The Effect of Incentive Management System on Turnover Rate, Job Satisfaction and Motivation of Medical Laboratory Technologists

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Abstract

Objectives: We investigated factors affecting turnover and assessed satisfaction with an existing Incentive Management System and to which extent it motivates employees. We also provide recommendations to improve the Incentive Management System.

Methods: A cross-sectional questionnaire study utilizing a convenience sample from a population of 250 Medical Laboratory Technologists.

Findings: 100 medical laboratory technologists responded to the survey. We found discrepancy in wage allocation to be the most prominent factor affecting turnover intention with 51% strongly agreeing, followed by low incremental system with 48%. Other factors were: limited opportunities for promotion, insufficient allowances and benefits, and lack of continuing education and professional growth opportunities with 49%. 26% of respondents found lack of autonomy/independence to be a factor. Poor workgroup cohesion was least ranked (17%). 39% reported dissatisfaction with workload, 31% were dissatisfied with their provided allowance, with management support, and the working hours, and opportunities for promotion (44%). Opportunities for career growth and higher pay were highest ranked as incentives to remain, and additional vacation time and supportive colleagues to be the least relevant factors. There was a significant correlation between age and motivation levels (r = 0.223, p = 0.026).

Discussion and Conclusions: Burnout and turnover can be costly to healthcare organizations, due to the impact on productivity and healthcare quality. Human resource departments must ensure to not only attract skilled employees, but also influence their motivation and retention due to the impact on productivity and health care quality. Incentive management systems support practices to enhance skills, knowledge, abilities and retention rates for healthcare employees. Our study findings support the continued improvement of Incentive Management Systems within the healthcare organization to reduce turnover rates, maximize quality outcomes, and increase the levels of commitment and motivation of employees.

Keywords

incentives, management, retention, healthcare, employees, human resources, motivation, laboratory technologist

Introduction

Employee turnover in the healthcare sector affects quality and safety of services and can lead to unfavorable patient outcomes as well as reduce profitability.1,2 A survey in the United Kingdom found the cost of replacing employees to be significantly high.3 Understanding factors that may lead to turnover supports the development of strategies for retention.

Laboratory services are integral to all levels of healthcare organizations, and the role of a committed laboratory employee is critical. Medical laboratory technologists (MLTs) have
special technical skills, as they handle delicate instruments and medical equipment to perform complex laboratory procedures to provide vital diagnostic evaluation and quality care to patients.\textsuperscript{2,4}

A study on the factors influencing the quality of laboratory service in public and private healthcare facilities in Ethiopia found that lack of reliability or poor medical laboratory services compromises quality of care and may lead to misdiagnosis or added financial expenditure.\textsuperscript{2} Issues such as low motivation, inadequate equipment, poor communications, shortage of employees, and lack of internal quality control are cited as major barriers to quality laboratory services.\textsuperscript{5} Retention of highly skilled health care professionals such as MLTs requires effective management measures and continuous motivation.\textsuperscript{6}

Management has a significant impact on the attitude of employees and how they build relationships within the organization.\textsuperscript{5} It is one of the factors that determines whether employees will remain with the organization or seek opportunities elsewhere. Healthcare organizations must understand the needs of their employees and put in place strategies to achieve them. Organizations that offer strong benefits and incentives to employees reduce the likelihood of turnover by 26\% and increase retention by 14\%.\textsuperscript{3,7} It is in the interest of healthcare institutions to prevent excessive employee turnover, encourage retention, commitment, and loyalty to the organization, and improve job productivity and satisfaction. Organizations have a range of incentive programs they can implement to motivate their employees. Studies have shown that incentive programs, such as pay-for-performance (P4P) schemes, enhance motivation and retention. P4P is a value-based payment system that provides financial incentives based on the attainment of pre-set targets.\textsuperscript{8} P4P ties reimbursement to metric-driven outcomes, patient satisfaction, and proven best practices, aligning payment with quality and value of service. Studies have shown varying levels of effectiveness of this incentive method.\textsuperscript{5}

The annual incentive plan is another type. This pay-plan rewards employees for accomplishing specific results at fixed intervals. This strategy ties expected performance outcomes to pre-defined results identified at the onset of the performance cycle.\textsuperscript{9} Another strategy is the spot reward system, which provides special contributions as they occur of a particular task or project. The other incentive program is discretionary bonus plan. This incentive plan involves giving of bonuses without any pre-determined formula. Under this strategy, the management determines the size of the bonus after a performance cycle.\textsuperscript{5}

The Incentive Management System (IMS) is an administration strategy that has been identified as a model for increasing motivation and employee’s retention, and the focus of this current study.\textsuperscript{8} These incentive strategies have the potential to enhance employee skills and knowledge and fulfill their intrinsic and extrinsic needs. They also cultivate a favorable working environment for employees with measures such as reasonable payments, job security, work autonomy, flexible schedules, recognition of work, and support for career development.\textsuperscript{5,6}

There is a strong relationship between motivation, job satisfaction, and performance.\textsuperscript{5,6} Bohm et al (2012)\textsuperscript{10} explored the relevance of Maslow’s Needs Theory and Herzberg’s Two Factors Theory in motivating healthcare employees. According to Maslow, employees feel motivated when their psychological needs are met. Herzberg’s Two Factors Theory suggests hygiene factors such as job security, compensation, working conditions, quality of management, relationships in the workplace cause dissatisfaction if absent. Job–related factors such as recognition, achievement, responsibility, opportunities for growth, and advancement are motivators, and can increase satisfaction.\textsuperscript{11} Healthcare managers should seek to provide sufficient hygiene factors and increase the motivators for their healthcare employees. It is necessary to satisfy employees’ lower order needs and offer opportunities to fulfill higher order needs such as self-esteem and self-actualization needs.\textsuperscript{11}

Intrinsic aspects, such as autonomy, competence, and relatedness are vital. Autonomy ensures that employees have a sense of freedom and engage in personally meaningful behaviors without coercion. Competence is having confidence in one’s capability and actions and the potential to achieve expected outcomes. Relatedness means feeling reciprocally respected and developing connections where one feels cared for. Teamwork is a tool for enhancing motivation and retention, by encouraging an inclusive decision-making process, effective conflict management providing employees with independence, autonomy, and freedom, increasing their sense of organizational citizenship.\textsuperscript{5,6,12}

Employees who feel recognized tend to be more committed, continue to work hard and put forward effort to achieve the set objectives of the organization.\textsuperscript{13} Recognizing employees’ efforts and achievement through issuing certificates of recognition and appreciation or offering verbal praise in the presence of other employees on the team or in the department considerably motivates employees and reduces turnover intentions.\textsuperscript{14}

Pay is one of the extrinsic rewards linked with motivating employees and affects their likelihood of staying with the organization.\textsuperscript{15} Heightened dissatisfaction with salary or pay scale is associated with higher incidences of turnover\textsuperscript{16} and as competitiveness in business operations increases, employees are exposed to a broader pool of employers in their fields, which may lead to increased turnover.\textsuperscript{17} Monetary reward tends to be the most widely practiced method for motivation and stimulates employees to remain at work and increase productivity.\textsuperscript{18,19} Organizations must remunerate their employees in a timely manner to allow them to meet their personal financial goals, however some employees may value non-financial rewards such as recognition, feedback, and prospects for career progression as well.\textsuperscript{5,20}

Educational levels are used to measure competency and allocate promotions, and as such employees with lower levels of education combined with a lack of opportunities to access this tend to be less motivated, and the ability to work toward the attainment of a higher education level as supported by the organization is satisfying.\textsuperscript{12} Lack of opportunities for growth in an organization can be a factor for turnover.\textsuperscript{21} Organizations
providing career development opportunities such as promotion increase job satisfaction and thereby retention of top talent and skills.21

Flexible work hours influence motivation and retention by allowing employees to balance between personal life and work demands.9 Long working hours reduces productivity and overall job satisfaction and can increase turnover intentions.16,22

Flexibility also revolves around workload and should involve assigning of tasks that an employee is able to complete on time and requires the involvement of employees in decision making to find ways of helping them perform their tasks with ease.22 Organizations can increase flexibility by redesigning routines to allow employees to leave early or work fewer hours in certain cases.

External motivations potentially undermine intrinsic motivation by crowding-out effects on professional values.18,19 As such, an incentive scheme such as the IMS should endeavor to strike a balance between extrinsic and intrinsic aspects for motivation.

As part of the Kingdom of Saudi Arabia’s National Transformation Plan and the Vision 2030, healthcare employment policies, labor regulations, and educational or training programs or career development and capacity building are areas for development toward achieving this vision.6,15 The current healthcare business environment, calls for the use of incentives in retaining employees. This depends on the type of healthcare facility and whether it is in the public or private sector and is currently under review as part of the National Transformation Plan and the movement toward the privatization of healthcare.15,23

Aims
The aim of this study was assess the applications of the IMS and the turnover rate among MLTs at King Abdulaziz Medical City (KAMC) to highlight their needs, levels of motivation and job satisfaction. The findings will support the development of the incentive system and reduce turnover rates, maximize quality outcomes, and ensure commitment and motivation of employees.

Objectives. The study objectives were to:

- Investigate the factors affecting employee turnover
- Assess the satisfaction of employees with the IMS and to which extent this system motivates employees
- Develop recommendations to improve the IMS
- Explore the impact on employees to stay or leave the organization.

Materials and Methods
Study Setting
KAMC provides primary, secondary and tertiary service with a capacity of 1200 beds and approximately 3 million outpatient visits a year. It has passed the requirements for accreditation under the Joint Commission International standards (JCI) with excellent performance and established itself as a center of excellence as it has the largest Emergency Care Center in the Middle East, a state of the art Hepatobiliary Sciences and Liver Transplant Center, a state of the art Cardiac facility, Dental Care Services Department with various specialties, Long Term and Extended Care Services for patients requiring long-term nursing care, and the recently commissioned Oncology Unit. The DPLM is a large and modern medical laboratory accredited by the Commission on Laboratory Accreditation of the College of American Pathologists (CAP) and the American Association of Blood Banks (AABB). The Department has maintained its CAP accreditation and JCIA.

Population of Interest and Sample Size
We utilized a convenience sample of all MLTs working in the Department of Pathology and Laboratory Medicine (DPLM) at KAMC, Riyadh. The estimated sample population was 250 MLTs.

Study Design
The questions in the survey instrument were derived from an existing validated framework with permission 24. The types of questions used in the questionnaire were demographic, Likert scale, and checklist method. Section 1 included 9 demographic questions to help determine other factors that may influence the laboratory technician’s answers, opinions, attitudes, and interests. Section 2 was Likert scale questions that included Part A to indicate reasons that may lead to turnover, and Part B to rate the extent employees are satisfied with their organization. Section 3 used a checklist method to indicate which strategy that motivate employees to remain in their current job (see Appendix A).

Pilot Study (Validity and Reliability)
The researcher conducted an initial pilot study on N = 30 to test the study instrument prior to launching the formal study. The questionnaire was also distributed to a group of arbitrators in the same specialization and faculty employees to adjust the statements appropriateness and factors and test for reliability and validity.

The Pearson correlation coefficient was \( r = 0.867 \) which is highly significant at the level \( 0.01 > \alpha = 0.05 \). The reliability of the questionnaire was calculated using Cronbach’s alpha coefficient and was equal to \( 0.707 \) for the whole questionnaire and for the factors between \( 0.823 \) and \( 0.844 \) (see Table 1). Coefficients for all questions were between 0.685 and 0.722.
Data Collection and Analysis

The researcher used a Google Form Survey link to collect responses for the study. The data obtained from the questionnaire were coded and entered into the database of Statistical Package Social Science Software (SPSS) for Windows Version 23 software. Descriptive analyses for summary frequencies, means, and standard deviations for each variable were calculated. Bivariate Pearson correlation coefficients (r) were calculated to explore the relationship between employee satisfaction and reasons that may lead them to leave. One-way ANOVA and Independent T-Test were used to examine the relationship between the demographic and outcome variables. Regression analysis was conducted for the purposes of assessing across all factors.

Ethical Considerations

The research study was approved by the ethical review board at KAMC on 23-10-2019 (ref. no. SP19-475-R). The study was conducted in accordance with the Declaration of Helsinki for Good Clinical Practices and in alignment with the protocol and most current revision. Responses from the study sample were obtained fully voluntarily through the online survey portal. No data was used for other purposes other than for this research study. The researchers maintained full confidentiality and anonymity of data as no other entities were provided access to information.

Results

Demographic Characteristics

40% of the 250 MLTs that were invited completed the survey (n = 100). The mean age was 32.68 years, with the majority being female (62.0%). Most of the respondents were Saudi (85.0%), compared to Non-Saudi (15.0%). Over half of the sample were married (56.0%) followed by those who were single (43.0%). 79% of respondents had a bachelor’s degree and 21% had a master’s degree level education. The majority of respondents had 1-5 years of work experience (36.0%), followed by those with 6-10 years’ experience (26.0%) and those with over 10 years’ experience (28%). The most common working hour’s system was a regular shift (9 hrs.), without weekends (42.0%) and almost half of the sample was earning between $2933-$4000 monthly (47.0%) (See Table 2).

Reasons for Turnover

51% of respondents strongly agreed that discrepancy in wage allocation/low salary was the most prominent reason for turnover (M = 4.31; SD = 0.85). 48% strongly agreed that low increment systems (annual raises) were also a factor for them (M = 4.19; SD = 0.94) followed by limited opportunities for internal promotion (M = 4.22; SD = 0.99), insufficient allowances or benefits (M = 4.27; SD = 0.85), and lack of continuing education/professional growth opportunities (M = 4.12; SD = 0.85). 49% of respondents strongly agreed across all 3 factors. 26% strongly agreed/agreed that lack of autonomy/independence was also a key issue (M = 3.68; SD = 0.99). The lowest ranked factor was poor workgroup union/cohesion (M = 3.52; SD = 1) with only 17% in strong agreement (see Table 3).

Job Satisfaction

The most prominent factors that caused job dissatisfaction were level of workload (M = 2.00; SD = 1.04), provided

| Table 1. Cronbach’s Alpha of the Questionnaire Factors. |
|--------------------------------------------------------|
| Factor | Cronbach’s alpha (if item deleted) |
|--------|-----------------------------------|
| Reason for Turnover | .823 |
| Job Satisfaction | .844 |
| Total | .707 |

| Table 2. Socio-Demographic Characteristics (N = 100). |
|--------------------------------------------------------|
| Characteristics | n | % |
|-----------------|---|---|
| Age (Mean ± SD) | 32.68 | 6.095 |
| Gender | | |
| Female | 62 | 62.00% |
| Male | 38 | 38.00% |
| Nationality | | |
| Saudi | 85 | 85.00% |
| Non-Saudi | 15 | 15.00% |
| Marital Status | | |
| Single | 43 | 43.00% |
| Married | 56 | 56.00% |
| Divorced | 1 | 1.00% |
| Widowed | 0 | 0.00% |
| Level of Education | | |
| Diploma | 0 | 0.00% |
| Bachelor’s degree | 79 | 79.00% |
| Master’s degree | 21 | 21.00% |
| Years of Experience | | |
| Less than 1 year | 10 | 10.00% |
| 1 year-5 years | 36 | 36.00% |
| 6 years-10 years | 26 | 26.00% |
| More than 10 years | 28 | 28.00% |
| Occupation | | |
| Laboratory Technician | 6 | 6.00% |
| Laboratory Technologist II | 16 | 16.00% |
| Laboratory Technologist I | 62 | 62.00% |
| Supervisor | 16 | 16.00% |
| Working Hours’ System | | |
| Regular Shift (9 hrs) w/o weekend | 42 | 42.00% |
| Regular Shift (9 hrs) w weekend | 23 | 23.00% |
| Irregular Shift 9 hrs (Day, Evening, Night) | 20 | 20.00% |
| Irregular Shift 12 hrs (Day, Night) | 15 | 15.00% |
| Monthly Income | | |
| Below 7000 SAR | 4 | 4.00% |
| 7000 SAR–10,000 SAR | 17 | 17.00% |
| 7000 SAR–10,000 SAR | 47 | 47.00% |
| More than 15,000 SAR | 32 | 32.00% |
allowance with 31% (M = 2.07; SD = 0.94), lack of top management support with 31% (M = 2.31; SD = 1.12), hours of work with 31% (M = 2.24; SD = 1.08), and lack of opportunities for promotion with 44% (M = 1.85; SD = 0.947) followed by job insecurity (M = 3.43; SD = 1.075) where 5% were strongly dissatisfied and 14% dissatisfied. 13% were dissatisfied with their relationships with co-workers (M = 3.45; SD = 1.02). The mean overall satisfaction with current job was (M = 2.53; SD = 1.00), with 35% dissatisfied and 16% reported being strongly dissatisfied (see Table 4).

**Motivation to Remain**

80% of respondents found that opportunities for career growth were motivators for them to remain with their organizations and 76% selected higher pay. 27% found the option of additional vacation time to be of importance and 34% found having supportive colleagues necessary. Reduction of working hours, fairness in the workplace, strong workplace ethic and job security in the workplace only had minimal agreement from respondents (7%) (see Table 5).

**Analysis of the 3 Factors: Reasons for Turnover, Satisfaction and Motivation**

When evaluating the reasons for turnover, job satisfaction and motivation across age and level of education groups we found employees with bachelor’s degrees were (M = 31.8 years, SD = 5.797), and master’s degrees (M = 36 years, SD = 6.181) and this was statistically significant (t = 2.805, p = 0.009).

For respondents with a bachelor’s degree, the mean score of reasons for turnover was (M = 3.847, SD = 0.6959), and for those with a master’s degree (M = 3.89, SD = 0.637). The results of the t-test did not indicate a significant difference (t = 0.272, p = 0.787).

For respondents with a bachelor’s degree, the mean score for job satisfaction was (M = 2.55, SD = 0.647), and for those with a master’s degree (M = 2.84, SD = 0.672). The results of the t-test did not indicate a difference between the 2 groups (t = 1.755, p = 0.089).

As for levels of motivation, we found that the mean of bachelor’s degree holders to be (M = 0.499, SD = 0.266), and for master’s degree (M = 0.667, SD = 0.208). The results of the t-test indicated a difference between the 2 groups, but this was not significant (t = 3.082, p = 0.004) (see Table 6).

We used the Analysis of Variance (ANOVA) across the 3 factors groups (reason for turnover, satisfaction, and motivation to evaluate the correlations with years of experience. Respondents with less than 1 year of work experience scored (M = 26.5, SD = 1.716), and those with 1-5 years’ work experience (M = 29.8, SD = 6.4), 6-10 years’ of work experience (M = 33, SD = 3.00), and those with more than 10 years’ work experience (M = 38.21, SD = 4.104). When using the F-Test to evaluate the difference between the 4 groups we found (F = 22.75 p = 0.000) and this was statistically significant (see Table 7).

In conducting a Post Hoc comparison to determine which of the groups of work experience caused the differences we found the third group (6-10 years) and the fourth group (more than 10 years’ experience) and this was the same across all 3 factors (see Table 8).

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**Table 3. Reasons for Turnover.**

| Parameters                                      | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | Mean | SD |
|-------------------------------------------------|-------------------|----------|---------|-------|----------------|------|----|
| 1. Limited opportunities for internal promotion | 3 (3%)            | 4 (4%)   | 10 (10%)| 34 (34%)| 49 (49%)       | 4.22 | 0.991 |
| 2. Unsupportive organization                    | 6 (6%)            | 6 (6%)   | 22 (22%)| 36 (36%)| 30 (30%)       | 3.78 | 1.124 |
| 3. Work-life imbalances                         | 0 (0%)            | 9 (9%)   | 28 (28%)| 32 (32%)| 31 (31%)       | 3.85 | 0.968 |
| 4. Emotional/physical exhaustion                | 0 (0%)            | 6 (6%)   | 20 (20%)| 37 (37%)| 37 (37%)       | 4.05 | 0.903 |
| 5. Poor work environment                        | 3 (3%)            | 12 (12%) | 32 (32%)| 22 (22%)| 31 (31%)       | 3.66 | 1.13  |
| 6. Scheduling conflicts or inflexibility        | 8 (8%)            | 14 (14%) | 30 (30%)| 24 (24%)| 24 (24%)       | 3.42 | 1.224 |
| 7. Lack of continuing education/professional growth opportunities | 3 (3%) | 8 (8%) | 12 (12%) | 28 (28%) | 49 (49%) | 4.12 | 1.094 |
| 8. Lack of managerial support                   | 4 (4%)            | 16 (16%) | 17 (17%)| 29 (29%)| 34 (34%)       | 3.73 | 1.205 |
| 9. Poor work group cohesion                     | 2 (2%)            | 14 (14%) | 31 (31%)| 36 (36%)| 17 (17%)       | 3.52 | 1.061 |
| 10. Unmanageable workloads                      | 3 (3%)            | 10 (10%) | 17 (17%)| 40 (40%)| 30 (30%)       | 3.84 | 1.061 |
| 11. Negative attitudes from supervisors         | 12 (12%)          | 21 (21%) | 23 (23%)| 18 (18%)| 26 (26%)       | 3.25 | 1.366 |
| 12. Discrepancy in wage allocation / low salary | 1 (1%)            | 2 (2%)   | 13 (13%)| 33 (33%)| 51 (51%)       | 4.31 | 0.849 |
| 13. Low increment system (annual raise)         | 1 (1%)            | 4 (4%)   | 18 (18%)| 29 (29%)| 48 (48%)       | 4.19 | 0.947 |
| 14. Insufficient allowance or benefits system   | 1 (1%)            | 1 (1%)   | 17 (17%)| 32 (32%)| 49 (49%)       | 4.27 | 0.851 |
| 15. Unfair performance appraisal process        | 5 (5%)            | 8 (8%)   | 24 (24%)| 28 (28%)| 35 (35%)       | 3.8  | 1.155 |
| 16. Insufficient training and development options| 3 (3%)            | 10 (10%) | 13 (13%)| 40 (40%)| 34 (34%)       | 3.92 | 1.07  |
| 17. Lack of autonomy/ independence              | 2 (2%)            | 6 (6%)   | 40 (40%)| 26 (26%)| 26 (26%)       | 3.68 | 0.994 |
| Total average of Reasons for turnover           |                   |          |         |       |                | 3.856471 | 0.681307 |
In evaluating the correlation between age, and the 3 factor groups we only found a statistically significant correlation between age and motivation, \((r = 0.223, p = 0.026)\). The other factors (reasons for turnover and satisfaction) had a positive correlation with age, but this was not significant (Table 9).

In evaluating the determination coefficient for the entire model, we found 26.6\% of the total variation from the average in job satisfaction was dependent on the averages of reasons for turnover (see Table 10), if we excluded the other factors from the model (see Table 11) where the F test = 35.573 with a significance of \(p = 0.000\).

**Discussion**

Of the 17 factors across the 3 groups we studied for association with the likelihood of employee turnover (Table 3), discrepancy in wage allocation/low salary emerged as a key issue for 84\% of respondents. We found low increment systems (annual raise) were another factor contributing to the likelihood of turnover and demotivation by 77\%.

Limited opportunities for internal promotion were key factors as well as insufficient allowances and a weak benefit system. This is in alignment with the findings of Jehanzeb et al (2012) who found that promotion and pay were key for improved performance and strong employee motivation.\(^1\) Where there is no visible potential for promotion, there is a higher likelihood of dissatisfaction and turnover. The achievement of exceptional performance arises from management that is committed toward motivating employee with visible and incentives such as potential promotions that are attainable.

We found a considerable influence of the lack of continuing education or professional growth opportunities. The desire to grow professionally, develop expertise or continue one's education is a key influencer of job performance, and if these opportunities are not available, this can also influence turnover rates.

We found lower rates of dissatisfaction and turnover, and improved employee commitment, retention and productivity (Table 5) a result of the use of the IMS and this is in agreement with several studies we reviewed.\(^1\)\(^5\)\(^2\)\(^4\)\(^2\)\(^5\)\(^2\)\(^6\) We found that with increasing age, the overall motivation level increases, and although this was not significant the positive correlation remains essential to consider when designing incentives. This agrees with existing studies that found low satisfaction adversely affected productivity and led to turnover.\(^1\)\(^6\)\(^2\)\(^7\)

Our findings also align with studies that reported significant issues with motivation.\(^2\)\(^8\)\(^2\)\(^9\) Where motivation score positively correlated to age variations, more motivation was seen in older employees. There is a stronger desire by older employees to fulfill intrinsically challenging jobs and this is also linked to work experience. Studies have also reported positive associations between employee career opportunities and levels of motivation, and this was stronger among younger employees.\(^2\)\(^9\)

We found a significant association between educational level, age, and motivation and this agrees with Paul (2012) that found an increase in the sense of fulfillment associated with an increase in levels of education and a measure of achievement.\(^2\)\(^4\) When compared to employees with a bachelor’s degree, those with masters’
degrees were more motivated. Where master’s degree holders are older, there was an evident higher level of motivation.

Paul et al (2012) also found that inadequate involvement in decision-making and low advancement opportunities were linked to negative employee motivation. If the IMS offered better participation and advancement opportunities for employees with higher levels of education, there is then a risk of low motivation for employees with lower levels of education. Older employees have more work experience, better exposure to workplace issues, better awareness, better control of their expectations on the job and knowledge of the incentive systems in place and are better positioned to take advantage of them.

There was no significant relationship found between educational level, reasons for turnover and motivation. Where there is a high level of satisfaction, the likelihood of turnover is reduced. The reported rates of dissatisfaction in this area demonstrate some weaknesses in the IMS in our study, which indicate areas where it might be further developed.

Other factors, such as poor workgroup cohesion, relationships with peers and lack of autonomy and independence, work environment quality, and degree of fulfilment of employee expectations of their respective jobs emerged as less impactful on the likelihood of employee’s turnover overall.

Years of experience affected reasons for turnover, satisfaction and motivation levels in our study and this was in agreement with the findings of several previous studies (Table 7). Employees with longer tenure and years of work experience, had higher workplace engagement levels. As age and years of employment increases, there is an associated increase in the level of experience, and higher awareness of job demands.

When compared to older employees, who have more experience; younger employees are less experienced and may have overrated expectations of their jobs. This agrees with the findings of Boumans et al (2011) who reported that motivation was higher in older employees, and that overall years of experience influenced reasons for turnover and job satisfaction. Rozman et al (2017) also found that differences in employee age and experiences led to increased levels of innovation, creativity and problem-solving skills. If the employee faces challenges due to inadequate skills and abilities, those with more experience have

| Parameters                                      | Frequency (%) |
|------------------------------------------------|---------------|
| 1-Oppportunity for career growth               | No  | Yes |
| 2-Higher pay                                   | 20 (20%)   | 80 (80%)  |
| 3-Flexibility or self-scheduling               | 24 (24%)   | 76 (76%)  |
| 4-Paid education leave for school or conferences| 53 (53%)   | 47 (47%)  |
| 5-Additional vacation time                     | 44 (44%)   | 56 (56%)  |
| 6-Supportive and empathetic manager            | 73 (73%)   | 27 (27%)  |
| 7-Supportive colleagues                        | 44 (44%)   | 56 (56%)  |
| 8-Reasonable workloads                         | 66 (66%)   | 34 (34%)  |
| 9-More supportive and responsive organization   | 66 (66%)   | 34 (34%)  |
| 10-Recognition and rewards                     | 53 (53%)   | 47 (47%)  |
| 11-Other                                       | 43 (43%)   | 57 (57%)  |
|         a- Decreased working hours               | 46 (46%)   | 54 (54%)  |
|         b- Inability to supplement income        | 93 (93%)   | 7 (7%)    |
|         c- Fairness in workplace, workplace ethic, reliable supervisors | 66 (66%)   | 34 (34%)  |
|         d- Job security                         | 53 (53%)   | 47 (47%)  |
|         e- Seeking other opportunities          | 43 (43%)   | 57 (57%)  |
|         f- Complicated regulations for promotion | 46 (46%)   | 54 (54%)  |
|         g- Ability to obtain permission for full-time sabbatical once an admission to higher education program is approved | 93 (93%)   | 7 (7%)    |

Table 6. T-test for Age and the 3 Factors by the Level of Education.

| Level of education | N  | Mean | Std. deviation | t    | Sig. (2-tailed) |
|--------------------|----|------|----------------|------|-----------------|
| Age                | Bachelor’s Degree 79 | 31.80 | 5.797 | 2.805 | .009            |
|                    | Master’s Degree 21   | 36.00 | 6.181 | .272  | .787            |
| Total average of reason for turnover | Bachelor’s Degree 79 | 3.847 | .695   | .272  | .787            |
|                    | Master’s Degree 21   | 3.890 | .637  |       |                 |
| Total average of job Satisfaction | Bachelor’s Degree 79 | 2.559 | .647  | 1.755 | .089            |
|                    | Master’s Degree 21   | 2.846 | .673  |       |                 |
| Average motivation | Bachelor’s Degree 79 | .499  | .266  | 3.084 | .004            |
|                    | Master’s Degree 21   | .667  | .208  |       |                 |
a better chance of coping. Motivation and job satisfaction are crucial for ensuring active employee engagement and enhance productivity and sustainability of the organization.1,6,28,33

**Limitations of the Study**

The study was conducted on a highly specialized category of healthcare professional (medical laboratory technologists) and variations in these findings could be found if the questionnaire was applied to other categories, or in comparison between specialties within the same organization or conducted nationally within the health system. Using another study design such as in-depth interviews may have provided more clarity on the reasons for employee turnover and their impressions on their motivation to work and remain with the organization and the factors influencing their levels of satisfaction. This work was part of a graduate studies project and was constrained by time considerations.

**Implications for Future Study**

Future research can adjust the study design and include control or experimental groups. Since this study focuses on examining IMS, with emphasis on reasons for turnover, motivation and satisfaction, therefore having 2 groups (with exposure and without exposure) to the factors may facilitate more clarity in future studies. It is also potentially possible to remove time constraints on data collection, and multiple categories of health

| Table 7. ANOVA and F Test for Age and the 3 Factors by Years of Experience. |
|---------------------------------------------------------------|
| Years of experience | N | Mean | Std. deviation | F | Sig. |
| Age | | | | | |
| less than 1 year | 10 | 26.50 | 1.716 | 22.751 | .000 |
| 1-5 years | 36 | 29.86 | 6.419 | 1-6-10 years | 26 | 33.00 | 3.007 |
| more than 10 years | 28 | 38.21 | 4.104 | 1-5 years | 36 | 4.03 | .563 |
| 6-10 years | 26 | 3.73 | .690 | more than 10 years | 28 | 4.12 | .538 |
| Total average of reason for turnover | | | | | |
| less than 1 year | 10 | 2.85 | .443 | 13.047 | .000 |
| 1-5 years | 36 | 4.03 | .563 | 6-10 years | 26 | 3.73 | .690 |
| more than 10 years | 28 | 4.12 | .538 | |
| Total average job satisfaction | | | | | |
| less than 1 year | 10 | 3.17 | .564 | 3.330 | .023 |
| 1-5 years | 36 | 2.55 | .667 | 6-10 years | 26 | 2.45 | .688 |
| more than 10 years | 28 | 2.68 | .568 | |
| Average motivation to remain | | | | | |
| less than 1 year | 10 | .32 | .161 | 13.047 | .000 |
| 1-5 years | 36 | .53 | .283 | 6-10 years | 26 | .54 | .273 |
| more than 10 years | 28 | .61 | .224 | |

| Table 8. Post Hoc by Scheffe Test for Age and Three Factors by Level of Education Correlations Across Age and 3 Factors (Reason for Turnover, Job Satisfaction and Motivation to Remain). |
|---------------------------------------------------------------|
| Scheffe | | | | | |
| Dependent variable | (I) Years of experience | (J) Years of experience | Mean difference (I-J) | Std. error | Sig. |
| Age | 6-10 years | less than 1 year | 6.500* | 1.761 | .005 |
| | 1-5 years | 3.139 | 1.218 | .091 |
| | more than 10 years | –5.214* | 1.289 | .002 |
| | more than 10 years | less than 1 year | 11.714* | 1.743 | .000 |
| | 1-5 years | 8.353* | 1.192 | .000 |
| | 6-10 years | 5.214* | 1.289 | .002 |
| Total average of reason for turnover | less than 1 year | 1-5 years | –1.17* | .208 | .000 |
| | 6-10 years | –8.67 | .217 | .002 |
| | more than 10 years | –1.256* | .215 | .000 |
| Total average job satisfaction | less than 1 year | 1-5 years | .620 | .228 | .067 |
| | 6-10 years | .720 | .237 | .031 |
| | more than 10 years | .488 | .2345 | .236 |
| Average motivation to remain | less than 1 year | 1-5 years | –2.106 | .0914 | .158 |
| | 6-10 years | –.2223 | .0951 | .149 |
| | more than 10 years | –.2871* | .0942 | .030 |

* The mean difference is significant at the 0.05 level.
professionals to develop comparisons and generate potentially
generalizable results. Comparisons between cities or countries is
also potentially interesting for applications of the IMS, as well as
between public and private sector healthcare.

A further study on reasons for non-significance in some of
the factors, such as the correlation between satisfaction and
educational level (master/bachelor), can offer additional
insight into the design and application of tools such as the IMS
in improving employee satisfaction. Hours of work and pay
rates require readjustment, as they emerged as the top reason
for dissatisfaction and a critical factor for motivation, satisfac-
tion and a pre-requisite for engagement. 17,29,32 Dissatisfaction
with work hours is linked to work overload, an indication of
inadequate staffing, which is linked to issues of burnout.

KAMC human resources can apply various promotional
types, as means to guarantee motivation and satisfaction in
employees. Opportunities for rank advancement, increased pay
or offering other benefits are options to consider, along with
adjusting the laboratory employee’s responsibilities or duties.

Encouraging fair and transparent competition across teams for
promotional initiatives is essential in facilitate performance
excellence and promote employee’s morale.

Managerial support is critical in the motivation of employees
and minimizing turnover. Failures in managerial support
increase the likelihood of turnover with employees searching for
more supportive opportunities in other organizations.

Our results showed that motivation, satisfaction and reasons
for turnover vary across age groups, years of experience and
levels of education. It is highly challenging to design an effec-
tive incentive plan and create a workplace that aligns with the
needs of all employees. It is necessary for managers to attempt
to balance between the employee needs and those of the orga-
nization. There is a need to implement the right incentive mea-
sures to ensure this balance is successfully achieved. Human
Resource Managers must incorporate these findings to promote
increase job satisfaction, maintain motivation and reduce turn-
over, especially in healthcare.

**Conclusion**

Our findings indicate significant dissatisfaction among the MLTs
sampled. Discrepancy in wage allocation/salary was the primary
concern influencing the potential for employees deciding to leave
their workplace. Limitations in educational growth/expansion or
promotion opportunities for enhanced job security and insufficient
benefits/allowances were also major reasons for turnover. Support-
tive management and workload levels also affected the levels of
satisfaction among employees, resulted in non-productive beha-
vior, demotivation and lack of engagement.

There is a need to improve the IMS in the workplace and
the development of incentive plans that align with the work-
related and personal needs of employees, for their satisfac-
tion as well as the reduction of turnover, to benefit the
healthcare organization by increasing retention and produc-
tivity and therefore the quality of the healthcare services
provided.

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**Table 9. Correlation Coefficients for Age and the Three Factors.**

| Factor                        | Pearson Correlation | Sig. (2-tailed) | N  | Total average of reasons for turnover | Total average job satisfaction | Average motivation to remain |
|-------------------------------|---------------------|----------------|----|--------------------------------------|-------------------------------|------------------------------|
| Age                           | 1                   | .055           | 100| .086                                 | .223*                         |                               |
| Total average of reasons for turnover | .555                | .587           | 100| .397                                 | .026                          | .170                         |
| Total average job satisfaction | .086                | .516**         | 100| .000                                 | .092                          | .070                         |
| Average motivation to remain  | .223*               | .170           | 100| .129                                 |                               |                               |

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

**Table 10. Model Summary.**

| Model | R    | R square | Adjusted R square | Std. error of the estimate |
|-------|------|----------|-------------------|---------------------------|
| 1     | .516*| .266     | .259              | .56807508805005           |

a. Predictors: (Constant), Total average of Reason

**Table 11. ANOVA.**

| Model | Sum of squares | Df | Mean square | F     | Sig. |
|-------|---------------|----|-------------|-------|------|
| 1     | Regression    | 11.477 | 1 | 11.477 | 35.573 | .000* |
|       | Residual      | 31.618 | 98 | .323  |       |      |
| Total | 43.095        | 99  |             |       |      |

a. Predictors: (Constant), Total average of Reason.
b. Dependent Variable: Total average satisfied.
Appendix A

Questionnaire

Section 1: Socio Demographic Questions

1. Age: ________ years old
2. Gender:
   - Male
   - Female
3. Nationality:
   - Saudi
   - Non-Saudi
4. Level of Education:
   - Diploma
   - Bachelor’s Degree
   - Master’s Degree
5. Marital status:
   - Married
   - Single
   - Divorced
   - Widowed
6. Years of experience:
   - Less than 1 year
   - 1-5 years
   - 6-10 years
   - More than 10 years
7. Occupation:
   - Laboratory technician
   - Laboratory technologist II
   - Laboratory technologist I
   - Supervisor
   - Other (specify): ______________________
8. Working Hours’ System:
   - Regular (morning) shift (9 hrs) without weekend work
   - Regular (morning) shift (9 hrs) with weekend work
   - Irregular shift 9 hrs (evening, night)
   - Other (specify):
9. Monthly Income:
   - Below $ 1867
   - $ 1867-$ 2667
   - $ 2933-$ 4000
   - Above $ 4000

Section 2: Likert Scale Questions

A—Indicate the Extent of Your Agreement with the Following Statements: Reasons that May Lead You to Submit Your Resignation

| Statements                                      | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|-------------------------------------------------|----------------|-------|---------|----------|-------------------|
| 1-Limited opportunities for internal promotion  |                |       |         |          |                   |
| 2-Unsupportive organization                     |                |       |         |          |                   |
| 3-Work-life imbalance                           |                |       |         |          |                   |
| 4-Emotional/Physical exhaustion                 |                |       |         |          |                   |
| 5-Poor work environment                         |                |       |         |          |                   |
| 6-Scheduling conflicts or inflexibility         |                |       |         |          |                   |

(continued)
(continued)

| Statements                                                                 | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---------------------------------------------------------------------------|----------------|-------|---------|----------|-------------------|
| 7-Lack of continuing education/professional growth opportunities          |                |       |         |          |                   |
| 8-Lack of manager support                                               |                |       |         |          |                   |
| 9-Unmanageable workloads                                                 |                |       |         |          |                   |
| 10-Poor work group union/cohesion                                        |                |       |         |          |                   |
| 11-Negative attitudes from supervisor                                   |                |       |         |          |                   |
| 12-Unfair pay/ low salary                                               |                |       |         |          |                   |
| 13-Low increment system (annual raise)                                   |                |       |         |          |                   |
| 14-Insufficient allowance or benefits system                             |                |       |         |          |                   |
| 15-Unfair performance appraisal process                                  |                |       |         |          |                   |
| 16-Insufficient training and development opportunities                   |                |       |         |          |                   |
| 17-Lack of autonomy/ independence                                        |                |       |         |          |                   |

B—Rate the Following Items for the Extent of Your Satisfaction with Your Organization:

| Items                                                                 | Very satisfied | Satisfied | Neutral | Dissatisfied | Very dissatisfied |
|-----------------------------------------------------------------------|----------------|-----------|---------|--------------|-------------------|
| 1-Hours of work                                                       |                |           |         |              |                   |
| 2-Flexibility in scheduling                                           |                |           |         |              |                   |
| 3-Amount of paid vacation time/sick leave offered                      |                |           |         |              |                   |
| 4-Rate of pay                                                          |                |           |         |              |                   |
| 5-Opportunities for promotion                                          |                |           |         |              |                   |
| 6-Provided allowances                                                  |                |           |         |              |                   |
| 7-Benefits (treatment, maternity leave, etc.)                          |                |           |         |              |                   |
| 8-Recognition for work accomplished                                   |                |           |         |              |                   |
| 9-Relationships with your co-workers                                   |                |           |         |              |                   |
| 10-Relationship(s) with your supervisor(s)                             |                |           |         |              |                   |
| 11-Opportunity to learn new skills                                    |                |           |         |              |                   |
| 12-Support for additional training and education                       |                |           |         |              |                   |
| 13-The level of workload                                               |                |           |         |              |                   |
| 14-Freedom to use your own judgment during work                       |                |           |         |              |                   |
| 15-Work Environment (value, culture)                                   |                |           |         |              |                   |
| 16-Job Security                                                        |                |           |         |              |                   |
| 17-Top management support                                              |                |           |         |              |                   |
| 18-Overall, your current job                                           |                |           |         |              |                   |

**Section 3: Checklist Methods**

**Which of the Following Strategies Would Encourage You to Remain in Your Current Job? (Check ALL that apply):**

1. Opportunity for career growth                                      
2. Higher pay                                                          
3. Flexibility or self-scheduling                                      
4. Paid education leave for school or conferences                       
5. Additional vacation time                                            
6. Supportive and empathetic manager                                   
7. Supportive colleagues                                               
8. Reasonable workloads                                                 
9. More supportive and responsive organization                          
10. Recognition and rewards                                             
11. Other (Describe): . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
Abbreviations
MLTs Medical Laboratory Technologists
DPLM Department of Pathology and Laboratory Medicine
IMS Incentive Management System
KAMC King Abdul-Aziz Medical City
SPSS Statistical Package Social Science Software
CAP College of American Pathologists
AABB American Association of Blood Banks
JCIA Joint Commission International Accreditation

Authors’ Note
We declare that we have obtained the required ethical approvals for this study, including consent for publication. The first author designed the study, sought ethical approvals from the relevant entities, developed the data collection instrument with permissions, collected and analyzed the data and wrote the manuscript. The second author supervised and reviewed the conduct of the work, edited and advised on conceptualization, data collection and analysis, and co-edited the manuscript for submission.

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References
1. Ibrahim AM, Usman BU, Bagudu MW. Employee turnover and its effects on organizational productivity of state-owned institutions in Niger state: (An Impediment to Achieving Vision 20: 2020 in Niger State). J Bus Organ Dev. 2013;5(2):1-12.
2. Mesfin E, Taye B, Belay G, Ashena A, Girma V. Factors affecting quality of laboratory services in public and private health facilities in Addis Ababa, Ethiopia. EJIFCC. 2017;28(3):205-223.
3. Chepchumba T, Kimuta B. The relationship between employee compensation and employee turnover in small businesses among Safaricom dealers in Eldoret Municipality. Int J Econ Commerce Manag. 2018;7(4):490-501.
4. Vanker N, Faull N. Laboratory test result interpretation for primary care doctors in South Africa. Afr J Lab Med. 2017;6(1):453.
5. Mendis M. The impact of reward system on employee turnover intention: a study on logistics industry of Sri Lanka. Int J Sci Technol Res. 2017;6(9):67-72.
6. Abaker M, Al-Titi O, Al-Nasr N. Organizational policies and diversity management in Saudi Arabia. Employee relations. Int J. 2018;41(3):454-474.
7. Benslimane N, Khalifa M. Evaluating pharmacists’ motivation and job satisfaction factors in Saudi hospitals. Stud Health Technol Inform. 2016;226:201-204.
8. Kovačs RJ, Powell-Jackson T, Kristensen SR, Singh N, Borghi J. How are pay-for-performance schemes in healthcare designed in low- and middle-income countries? Typology and systematic literature review. BMC Health Serv Res. 2020;20(1):291. doi: https://doi.org/10.1186/s12913-020-05075-y
9. SHRM. Designing and managing incentive compensation programs Publication 2018. Updated November 20, 2020. Accessed October 12, 2019 https://www.shrm.org/resourcesandtools/tools-and-samples/toolkits/pages/designingincentivecompensation.aspx
10. Bohm J. Two-factor theory—at the intersection of health care management and patient satisfaction. Clinicoeconom Outcomes Res. 2012;4:277-285
11. Al-Nsour M. Relationship between incentives and organizational performance for employees in the Jordanian Universities. Int J Bus Manag. 2012;7(1):78-89.
12. Slimane NS. Motivation and job satisfaction of pharmacists in four hospitals in Saudi Arabia. J Health Manag. 2017;19(1):39-72.
13. Al-Dossary RN. The Saudi Arabian 2030 vision and the nursing profession: the way forward. Int Nurs Rev. 2018;65(4):484-490.
14. Al Mahdi HK. Moral incentives vehicle of job performance in Saudi Arabian banks. J Manag. 2017;5(2):17-23.
15. Jehanzeb K, Rasheed MF, Rasheed A. Impact of rewards and motivation on job satisfaction in banking sector of Saudi Arabia. Int J Bus Soc Sci Res. 2012;3(21):272-278.
16. Das BL, Baruah M. Employee retention: a review of literature. J Bus Manag. 2013;14(2):8-16.
17. Kao AC. Driven to care: aligning external motivators with intrinsic motivation. Health Serv Res. 2015;50(Suppl. 2):2216-2222. doi:https://doi.org/10.1111/1475-6773.12422
18. Deci EL, Koestner R, Ryan RM. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. Psychol Bull. 1999;125(6):627-627.
19. Musa BM, Ahmed I, Bala A. Effect of motivational incentives on staff turnover in hotel industry in Gombe state. J Bus Manag. 2014;16(3):36-42.
20. Aguenza BB, Som AP. Motivational factors of employee retention and engagement in organizations. Int J Adv Manag Econ. 2012;1(6):88-95.
21. Kabir AI, Newaz S, Alkhailifa KA. Analyzing the impact of workplace environment on job satisfaction of the office employees of Saudi Arabian Oil and Gas Industry. Glob J Manag Bus Res. 2019;19(2):8-15.
22. Alharbi MF. An analysis of the Saudi health-care system’s readiness to change in the context of the Saudi National Health-care Plan in Vision 2030. Int J Health Sci. 2018;12(3):83-87.
23. Tourangeau AE, Wong M, Saari M, Patterson E. Generation-specific incentives and disincentives for nurse faculty to remain employed. *J Adv Nurs.* 2013;71(5):1019-1031.

24. Paul T. The impact of age and education on the level of satisfaction and motivation among employees. *IUP J Manag Res.* 2012; 11(1):29.

25. Samuel MO, Chipunza C. Employee retention and turnover: using motivational variables as a panacea. *Afr J Bus Manag.* 2009;3(8): 410-415.

26. Allen D, Bryant P, Vardaman JM. Retaining talent: replacing misconceptions with evidence-based strategies. *Acad Manag Perspect,* 2017;24(2):48-64.

27. Hassan M, Hassan S, Din KK., Naseem M. ‘Employee retention as a challenge in leather industry’. *Glob J Human-Soc Sci Res.* 2011;11(2):9-14.

28. Solati N. The impact of reward system on job satisfaction: a moderation effect of age and tenure. [Masters Thesis] Grime American University; May 20, 2019.

29. Boumans NP, De Jong AH, Janssen SM. Age-differences in work motivation and job satisfaction. The influence of age on the relationships between work characteristics and workers’ outcomes. *Int J Aging Hum Dev.* 2011;73(4):331-350.

30. Sanjeewa CG, Dilma H. Employee satisfaction and related factors among public healthcare workers in Sri Lanka: a case study on regional directorate of Hambanthota. *Glob J Med Res.* 2018;8(4): 1-7.

31. Andrew A. Employees’ commitment and its impact on organizational performance. *Asian J Econ Bus Account.* 2017;5(2): 1-13.

32. Rožman M, Treven S, Čančer V. Motivation and satisfaction of employees in the workplace. *Business Syst Res J.* 2017;8(2): 14-25.

33. Balkhi B, Alghamdi A, Alshehri N, Ishehri A. Assessment of job satisfaction among hospital pharmacists in Saudi Arabia. *IOSR J Pharm.* 2017;7(5):34-40.

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