INTRODUCTION

The rapidly growing body of scientific evidence as well as public opinion have effected revolutionary changes in the health care system and working standards of the doctors. In the developed countries the working and training conditions of doctors are frequently evaluated scientifically, but there is dearth of such work in developing countries like ours.

Residency involves learning in the context of providing clinical services to the patients. The relationship between working environment, workload and learning is highly complex and has been debated for long in the developed countries. It still continues to be debated with the aim to ensure safe and productive working and learning environment for residents.

Several variables that influence the learning during residency, have been identified by published research works. These include residents’ workload, working environment, support and supervision by faculty, appraisal and constructive feedback by mentors, financial incentives, and work related other problems such as mistreatment or harassment etc. Also the colleagues’ professional attitude and behaviour constitute an important source of insensible learning during residency. The role of surveys entailing residents’ perceptions of their residency experiences has been under continuous scrutiny and greater attention revolves around their utility as feedback for identifying and rectifying deficiencies in residency training.

The present cross sectional survey was undertaken to determine the current working conditions of the residents at PIMS and hence obtain actionable information to effect meaningful changes in the working conditions and well being of the trainees.

METHODOLOGY

This cross-sectional survey was undertaken at the Department of Medical Education, Pakistan Institute of Medical Sciences (PIMS), Islamabad, during September and October 2008.

PIMS is a tertiary care hospital and is one of the country’s leading medical institutions, various post-graduate residency programmes including FCPS, MS, MD, MCPS and M.Phil. in different clinical specialties.

ABSTRACT

Objective: To determine the residents’ perceptions of their current working conditions by measuring their level of satisfaction with the existing pattern of workload, working environment and residential/financial standards.

Study Design: Cross-sectional survey.

Place and Duration of Study: The Department of Medical Education, Pakistan Institute of Medical Sciences (PIMS), Islamabad, during September and October 2008.

Methodology: Residents of different specialties who had been undergoing residency training at PIMS for no less than one year were included. A questionnaire was employed which addressed three components of residency programme including workload, working environment and financial/residential aspect of training. Supplemental questions regarding impression of the overall working environment was asked. A five point response scale was used to rate responses to the questions in each of the three components of residency programme.

Results: Response rate was 73%. Among the 109 respondents, 74 (68%) were males while 35 (32%) were females. Seventy three (67%) were pursuing FCPS and 36 (27%) were pursuing other degree programmes including MS, MD, MCPS and M.Phil. The age range was 25 to 41 years with a mean of 31.60 ± 4 years. Working environment was the highest rated area with index score of 67%. Financial and residential aspect of training was the lowest rated area with a score of 37%. Workload’s index score was 46.78%. The overall working index score was 26.23%.

Conclusion: Residents perceived marked problems with their working conditions as indicated by their unfavourable ratings of the various components of the residency programme. There were problems with workload, duty hours, working environment, income and accommodation. Further research is needed to confirm and improve upon these results.

Key words: Residency. Postgraduate medical education. Duty hours. Workload of doctors. Working environment.
The study population was constituted by all the residents undergoing residency training at the institute for a period of over one year. The data of residents in different residency programmes was initially obtained from the hospital's official record. The target was to cover half of the residents from all specialties and residency programmes. They were randomly approached face-to-face, with the help of a team of junior doctors detailed for questionnaire distribution among residents of different specialties.

A self-administered questionnaire was employed for the survey. A good deal of effort and consideration went into designing the questionnaire in order to cover all the important aspects of residency training and to generate a representative data, that would serve as a valid outcome variable.

The questionnaire was reviewed after initial pre-testing on a group of 15 residents from different specialties and various residency programmes. The questions were rephrased in such a way that an agreement/satisfaction with the accepted standards got higher score while disagreement/dissatisfaction scored lower. Also new questions were added to the questionnaire in the light of the suggestions, frequently made by the subjects of the pre-test group. The questionnaire comprehensively addressed 3 components of residency programme namely; workload, working environment e.g. mistreatment etc. and financial and residential aspect. Supplemental questions regarding impression of the overall working and learning environment were asked. Any additional suggestions for further improvement of the existing situation were also invited.

A 5 point response scale was used to rate responses to the questions in each of the 3 components of residency programme; with 5 points for strongly agree, 4 for agree, 3 for neither agree nor disagree, 2 for disagree and 1 point for strongly disagree. No response was considered as zero point. Results for each of the measures of all the included residents were added up, and an average was calculated and scaled to a score out of 100 to form the ‘Index Score’ of the given component. In this way the residents’ level of agreement or disagreement with the questioned statement was measured from ‘strongly disagree’, (0%) to ‘strongly agree’, (100%). Response scale for the overall impression of working and training environment was also of similar five points. i.e. from 0% to 100%.

The data were analysed through SPSS for Windows version 10. The nominal variables were reported as frequency and percentages. The numerical data were reported as mean ± S.D. The average of the responses to the questions in each of the 3 components of residency programme, was taken as the Index Score (IS) for the respective component. The average of the responses to the overall impression of working environment was taken as the Overall Working Index Score (OWIS).

RESULTS

In the target population of 150 residents contacted, 109 returned the questionnaires duly answered. The response rate was thus 73%. Among the 109 respondents, 74 (68%) were males while 35 (32%) were females. Majority of respondents (67%) were pursuing FCPS while 36 (27%) were undergoing other degree programmes including MS, MD, MCPS and M.Phil. The age range of the respondents was 25 to 41 years with a mean of 31.60 ± 4 years.

The workload of the residents was assessed with the help of questions covering 6 important aspects namely;

### Table I: Residents’ perceptions of the workload (n=109).

<table>
<thead>
<tr>
<th>Questions and responses</th>
<th>No. (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>My weekly duty hours are less than 80 hours</strong></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>33 (30.27%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>17 (15.59%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>28 (25.68%)</td>
</tr>
<tr>
<td>Agree</td>
<td>23 (21.10%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>3 (2.75%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>5 (4.58%)</td>
</tr>
<tr>
<td><strong>I usually avail enough hours of un-interrupted sleep when on call</strong></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>63 (57.79%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>19 (17.43%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>9 (8.25%)</td>
</tr>
<tr>
<td>Agree</td>
<td>8 (7.33%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>4 (3.66%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>6 (5.50%)</td>
</tr>
<tr>
<td><strong>Significant proportion of my on-call time is not spent on non-clinical/managerial work</strong></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>34 (30.27%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>23 (21.10%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>27 (24.77%)</td>
</tr>
<tr>
<td>Agree</td>
<td>11 (10.09%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>9 (8.25%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>5 (4.58%)</td>
</tr>
<tr>
<td><strong>I prefer 24 hours On-call system over 12 hours shifts</strong></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>13 (11.92%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>11 (10.09%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>7 (6.42%)</td>
</tr>
<tr>
<td>Agree</td>
<td>18 (16.51%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>57 (52.29%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>3 (2.75%)</td>
</tr>
<tr>
<td><strong>My hospital work allows me sufficient work—life balance</strong></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>51 (46.78%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>26 (23.85%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>16 (14.67%)</td>
</tr>
<tr>
<td>Agree</td>
<td>13 (11.92%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>2 (1.83%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>1 (0.91%)</td>
</tr>
</tbody>
</table>

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weekly duty hours, necessary sleep when on-call, managerial work, work-life balance, magnitude of direct patient care duties and preference for 24 hours on-call over 12-hours shift.

Majority of the residents worked for over 80 hours per week. Most of them reported inability to avail sleep when on-call. Majority reported involvement in managerial work as well as excessive direct patient care duties. Work-life balance was also unfavourably rated. Majority preferred 24 hours on-call system over 12-hours shifts (Table I).

Working environment was assessed with the help of responses to 5 important attributes i.e. perceived mistreatment, discrimination, harassment, dignified treatment and any special un-ethical behaviour (e.g. sexual harassment). Majority of the residents reported absence of various negative elements in their working environment (Table II).

The attributes towards the financial and residential aspect of training included; regular salary/stipend, reasonable amount of salary, need for any part-time job, status of residential facility and overall satisfaction with income and residence.

Majority of the residents reported receiving salary/stipend on regular basis, but unfavourably rated all other related attributes (Table III).

Working environment was the highest rated area with IS of 67%. Financial and residential aspect of training was the lowest rated area with a score of 37%. Workload's IS was 46.78%. The overall working index score was 26.23%.

Table III: Residents’ perceptions regarding financial and residential issues. (n=109).

<table>
<thead>
<tr>
<th>Questions and responses</th>
<th>No. (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I receive stipend/ salary on regular basis</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>17 (15.59%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>23 (21.10%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>10 (9.17%)</td>
</tr>
<tr>
<td>Agree</td>
<td>49 (44.95%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>3 (2.75%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>7 (6.42%)</td>
</tr>
<tr>
<td>My stipend is sufficient for my family needs</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>91 (83.48%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>11 (10.09%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>6 (5.50%)</td>
</tr>
<tr>
<td>Agree</td>
<td>1 (0.91%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>0</td>
</tr>
<tr>
<td>Not answered</td>
<td>0</td>
</tr>
<tr>
<td>I do not need a part time job to fulfill my needs</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>54 (49.54%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>15 (13.76%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>13 (11.92%)</td>
</tr>
<tr>
<td>Agree</td>
<td>14 (12.84%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>13 (11.92%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>0</td>
</tr>
<tr>
<td>I have a decent residential facility for living</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>73 (66.97%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>19 (17.43%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>4 (3.66%)</td>
</tr>
<tr>
<td>Agree</td>
<td>7 (6.42%)</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>6 (5.50%)</td>
</tr>
<tr>
<td>Not answered</td>
<td>0</td>
</tr>
<tr>
<td>Overall I am satisfied with my income and residence</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>83 (76.14%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>18 (16.51%)</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>8 (7.33%)</td>
</tr>
<tr>
<td>Agree</td>
<td>0</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>0</td>
</tr>
<tr>
<td>Not answered</td>
<td>0</td>
</tr>
</tbody>
</table>

DISCUSSION

Majority of the residents reported working for more than 80 hours per week and also could not avail enough hours of un-interrupted sleep while on call. A recently conducted Karachi based study also showed that for most of the residents, working hours were very long in a number of departments,9 exceeding the internationally agreed limit of 80 hours per week. The study also found
significant levels of mild as well as morbid stress among the trainees, the chance of stress being more among those with longer hours of work. In the developed countries there is growing recognition of the fact that long working hours of postgraduate trainees lead to fatigue and sleep deprivation which ultimately results in overall poor performance, owing to compromised judgment, impaired manual dexterity and errors in medication orders.

Currently there exist no prescribed standards or official limits of duty hours for trainee doctors in Pakistan. This is in sharp contrast to the developed countries where duty hour standards have evolved after a long experience and careful consideration over the last 3 decades. In June 2002, the Accreditation Council for Graduate Medical Education (ACGME) approved new duty-hour standards for residency programmes in all specialties. These limit the duty hours in all specialties to 80 hours a week and require a rest period between duty periods. Continuous duty is limited to 24 hours, with an added period of up to 6 hours for continuity and transfer of care and didactic activities. In Canada the famous PAIRO–OCOTH agreement (Professional Association of Interns and Residents of Ontario-Ontario Council of Teaching Hospitals agreement) was okayed in 2000. This agreement limits residents to a maximum of 7 in-house, on-call periods of up to 24 hours (plus a handover period) in 28 days. Call periods are non-consecutive, should not include more than 2 weekend days in the 28-day cycle and are followed by “relief of service until the next working day.”

Although we could not determine an exact estimate of the sleep time that a resident avails during the 24 hours on call, most of them reported inability to avail enough hours of un-interrupted sleep while on call. Further studies into the residents’ sleep patterns and requirements are needed.

Residents reported investment of significant time on non-clinical and managerial duties such as arranging bed, blood, theatre items etc. for patients. Since residency training relies on learning in the context of providing clinical service to the patients, there is dire need to redesign the working pattern in such a way that all the residents have a reasonable opportunity to participate in the formal educational events.

Most of the residents preferred the 24 hour on call system. Tait et al. also noted that the shift system was less safe, harmful to training, and worse in terms of work-life balance. By and large the partial shifts are not conducive to high quality training. They are associated with lack of continuity with patients and staff. However, there is no all-encompassing standard solution which can work across all medical specialties and settings, therefore, a flexible approach to working patterns should be adopted.

Residents also reported overwork regarding their experience of direct patient care duties. There were wide differences in the number of new patients they attend when on-call, new admissions they handle and emergency surgical procedures they perform. Haney et al. found that residents feel more challenged with increase in the total number of patients they care for (case volume), with more patients whose diagnoses are new to them (case variety) and who are more sick (acuity).

Working environment was the highest rated area. There was no report of sexual harassment in this study. This may reflect a healthy socio-cultural milieu of mutual respect, however, further detailed studies are warranted to conclude whether sexual harassment really does not exist in our institutions or it exists, but is denied or not disclosed. Not surprisingly experiences of sexual harassment and mistreatment are not infrequent in the West and studies have attempted to explore sexual harassment in academic settings, because it is responsible for an environment that creates negative impact on the residents’ individual performance and reduces their productivity.

Financial and residential aspect constituted the lowest rated area. This study’s findings provide a compelling rationale for redesigning the pay structure and financial incentives for the trainee doctors. Low salaries, poor service structure etc. have also been identified by other published local studies as one of major sources of dissatisfaction among Pakistani doctors.

This survey has some limitations. Only the most important aspects of 3 attributes of residency training were probed. Relationship between residents’ working conditions and learning is highly complex and influenced by many factors. Further research is needed to evaluate the various components of residents’ workload in particular. With better understanding these components with meaningful interventions can be instituted to optimize the learning environment. In fact no questionnaire can be an all encompassing one and each one has its own limitations and deficiencies. Since research is a dynamic process we may need to redesign the questionnaire in future in light of the ongoing experience. Moreover, other researchers may customize it to meet their survey objectives in a particular context.

**CONCLUSION**

Residents perceive significant problems with the working conditions of their training as indicated by their unfavourable ratings of the various components of the residency programme. There are problems with workload, duty hours, working environment, income and accommodation. Further research is needed to confirm and improve upon these results.
REFERENCES


