

Emotional Intelligence in Medical Laboratory Science

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ABSTRACT

OBJECTIVE: Explore the role of emotional intelligence (EI) among medical laboratory scientists as perceived by clinical laboratory administrators.

DESIGN: A detailed survey was designed to assess the importance laboratory administrators placed on EI related skills as well as to gauge their satisfaction with EI among currently practicing medical laboratory scientists (MLSs). Other survey questions solicited information about the responsibility individuals and college-based programs should assume for EI training as well as what is currently being done in clinical laboratories to promote the development of soft skills. Quantitative and qualitative information from 413 completed surveys was compiled and analyzed.

SETTING: Surveys were collected from clinical laboratory administrators from 42 states.

CONCLUSION: Laboratory administrators indicated that EI related skills were very important for successful job performance in the clinical laboratory. They expressed overall satisfaction with EI among currently practicing MLSs, but indicated room for improvement.

ABBREVIATIONS: EI - Emotional intelligence, MLS - medical laboratory scientist, ANOVA - analysis of variance, LSD - least squared difference.

INDEX TERMS: Emotional Intelligence, Administrative personnel, Medical laboratory personnel, conflict resolution, empathy

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INTRODUCTION

The concept of the “healthcare team” has been the focus of recent changes in medicine, with increased emphasis being placed on quality customer-centered care. Despite having what many would consider limited patient interaction, administrators in clinical laboratories have responded to this movement by increasing their efforts to cultivate skills beyond technical ability and theoretical knowledge. Many facilities have implemented trainings, hiring practices, and team-building activities designed to increase what some call “soft skills.” These soft skills include interpersonal communication, integrity, self-control, dependability, conflict resolution, and empathy and lie at the heart of what has been termed emotional intelligence (EI).¹ Emotional intelligence can be defined as the ability to recognize and interpret emotion and then use that information to guide healthy decision-making and actions.²

While few would argue the benefit of these qualities and skills in a healthcare field with extensive patient interaction, some might question their importance in the clinical laboratory. Furthermore, the roles these types of attributes and abilities play in successful performance of the duties of a medical laboratory scientist are unclear. Finally, if clinical laboratories have a need for employees with increased EI, who should shoulder the responsibility for its development? This study sought to shed light on these points by evaluating how EI is perceived among currently practicing medical laboratory supervisors and managers.

Literature Search

Emotional Intelligence in Other Healthcare Fields

An extensive review of the published literature uncovered very few articles that looked at the affective aspects of work in the clinical laboratory. Many studies have been performed to investigate the role emotional intelligence plays in healthcare fields such as nursing, dental hygiene, and radiologic sciences,^{3,4,5} but to date,

no one has specifically explored emotional intelligence in the medical laboratory. In a review of literature related to EI and health education, Freshwater and Stickley found an increase in the attention programs were paying to EI concepts. They noted that “many curricula now make reference in some way to the notion of an emotionally intelligent practitioner, one for whom theory, practice and research are inextricably bound up with tacit and experiential knowledge.”¹ Another published review of EI in healthcare revealed, “higher EI is positively associated with more compassionate and empathetic patient care, improved teamwork and...communication.”⁶ Although these reviews and the other studies mentioned did not specifically explore EI in the medical laboratory, their findings suggest that EI related concepts hold significant importance in healthcare and should be addressed at least to some degree in college-based healthcare training.

Emotional Intelligence in Technical Fields

The published studies that looked at EI in nursing and similar fields shed some light on the role EI might play in the clinical laboratory, however those fields lack the technical nature of medical laboratory work. To explore the way EI might influence practitioners in a more technical field like MLS, the body of published research was searched for articles that investigated EI in fields like engineering, computer sciences and information technology. Several studies of this nature found significant positive correlations between EI and employee satisfaction, employer satisfaction, and successful job performance in technical fields.^{7,8,9} Blom and Saeki supported the importance placed on EI by other researchers, but highlighted significant gaps between the importance placed on EI and employer satisfaction with the EI in technical fields.¹⁰ Other researchers found similar gaps between college-based skills development and industry expectations in areas related to EI.¹¹ In summary, researchers who have studied the role EI plays in technical fields support increased focus on EI at the college level and maintain EI is important for job performance and satisfaction.

EI in Medical Laboratory Science

It was not until 1999 that studies exploring the affective side of medical laboratory science began to appear in scientific journals.^{12,13} It appears that for decades, researchers treated those who staff clinical laboratories as being as automated and robotic as the instruments

they work with. Plebani referred to MLSs during this period as “unseen generators of patient health information.”¹² The advent of computers and automated access to laboratory test results further pushed MLSs into the shadows. Recent changes in healthcare and the notion of the healthcare team, however, have sparked change in the way laboratorians are viewed. The personal interaction between physicians and those in the clinical laboratory has increased drastically since 1990 and will continue to increase as the value of the clinical laboratory and those who staff it expands.¹⁴ With these changes comes the need to explore what is necessary for MLSs to be successful in their work going forward. Beck and Doig highlighted a need for non-technical skills in a study of the competencies needed for medical laboratory work, but did not fully elucidate what these skills included.¹⁵ Adams et al. explored the perceived emotional intelligence of medical laboratory science students compared to that of other health professions students, but did not elaborate on the role EI plays in the clinical laboratory.¹⁶ The current study sought to fill this gap by exploring the role EI skills might play within the clinical laboratory as perceived by clinical laboratory administrators.

MATERIALS AND METHODS

Development and Content Validity

Development of the survey began with a thorough review of emotional intelligence literature as well as semi-structured, cognitive interviews with currently practicing laboratory supervisors and managers. 250 currently practicing MLSs and laboratory supervisors were invited to pilot the survey, of which 68 individuals from 28 states participated. In addition to completing the survey, participants were asked for feedback on each individual question as well as the survey as a whole. A Cronbach's alpha reliability analysis was performed to verify the internal consistency of all scales used in the survey. The alpha level on all portions of the survey was above 0.90, indicating strong consistency among content items. Following a solicitation for help via the medical laboratory science educator list serve, 55 MLS educators read through the final version of the survey and gave constructive feedback. The high reliability coefficients as well as the number of individuals included in the pilot and revision phases of the survey development helped ensure strong instrument validity.

Survey Instrument

The first portion of the survey asked the respondent to give some basic demographic information about herself/himself and about the laboratory where she/he worked. The personal information included gender, age, ethnicity, years of experience, and basic job responsibilities. The lab-specific information included the state where the laboratory was located, the number of employees in the laboratory, the number of recent graduates hired each year, and the distribution of Medical Laboratory Technicians (MLTs) and MLSs.

The survey items included 3 skills often associated with job performance in the medical laboratory (technical skills, theoretical knowledge and mechanical skills) and 13 skills or characteristics that are more closely associated with EI. These were positive conflict resolution, respect for others, self-control, positive attitude, communication with co-workers, communication with other healthcare workers, tact and diplomacy, ability to work as part of a team, self-awareness, dependability, personal ethics, adaptability, and empathy. The bulk of the survey was devoted to gathering administrator's perceptions about these skills and attributes, their importance for job satisfaction, the administrator's level of satisfaction with the way MLSs perform in each of the EI related areas, as well as the responsibility that college-based programs should assume for the development of each item. The same list of skills and attributes was used for each section (importance, satisfaction, and responsibility of the college-based program for development of the skill) to identify if gaps existed between the perceived level of importance and level of satisfaction with each item and to identify the emphasis administrators felt training programs should give each item.

The final sections of the survey focused on what is being done in clinical laboratories to promote awareness and demonstration of EI among currently practicing MLSs. Those sections concluded with a question that asked participants to indicate the percent of the responsibility that should be assumed by the individual, the college-based program and the clinical laboratory for the development of EI. With the exception of that question and one question where respondents were able to free-write any comments about EI and medical laboratory science, all survey questions used a likert-type scale to allow for descriptive and statistical analysis of responses.

This scale for the satisfaction questions ranged from 0, indicating "not at all satisfied" to 4 indicating "extremely satisfied." For the responsibility that college-based programs should assume for EI development, the scale ranged from 0, indicating "no responsibility at all" to 3, indicating "most of the responsibility." Cronbach's alpha, Levene's *f*, Fisher's Least Squared Difference (LSD) and ANOVA testing were used to determine reliability of scales, homogeneity of variance, and significance of differences. Free-written responses were examined qualitatively using content analysis for common theme identification.

Sampling

During the months of January and February of 2013, approximately 1800 members of the Clinical Laboratory Managers Association (CLMA) were selected at random from the association's publicly available website. These laboratory administrators were contacted via email and were invited to respond to an online survey, hosted by Survey Monkey. Participation was completely voluntary and anonymous. After eliminating the email addresses that were returned as being undeliverable, and after two follow-up email initiations, a total of 413 respondents completed the survey (response rate of 30%).

RESULTS

Demographics

There were respondents from all demographic categories on the survey, however the average respondent could be described as a white, female, between the ages of 51 and 60, with at least five years of management experience. (Table 1) Surveys were collected from administrators in 42 states, with the highest concentration of responses coming from California (10.4%), Wisconsin (8.2%), New York (7.0%), Minnesota (6.3%) and Iowa (6.3%). Respondents came from laboratories of all different sizes ranging from those that employ less than 10 individuals to laboratories with more than 200. The majority (51.4%) of respondents described their laboratories as hiring mostly MLSs with some MLTs. These demographic results are consistent with what others who have surveyed similar healthcare administration populations in the United States have found.¹⁷

Survey Results

The first section of the survey asked laboratory admini-

Table 1. Demographic Information of 413 Respondents

Demographic	Number	Percentage
Gender		
Male	102	24.9
Female	308	75.1
Age (years)		
21 - 30	2	0.5
31 - 40	31	7.5
41 - 50	83	20.1
51 - 60	202	48.9
60 or older	94	22.8
Race		
Caucasian	378	93.3
African American	8	2.0
Asian	12	3.0
Latino	7	2.0
Type of Administrator		
Lab Manager	182	43.5
Department Supervisor	79	19.0
Administrative Director	61	14.6
General Supervisor with Management Responsibilities	28	6.7
General Lab Supervisor	21	5.0
Medical Director	8	1.9
Other/Non-Specified	39	9.3
Years of Experience		
Less than 1 year	17	4.1
Between 1 and 3 years	62	15.0
Between 3 and 5 years	41	10.0
Between 5 and 10 years	85	20.6
More than 10 years	207	50.2
Size of Laboratory		
More than 200 employees	93	23
More than 100 employees but less than 200	82	20.2
Between 50 and 100 employees	85	21
Between 10 and 50 employees	115	28.4
Less than 10 employees	30	7.4
Number of Recent Graduates Hired per Year		
Less than 1	145	35.2
1	107	26.0
2	60	14.6
3	39	9.5
4	25	6.1
5 - 10	29	7.0
More than 10	7	1.7
Distribution of MLTs and MLSs Employed by the Laboratory		
Mostly MLSs with some MLTs	207	51.4
About the Same number of MLTs as MLSs	75	18.6
Mostly MLTs with some MLSs	66	16.4
Only MLSs	49	12.2
Only MLTs	6	1.4

The figures in the table omit missing data (e.g., no answer was given).

strators to rate how important various skills and attributes were to job satisfaction. As expected, technical skills received the highest rating for importance (3.87/4), however soft skills such as integrity (3.85),

dependability (3.65) and respect for others (3.66) were rated just as highly. It is interesting to note that all attributes on the survey were considered to be either “very important” (average score of 3.0) or “extremely important” (average score of 4.0) for job satisfaction in the clinical laboratory. When asked about their overall satisfaction with medical laboratory scientists’ performance of the previously mentioned skills, administrators indicated that they were most satisfied with technical skills, but were between “somewhat satisfied” (average score of 2) and “very satisfied” (average score of 4) with the demonstration all of the skills on the survey. (Table 2)

An analysis of the differences, or gaps between the level of importance and the level of satisfaction with each item (Figure 1) revealed some interesting findings. There was greater disparity between importance and satisfaction for each of the EI related items than there was for technical skills, theoretical knowledge, and mechanical skills. The largest gaps existed between positive conflict resolution, respect for others, self-control, and positive attitude.

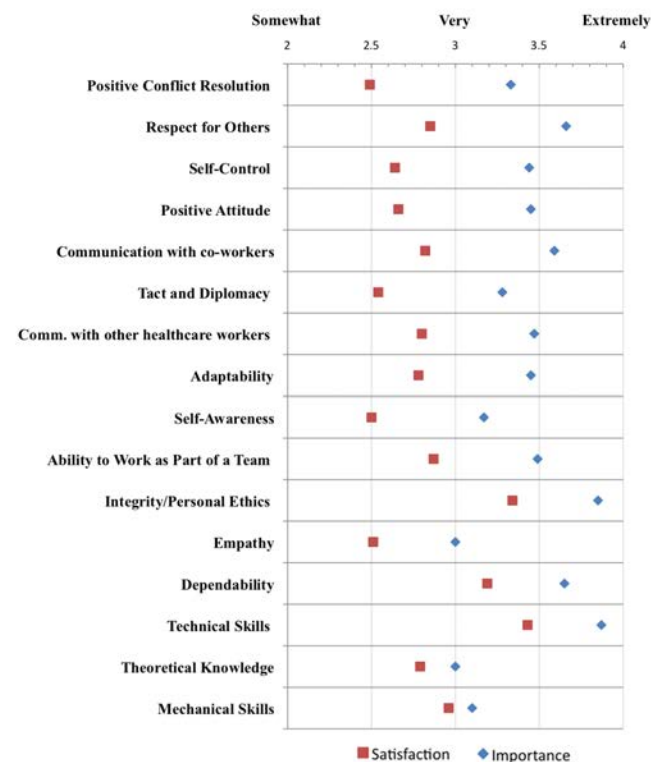


Figure 1. Gaps between level of perceived importance and level of satisfaction

Table 2. Administrator's perceptions of the importance of each skill or attribute for job performance and their satisfaction with its demonstration among practicing MLSs.

Skill/Characteristic	Rating of Importance	Rating of Satisfaction
Positive Conflict Resolution (Appropriately approaches conflict without blaming or becoming overly defensive)	3.33	2.49
Respect for Others (Treats others like equals, respects their time and personal space)	3.66	2.85
Self-Control (Manages negative emotions, reacts appropriately to intense situations, appropriately expresses frustration)	3.44	2.64
Positive Attitude (Appreciates challenges, looks for the good in others, is often upbeat and happy)	3.45	2.66
Communication with co-workers (Has positive day-to-day interactions with others in the lab)	3.59	2.82
Tact and Diplomacy (Responds appropriately when challenged, communicates without offending)	3.28	2.54
Communication with other healthcare workers (Positively interacts with nurses, physicians etc.)	3.47	2.8
Adaptability (Is flexible and open to new ideas and information)	3.45	2.78
Self-Awareness (Understands their own thoughts, feelings and behaviors and recognizes how they impact others)	3.17	2.5
Ability to Work as Part of a Team (Works well with others, sacrifices personal interests for the benefit of the group)	3.49	2.87
Integrity/Personal Ethics (Performs tests without cutting corners or skipping steps, is honest with others)	3.85	3.34
Empathy (Desires to understand thoughts and feelings from another's perspective)	3.00	2.51
Dependability (Arrives on time, stays on task during their shift)	3.65	3.19
Technical Skills (Correctly performs and results tests)	3.87	3.43
Theoretical Knowledge (Understands the principles, theories and reactions behind the tests)	3.00	2.79
Mechanical Skills (Can troubleshoot and repair basic instrument/mechanical issues)	3.10	2.96

When asked who should be responsible for developing various skills, respondents indicated that college-based programs should hold “most of the responsibility” (rating of 3.0) for the development of theoretical knowledge and technical skills. Self-control, self-awareness, and empathy had the lowest average ratings for the amount of responsibility that college-based programs should assume for development (1.92, 1.90, and 1.81 respectively), however administrators felt that programs still carried at least “some of the responsibility” (rating of 2.0) to help develop these and all other EI-related skills.

On average, administrators indicated that the individual MLS should assume about 55% of the responsibility for developing EI and that the remaining 45% should be evenly split between the college-based program (22%) and the laboratory that hires the MLS (23%). Survey responses indicated that most laboratories offer some level of training in EI-related skills, however the importance given to this training was relatively low.

ANOVA testing using composite scores for all EI survey items revealed very few statistically significant differences in the perceptions administrators had about EI across varying demographics. The size of the laboratory seemed to influence administrators' satisfaction with EI among their employees, with administrators from larger laboratories (>100 employees) indicating less satisfaction (34.8) while those from smaller laboratories reporting greater levels of satisfaction (38.2). Another significant relationship existed between the importance given to EI and the attention the laboratory paid to improving it through trainings and workshops. Approximately 90% of respondents indicated that some type of training in areas related to EI was available at the hospitals where they worked. Those laboratories that had more frequent training intended to improve soft skills yielded administrators who deemed EI to be more important.

Qualitative analysis of responses

Approximately 30% of administrators responded to the survey item that simply prompted, “please feel free to add any additional comments you may have about emotional intelligence as it relates to medical laboratory science.” Qualitative analysis revealed six meaningful themes in respondents' comments. (Table 3)

Table 3. Themes Derived from Responses to Open Ended Question About EI in MLS

Theme	Frequency	Percent
Differences in EI may be due to generational differences	6	0.5
The personality of Medical Laboratory Scientists does not lend itself to EI	11	10.1
It is the individual's responsibility to develop EI	15	13.8
Doubts about the ability to teach/learn EI skills	22	20.2
EI is necessary for successful job performance and satisfaction	24	22.0
More attention should be paid to EI at the program level	31	28.4
Total	109	100

The first theme reflected participants' feelings about the personality of those who choose to work in clinical laboratories, suggesting that a person who is drawn to the medical laboratory field may be strong in logic and reasoning skills, but may be lacking in emotional or interpersonal skills. This sentiment was well represented by one respondent who said, "We are analytical and detailed by nature and many of the soft skills are not intuitive to this personality type." The second theme highlighted perceived differences in emotional abilities across different generations of employees. Comments ranged from administrators who felt older MLS might feel "threatened by younger medical technologists" to those who claimed personal electronic devices were robbing those of a younger generation of opportunities to develop "key soft skills that have to do with successful human relationships and communication." The third theme stemmed from respondents who indicated skepticism about whether EI could be taught and learned. Many who echoed this theme expressed the opinion that character and personality are well developed by the time an individual is obtaining employment in a clinical laboratory. Said one individual, "I can supplement skills at the bench level, but you can't teach reliability, dependability, tact and courtesy...they have to come in with these values and capabilities." Another theme that emerged through analysis of the comments was that EI is critical for success in the clinical laboratory. Administrators spoke of hiring practices, performance appraisals, and dealing with employees where they gained an appreciation for

skills beyond those of a technical nature. One administrator said, "Just having technical skills is not providing the service that is expected in today's lab environment." Another referred to EI skills as being "highly underrated, misunderstood and sorely needed."

The fifth theme supported increased emphasis on EI development at an individual level. While this theme is similar to the theme related to one's ability to learn EI skills, this group of comments seemed more focused on the way an individual should work to improve their soft skills. Speaking of the individual's responsibility to develop EI, one respondent wrote, "Each individual must accept personal responsibility for EI and work on it throughout their life." Another wrote, "...the desire to change to improve emotional intelligence must come from the individual." Finally, respondents seemed to agree on the role the college-based program plays in encouraging EI development. One administrator put it this way, "Stressing integrity and interpersonal interaction is vital during the education process. If students do not show qualities of EI, this is not the career for them." Another simply wrote, "...programs need to add training in emotional intelligence if they want their graduates to succeed in the workplace."

DISCUSSION

Perhaps the most significant finding of this study is the overwhelming agreement between medical laboratory administrators concerning the importance of emotional intelligence skills and attributes for success in the clinical laboratory. Even the lowest rated item, empathy, had an average rating of 3.0, indicating administrators felt it was "very important" for successful job performance in the medical laboratory. It was encouraging to find that satisfaction with EI among practicing MLSs was also very high, however the gaps between the importance given to EI skills and the level of satisfaction with each indicates some needed improvement. The difference in gap size between the EI-related attributes and mechanical skills, theoretical knowledge and technical skills indicates the current focus of those who train medical laboratory professionals may be somewhat misplaced. To fully prepare individuals for effective work as part of the healthcare team, more attention should be paid to those skills that are not of a technical nature. This view is supported by the work of others who have looked at the skills needed for success in the clinical laboratory.^{18,19}

One very meaningful implication of this study is the indicated need for improvement in EI training, specifically at the college level. Theoretical knowledge is an important component of the curriculum of medical laboratory science programs, however “theoretical knowledge” received the lowest rating for importance for successful job performance (3.0). Additionally, the gap between the importance given to theoretical knowledge and satisfaction with it among practicing laboratorians was second smallest, (second only to mechanical skills) indicating laboratory administrators may not be as concerned about the development and demonstration of theoretical knowledge as they are about improving EI-related abilities. One explanation for this could be related to the emphasis that is already placed on theoretical knowledge at the program level. It may not be so much that administrators do not think it is important (a rating of 3.0 indicates it was still considered “very important”) but rather they feel that college-based programs are doing an adequate job in preparing students in this area. Alternatively, the explanation could be as straightforward as it seems: that being able to correctly perform laboratory procedures (technical skills) and the ability to report the results or work with others (EI related skills) may be more important to job performance than an understanding of the theoretical concepts behind the analyses.

The results of this study demonstrate that administrators believe the individual carries the bulk of the responsibility for developing EI, however, they felt that the college-based programs should assume at least some of the responsibility for developing each of the EI-related skills on the survey. How a college-based program might incorporate EI skills training into what is already a tightly packed curriculum for most remains to be explored.

These findings indicate the clinical laboratory is not without its own responsibility to improve EI among MLSs. It appears as though most laboratories offer some level of training in skills related to EI, however these trainings are either rarely mandatory or are not as effective at initiating change as they could be. It stands to reason that a laboratory’s hiring practices may have a more direct impact on the EI skills of those employed in the laboratory than the irregularly held, optional in-services that some facilities offer. In other words, staffing the laboratory with employees who were hired

not just for their technical skills or academic abilities, but also for their demonstration of soft skills would likely yield greater increases in EI-related abilities than infrequent trainings. Furthermore, if laboratory managers preferentially hired those who complement technical skills with well-developed emotional skills they would undoubtedly send a positive message about the importance of EI to individuals and programs alike.

In conclusion, medical laboratory administrators perceive emotional intelligence to be very important for successful job performance in the clinical laboratory. Although they are satisfied overall with EI among currently practicing MLSs, there is significant room for improvement. In order to make progress in this area, individuals, laboratories and college-based programs need to increase the time and attention they pay to the development of emotional intelligence.

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