can directly influence employee satisfaction. In addition, they indirectly affect employee productivity by influencing communication and employee fatigue.^[5,10] Overcrowding, heavy workload, incorrectly installed and poorly-maintained equipment and

badly-designed premises are frequent contributing factors to laboratories occupational injuries and illnesses.^[11] New employees should be adequately trained to use unfamiliar technical procedures and instruments. They should also be introduced to office and clerical procedures.^[12] For some years there has been dissatisfaction with the existing method of assessing laboratory workload which relies on the raw total number of tests [In a conversation with the director of laboratories and blood banks (April 2009)].

The main aim of the study was to explore the perception of employees in the PHC laboratories about their workload and their working environment.

Materials and Methods

Study Design: A cross sectional study was carried out on the governmental primary health care medical laboratories in the Gaze Strip.

Study Population: All the eighty four medical laboratories employees working at MOH primary health care medical laboratories in the Gaza Strip who have technical responsibilities in the field of laboratory at the time of study comprise the study population.

Ethical Considerations: An official letter of approval obtained from Helsinki Committee “, a Palestinian ethical committee”. Also, an official letter of request was obtained from the PHC Director General at MOH to conduct the study at MOH primary health care laboratories. Furthermore, each participant in the study received an explanatory letter attached to his questionnaire about the purpose of the study, confidentiality of the information and the fact that the participation is optional.

Instruments: Data had been collected using the following instruments:

1. Self-administered structured employee questionnaire was developed to get information about employees' perception of the existing workload, staffing decisions, and working environment. The questionnaire was constructed using likert scaled questions and included open-ended and close-ended

questions. Based on logic and reliability analysis, related questions were grouped under one category. The categories are listed below:

- Essentiality of Workload Measurement
 - Existing Workload
 - Staffing decisions Communication with Management
 - Laboratory Environment
 - Maintenance Department Services
2. An observational checklist used to get information about staff and working environment as relying on self-evaluation of the staff is not enough.

Statistical Analysis: Data were presented as actual frequencies, percentage, mean and standard deviation. The results of this study describe PHC employee's perceptions about workload and working environment. Analysis was carries out using the statistical Package for Social Sciences, version 15 (SPSS). Further analysis using chi square test and examination of significance at level 0.05 was performed.

Results

This study was conducted to include the eighty four laboratory employee who had technical responsibilities at primary health care laboratories which are distributed over the five geographical districts of the Gaza Strip. The response rate was high and reached 96% of the study population which reflects employee's concern about the subject. Figure 1 and 2 shows the distribution of study population by governorate and by laboratory level respectively.

Socio Demographic Characteristics

In this study, as described in the following table (Table 1), females represent 71.6% of the study population. The majority (93.8%) were married, and 80.7% of the subjects were below 40 years old.

Employee's Qualification and Specialty

More than half (56.8%) of the employees hold a bachelor degree; 39.5% hold a diploma, and the remaining 3.7% have master degree (Figure 3).

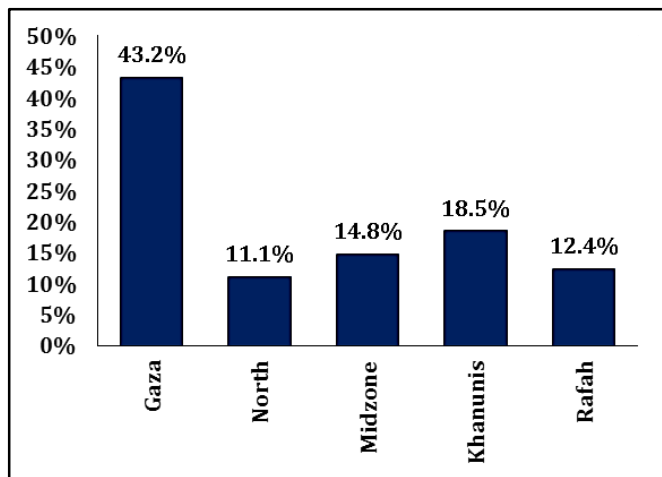


Figure-1: Distribution of the Study Population by Governorate

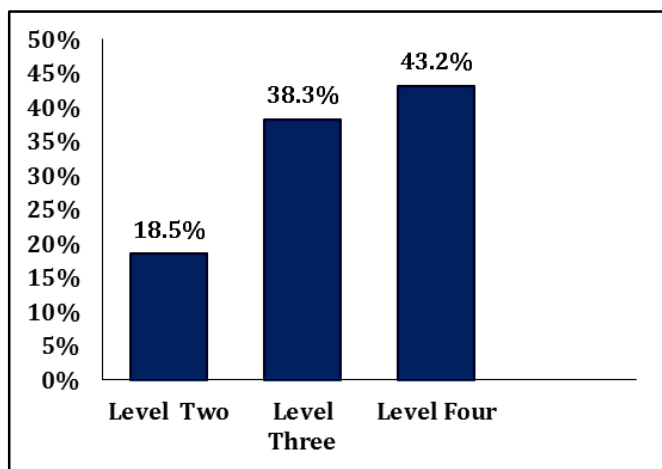


Figure-2: Distribution of the Study Population by Laboratory Level

Table-1: Distribution of Study Population by Socio Demographic Characteristics

Characteristic		No.	%
Gender	Female	58	71.6
	Male	23	28.4
Marital Status	Married	76	93.8
	Single	5	6.2
Age (in years)	Below 30 years	38	46.9
	30-40 years	27	33.3
	Above 40 years	16	19.8

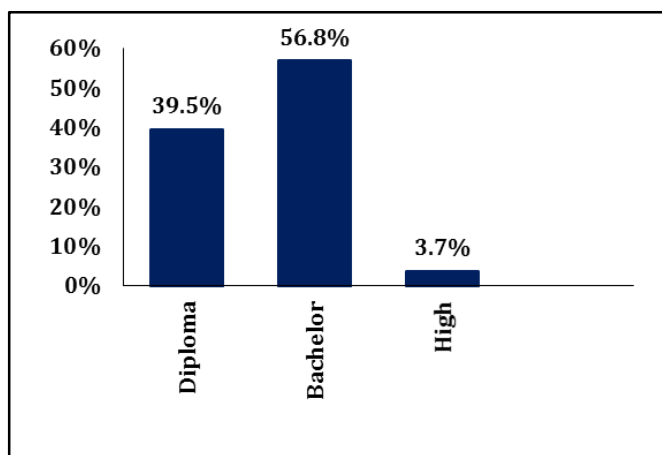


Figure-3: Distribution of the Study Population by Qualification

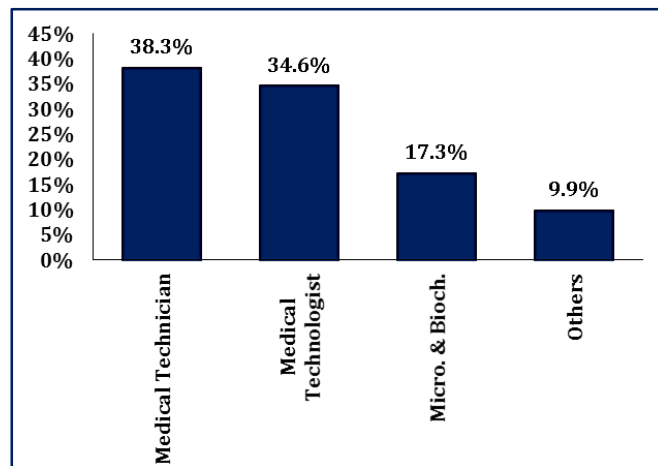


Figure-4: Distribution of the Study Population by Specialty

Concerning their specialty, 38.3% were medical technicians, (34.6%) were medical technologists, (17.3%) were microbiologists or biochemists, and (9.9%) were of other specifications such as chemists and biologists.

Employee's Experience and Received training

As summarized in Table 2, the general work experience at the field of laboratories for more than half of the employees (56.8 %) was from 5 to 15 years, while only 14.8% of the employees have more than 15 years' experience. Regarding job title, about 26% of laboratory employees were holding managerial job titles, such as head of branch, head of sector, and supervisor. However, there was a statistically significant difference (p-value = 0.001) between males and females regarding this issue (Table 3), since only 15.5% of females were holding managerial job titles compared to 52.2% of males who were holding those titles at the time of the study. In other words, females tend to hold managerial job titles less than males by approximately six times. On the other hand, the difference between males and females concerning the years of experience in the field of laboratories didn't reach a statistically significant difference.

During their college or university studies, only 32.1% of the employees had received educational courses related to laboratory management. However, 75% of them participated in workshops during work and only 37.7% of them participated in workshops about laboratory management. Only 32.1% of employees receive training courses about laboratory safety.

Table-2: Employees' Experience

Characteristic	No.	%	
General Experience in the Field of Laboratories	< 5 Years	23	28.4
	5-15 Years	46	56.8
	> 15 Years	12	14.8
Job Titles	Managerial	21	25.9
	Non-Managerial	60	74.0

Table-3: Distribution of Employment Characteristics by Gender

Characteristic	Male		Female	
	n	%	n	%
Managerial Job Title				
Hold a managerial job title	12	52.2	9	15.5
Don't hold a managerial job title	11	47.8	49	84.5
Odds ratio = 5.94; C.I= (2.01 - 17.56); $\chi^2 = 11.52$; p-value = 0.001				
Years of experience in field of laboratories				
Below 5 Years	3	13	20	34.5
From 5 to 15 years	14	60.9	32	55.2
Above 15 years	6	26.1	6	10.3
$\chi^2 = 5.515$; p-value = 0.063				

Table-4: Factors Attributed to Employees' Over-Workload

Factor (n=45)	No.	%
Inadequacy of Staff	36	80%
Increasing Intensity of Work	36	80%
Increasing Paperwork	32	71.1%
Frequent Equipments Failure	31	68.9%
Absence of Clear Job Description	31	68.9%
Shortage in Reagent Supply	29	64.4%
Additional Job Duties	28	62.2%
Improper Working Environment	24	53.3%
Implementing Quality Assurance Program	19	42.2%
Training of New Employees or Trainees	18	40.0%
Work Neglected by my Colleagues	12	26.7%
Lack of Skills	1	2.2%

Knowledge about Workload Measurement

Based on WHO definition of workload measurement^[14], only 11.3% of participants were knowledgeable about the definition of workload measurement. About 72% of participants think that, Workload is measured via obtaining the number of tests only. Only 11.3 % answered that, workload could be measured as the number of tests multiplied by time required to complete the work.

Only 10% of laboratory employees who held managerial job titles were knowledgeable of workload measurement compared to 11.8% of employees who didn't hold managerial job titles. In addition, 70% of employees who held managerial job titles believed that workload is measured by the summation of the crude number of tests performed or number of cases received compared to 72.5% of employees who didn't hold managerial job titles. However, these differences

were not statistically significant (p-value 0.900).

Further analysis revealed that there were a slight differences between employees who received management educational courses during their college or university studies and those who didn't regarding knowledge of workload measurement. Only 4.3% of employees who received the courses were knowledgeable of workload measurement compared to 14.6% of employees who didn't receive such courses. During their college or university. However, these differences between those who receive educational courses during their college or university studies and those who didn't were not statistically significant (p-value 0.143).

Employees' Perception about Workload

The mean of employees' perceptions with respect to essentiality of workload measurement, existing workload, staffing decision, and communication with management are presented in Table 5. Concerning employees' perception about the managerial essentiality of workload, the mean of subjects' perception was 4.31, which indicate that the majority (about 86%) were aware of the managerial importance of workload measurement.

The mean of employees' perception about their existing workload was 3.29, suggesting that about 66% of employees feel that they or their colleagues were overloaded. As employees were asked about factors attributed to their over-workload, their answers indicate that the major attributing factors were: inadequacy of staff, increasing work intensity, the increase in paperwork, frequent equipment failure, and the absence of a clear job description. The following table (4) presents the percentage of employees who believe that the mentioned factor attributed to his/her feeling of being overloaded. Regarding staffing level and staffing decisions, the mean of subjects' perception was 2.76, suggesting that about 55% of employees feel that staffing decisions and staffing level were fair, transparent or objective, while the other 45% don't.

The mean of subjects' perceptions regarding communication with management was 2.59,

indicating that about 52% of employees feel that they communicate well with their manager regarding staffing issues in contrast to the other 48% who don't feel that they communicate well with their manager regarding this issue.

Employees' Perception about their Working Environment

The perceptions of the employees with respect to their working environment, and instruments were summarized in table 6. The mean of subjects' perception regarding their laboratory environment was 2.76, suggesting that, about 55% of employees hold positive perception about their environment in respect of being safe, healthy, comfortable, clean, and having adequate space in contrast to the other 45% who do not. The mean of subjects' perception regarding the service of maintenance department was 2.24, suggesting that about 45% of employees feel that maintenance department works properly, while 55% don't.

Laboratory Working Environment

As observed by the researcher while filling the observational checklist, laboratories vary in design and structure since they were constructed according to different specifications. The major observations were related to laboratory temperature, space, safety, and instruments. One challenge that became apparent during the assessment of space was the absence of an international agreement on the provision of work space in laboratories which had been stated in the WHO publication on safety in healthcare laboratories.^[11] However, the researcher relied on her observation to give a rough estimation about the availability of a minimum separated area for bench working, recording and for each instrument. Observation revealed that, only 37.5% of laboratories had sufficient working area, 59.4% had sufficient area for instruments and out of the majority (93.8%) had sufficient recording area. However, those who don't have sufficient working area use recoding area interchangeably. Also observed that, 75% of laboratories don't have air condition or have a disrupted one.

Regarding safety, it had been observed that there was no biosafety manual available at any of the

laboratories under study and that 90.6% of laboratories are provided with safety boxes which used to collect sharps to be incinerated. Only 18.8% of laboratories separate their hazardous wastes from the domestic one.

Table-5: Means of Employees Perceptions

Category	Mean	Sum	SD
Essentiality of Workload Measurement	4.31	349.00	0.62
<ul style="list-style-type: none"> • Workload measurement is essential for laboratory management. • Workload measurement is essential for making decisions about staffing level and distribution. • There is a need to have workload measurement standard. 			
Existing Workload	3.29	266.67	1.00
<ul style="list-style-type: none"> • Do you believe that you are over work loaded • Do you believe that other staff in your laboratory are over work loaded • Do you believe that other staff in other PHC laboratories are over work loaded 			
Staffing Decisions and Staffing Level	2.76	223.67	0.93
<ul style="list-style-type: none"> • Staffing decisions about staffing level and distribution are made objectively in my laboratory • Staffing level and distribution in our laboratories is fair. • Staffing level and distribution decisions are transparent. 			
Communication with Management	2.59	210.00	1.07
<ul style="list-style-type: none"> • Before staffing decision, my manager informs us about his/her plans. • When my manager makes a decision about staffing level or distribution, he/she gives explanations about the used selection method. • I'm able to discuss staffing related issues with my manager 			

Table-6: Means of Employees Perceptions

Category	Mean	Sum	SD
Laboratory Environment	2.76	223	0.77
<ul style="list-style-type: none"> • My workplace is safe. • My workplace is healthy. • My workplace is comfortable. • My workplace is clean. • My laboratory has sufficient area. 			
Maintenance Department Services	2.24	100	0.52
<ul style="list-style-type: none"> • Equipments and instruments are regularly maintained by maintenance department. • There is a rapid response from the maintenance department upon their notification 			

Regarding laboratory instruments, half of laboratories have at least one disrupted instrument and the majority of laboratories 84% didn't have the operation manuals for all the instruments used. Also, 84% of laboratories don't have preventive maintenance records.

Communication with Administration

All laboratories rely on phone calls to communicate with management, however only 15.6% of laboratories had a telephone set. Those who didn't have a telephone set try to use telephone outside their laboratories. The

researcher observe that 94% of laboratories communicate through official reports while 50% of the laboratories use direct communication through visiting the director of PHC laboratories in his office. In addition, all laboratories use manual recording system and none of them had a computer or a fax.

Discussion

Staff Distribution and Their Characteristics

Lab. employees hold deferent levels of qualifications. However, the researcher observed that employees with bachelor degree perform tasks similar to those holding diploma as well as employee who hold master degree. This indicates the absence of clear job description which was one of the managerial related items that was complained by 26% of employees while answering the open-ended question about things that they don't like. The researcher tends to agree with Barros, who pointed out the importance of assigning duties to be commensurate with employee's education, training, and experience. Barros, suggests that a highly educated and qualified staff member should not be assigned duties that someone less qualified can perform, so that over-qualified employees don't become bored, frustrated, and disgruntled.^[12]

Regarding gender, females represent higher percentage than males in this study as 71.6% of the study population were females indicating that females are more interested in this field than males. A consistent finding with our results was reported in USA where clinical laboratory professions are female-dominated and represents about 79%, indicating that even in USA, females tend to be more interested in this field than males.^[13]

Besides being the majority, females tend to hold less managerial job titles less males by approximately six times. This difference is considered statistically significant (p -value = 0.001). However, there were no statistically significant difference between males and females related to their years of experience (p =0.063). Seemingly, the dominating culture effect is responsible since it considers women to have less

managerial capabilities and where family is the first priority for women. These findings are similar to those from the study by Thabet about managerial positions in Gaza hospitals.^[16]

Knowledge of Workload Measurement

Concerning knowledge of workload measurement, only 11.3 % of the study employees gave the right answer according to WHO definition. Further analysis revealed that, the difference between employees who held a managerial job titles and those who don't regarding knowledge of workload measurement was not statistically significant (p -value=0.900). Moreover, the difference in knowledge of workload measurement between employees who received managerial courses during their graduation study and who didn't was not statistically significant (p -value 0.143). Also, for the difference in knowledge of employees regarding workload measurement between employees who participated in managerial workshops during work and who didn't was statistically insignificant (p -value=0.597) suggesting that, lack of knowledge about workload measurement among employees could be attributed to the fact that educational courses or material received by employees during graduation studies or during work doesn't include topics related to this issue.

Employees' Perception of Workload and Staffing Decisions

Employees' perception about the managerial essentiality of workload measurement was positive, about 86% of them were aware of managerial essentiality of workload measurement especially for staffing related decisions. Therefore, it is expected that implementation of a workload measurement system will be supported by the majority of employees.

In this study, 66% of employees felt that they or their colleagues were over-work loaded and relate this feeling to five major factors: inadequacy of staff, increasing work intensity, increasing paperwork, frequent equipment failure and absence of clear job description.

About half of employees (55%) had positive perceptions about staffing decisions and staffing

level in the sense of being fair, transparent or objective, while the other 45% didn't. This could be explained by the lack of a formal standard on which staffing decisions were based as "employees were roughly distributed based on the number of available staff, the number of tests performed by each laboratory and the type of laboratory whether it's a hospital or PHC laboratory" as stated by the Director of Laboratory and Blood Banks Directorate [In a conversation with the director of laboratories and blood banks (April 2009)]. This highlights the need to develop workload measurement system that can help in planning for human resources.

Concerning communication with management, about 52% of the employees thought that they communicate well with their manager regarding staffing issues while 48% didn't think so. This finding could be linked to the data collected through the observational checklist, where about half of laboratories depend on direct communication with their manager through visiting his office. Seemingly, employees who work at those laboratories may express their satisfaction about communication with management. In addition, the unavailability of telephone set, computer, and Fax machine could be the reason beyond the negative perception held by 48% of employees regarding communication with management. All those aforementioned causes may hinder communication with management therefore lowering their perception about communication. This finding was also supported by the comments of 26% of employees -while answering an open ended question-who dislike some managerial related issues such as poor communication with their managers.

Employees' Perception of their Working Environment

Findings regarding employees' perceptions with respect to their working environment, and instruments revealed that 45% of employees held a negative perception about their working environment. This could be explained by the improper working conditions observed by the researcher during conducting the study. An example of that is the unavailability of functioning air condition in 75% of laboratories.

Moreover, about two thirds of laboratories (62.5%) who didn't have sufficient working area at the time of the study use recoding area interchangeably. Employees' dissatisfaction with their environment was also expressed while answering the question about things that they don't like where 48% of employees complained from having inappropriate working environment such as insufficient working area, uncontrolled temperature, and laboratory design. Also, about 38% of them state that, if they were in charge, their first priority decision would be to improve working environment via providing laboratories with sufficient working area and restructuring of laboratories.

Also it was observed that, there was no bio-safety manual available at any of laboratories and that only 18.8% separate their hazardous wastes from the domestic one which raise the need for monitoring the medical waste separation and disposal.

The presence of at least one disrupted instrument in 50% of laboratories and the unavailability of the instruments operation manuals in 84.4% of laboratories, tend to be the reason behind the negative perception held by 55% of employees about the maintenance department. This perception was confirmed when 40% of employees considered some instrument related issues as frequent instrument failure and the remissness of maintenance department among things that they dislike while answering the open ended question. During her observational tour, the researcher was told by employees that they think that they didn't receive adequate training on the use of instruments, and the source of their knowledge was the experience of their colleagues. This issue also was addressed by Barros, who recommended that, every new employee should be adequately trained to use instruments.^[12]

Conclusion

PHC Medical laboratories employees at governmental sector expressed negative perceptions about their workload and their working environment. Sixty six percent of them believed that over-workload exists in their laboratories and 45% of them had negative

perception about their working environment. Improvement of both working environment and management of laboratory instruments are essential to ensure better laboratory services. In addition, more effective communication and involvement of staff in decision making could improve employees' satisfaction. Finally, the need for developing a reliable workload measurement system was recommended for better staffing decisions.

References

1. Valenstein PN, Souers R, Wilkinson DS; College of American Pathologists. Staffing benchmarks for clinical laboratories: A college of American pathologists Q-probes study of staffing at 151 institutions. *Arch Pathol Lab Med.* 2005;129(4):467-73.
2. Smith R. Early Warning Signs- Are Your Employees Losing Focus and Enthusiasm? *The American Chronicle.* 2007 [cited 2013 May 12]. Available form URL: <http://amchron.soundenterprises.net/articles/view/34239>
3. American Association of Critical-Care Nurses. AACN Standards for Establishing and Sustaining Healthy Work Environments: A Journey to Excellence. *Am J Crit Care.* 2005;14(3):187-97.
4. Schermerhorn J. *Management.* 6th ed. USA: John Wiley & Sons, Inc.; 1999.
5. Robbins S. *Organizational Behavior.* 8th ed. USA: Prentice-Hall International, Inc.; 1998.
6. Gvazdinkas L, Maffetone M. Employee satisfaction: and integral component of total quality. *Clin Lab Manage Rev.* 1995; 9:107-112.
7. Akers L. Workload measurement system. Court executive development program, phase 3 project. Missouri: St. Louis County Circuit Clerk; 2002.
8. Nursing and Midwifery Workforce Management: Conceptual Framework. India: WHO; 2003.
9. Hayes T. Leadership is communication. *Lab Manager Magazine.* 2011;6(3):24.
10. Holden RJ, Patel NR, Scanlon MC, Shalaby TM, Arnold JM, Karsh BT. Effects of mental demands during dispensing on perceived medication safety and employee well-being: A study of workload in pediatric hospital pharmacies. *Res Social Adm Pharm.* 2010;6(4):293-306.
11. WHO. Safety in Health-Care Laboratories. Geneva: WHO; 1997.
12. Barros A. Identifying the causes of low productivity. *Medical Laboratory Observer.* 1988 [cited 2013 May 12]; 20(4):37-40.
13. Bates T, Blash L, Chapman S, Dower C, O'Neil E. California's Health Care Workforce: Readiness for the ACA Era. USA: The Center for the Health Professions, UCSG; 1-2011 December.
14. Houang L, EL-Nageh M. *Principles of Management of Health Laboratories.* Alexandria: WHO; 1993.
15. Thabet S. Job satisfaction among managers working in Gaza hospitals [Master Thesis]. Palestine: Al-Quds University; 2004.

Cite this article as: Shomar RTA, Abed YA. Laboratory employees' perception about their workload and working environment in governmental primary health care medical laboratories, Gaza Strip (Palestine). *Int J Med Sci Public Health* 2013; 2:862-869.

Source of Support: None

Conflict of interest: None declared