The Knowledge and Attitude of Medical Laboratory Technologists in the Southern Province on Medical Laboratory Accreditation

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ABSTRACT

Accreditation is a procedure by which an authoritative body gives formal recognition that an organization is competent to carry out specific tasks. The general objective of this study was to study the knowledge and attitudes of medical laboratory technologists in both government and private sector laboratories in the Southern Province towards quality laboratory essentials and the accreditation process.

A descriptive cross-sectional study was conducted using self-administered, pre-tested questionnaires with the participation of 52 medical laboratory technologists in the Southern Province, Sri Lanka. The results were analyzed using SPSS software version 21.Study participants who obtained scores of less than 50%. 50-75%, 75-90%, and more than 90% for the knowledge score were categorized as poor, average, good, and excellent, respectively. Themean (SD) knowledge score among the participants was 40.33(29.35). The Medical Laboratory Technologists' attitudes towards laboratory accreditation were satisfactory. Among the study participants, 82.69% (n=43) are of the view that medical laboratories should be accredited. However, several misunderstandings regarding the same aspect were observed.

The study concluded that the overall knowledge of MLTs on medical laboratory accreditation is not satisfactory. The study was conducted in and around Galle. Therefore we assume that knowledge scores will be poorer among the MLTs who work in the rural laboratories since they possess less opportunity for participation in continuous education, compared to those working for urban employers. However, the overall attitudes of Medical Laboratory Technologists regarding accreditation is satisfactory. The value of educational and training programs on medical laboratory accreditation and evaluation of their effectiveness is emphasized.

Key Words: Accreditation, Attitude, Knowledge, Medical Laboratory Technologists, ISO 15189 standard

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INTRODUCTION

Accreditation is a process in which trained external peer reviewers evaluate the compliance of an organization with pre-established performance standards. ISO 15189 is the gold standard for accreditation of medical laboratories. ISO 15189, was first published in 2003 and revised in 2007 and 2012.The goal of ISO 15189 is the continuous improvement of the laboratory, and to provide necessary information to its workers in order to perform their jobs(Richardson, 2002).By accrediting, a medical laboratory can gain international recognition which proves its quality management system, technical competence, and the proficiency of its personnel to generate an accurate and precise test result for each test(Frost, 2004).

ISO 15189 had become a part of the mandatory medical laboratory accreditation requirements in about 60 countries by the year 2015(Schneider, Maurer & Friedberg, 2017). Each of these countries has its own national accreditation body, which is responsible for granting accreditation (Frost, 2004).

The medical laboratory accreditation standard, ISO 15189, was initiated in Sri Lanka in the year 2005 under the Sri Lanka Accreditation Board for Conformity Assessment Act No.32 of 2005. The Sri Lanka Accreditation Board for Conformity Assessment (SLAB) is the National Accreditation Authority for Sri Lanka. It promotes accreditation activities and provides the necessary accreditation services to facilitate conformity assessments in Sri Lanka. Although there are thousands of medical laboratories functioning in every nook and corner of the country, only about 20 of them have gained the ISO15189:2012 Accreditation Certificate in Sri Lanka (2020).

The aim of this study was to investigate the knowledge and attitudes of medical laboratory technologists in both government and private sector laboratories in the Southern Province towards quality laboratory essentials and the accreditation process.

METHODS AND MATERIALS

Ethical approval for the study was obtained from the Ethical Review Committee, Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka. A descriptive cross-sectional study was performed. The study was carried out using a purposive convenient sample of 52 medical laboratory technologists who were working in both private sector and government sector laboratories in Southern Province. Medical Laboratory Technologists in 2 teaching hospitals, 3 general hospitals and 5 private sector laboratories in Southern Province (in and around Galle) were included in the study. Questionnaires were distributed among Medical Laboratory Technologists who consented to participate. The questionnaire consisted of 3 sections. Demographic data was collected in section I. In section II, the knowledge of the Medical Laboratory Technologists' regarding the accreditation concept, accreditation body, ISO 15189 manual, quality policy, quality manual, and quality management system was obtained. The attitudes of the Medical Laboratory Technologists on accreditation were assessed using section III. Data was collected using a pre-tested self-administered questionnaire. Demographic data were analyzed using descriptive analysis. Group comparisons were done using t- test and one-way ANOVA by SPSS version 23.

RESULTS

A total of 52 medical laboratory technologists from both private sector and government sector laboratories in Southern Province were included in the study. Demographic characteristics of the sample is indicated in the table I.

Table I: Demographic characteristics of the medical laboratory technologists who participated in the study

Demographic characteristics		Percentage of Medical Laboratory Technologists
Gender	Female	59.6%
	Male	40.4%
Age (years)	21-30	23.1%
	31-40	36.5%
	41-50	19.2%
	51-60	19.2%
	>60	1.9%
Profession	Medical Laboratory Technologist	59.6%
	Medical Laboratory Scientist	28.8%
	Senior MLT	9.6%
	Superintend MLT	0%
	Laboratory Manager	1.9%
Educational level	Diploma	55.8%
	Graduate	42.3%
	Post Graduate	1.9%
Additional qualification	Yes	82.7%
	No	17.3%
Certificate courses	Yes	17.3%
	No	82.7%

Workshops	Yes	69.2%
	No	30.8%
Training programs	Yes	32.7%
	No	67.3%
Conferences	Yes	26.9%
	No	73.1%
Working Organization	Government	86.5%
	Private	13.5%
Working Experience	1-10 years	57.7%
	>10 years	42.3%
Monthly Income	Not mentioned	3.8%
	Less than Rs.50,000	19.2%
	Rs.50,000– Rs.100,000	65.4%
	Rs.100,000– Rs.150,000	11.5%

Participants who obtained scores of less than 50%. 50-75%, 75-90%, and more than 90% for the knowledge score were categorized as poor, average, good, and excellent, respectively. The mean knowledge score was 40.33 (SD±29.35). Among the study participants only 5.8 % (n=3) were in the excellent level, while 13.5 % (n=7) were in the good level, 13.5 % (n=7) were in the average level, and 67.3% (n=35) were in the poor level.

The mean knowledge scores (±SD) of the different groups are given in Table II

Table II: Group wise knowledge scores

Groups		Mean±SD
Gender	Female	35.94±29.97
	Male	46.81±27.84
Age (years)	21 – 30	54.08±24.06[a]
	31 – 50	39.00±30.42

	>50	28.82±28.31
Profession	Medical Laboratory Technologist	27.19±25.12
	Medical Laboratory Scientist	65.20±21.01[b,c]
	Senior MLT	36.00±15.70
	Laboratory Manager	96.00±0.00
Educational level	Diploma	25.72±23.31
	Graduate	57.05±25.15[d]
	Post Graduate	96.00±0.00
Working Organization	Government	37.93±29.83
	Private	55.71±21.85
Working Experience	1-10 years	50.70±27.81[e]
	>10 years	26.18±25.71

[a] p=0.040, [b] p=0.000, [c] p= 0.019, [d] p= 0.000, [e] p= 0.002

There was a statistically significant difference for the knowledge scores in the Medical Laboratory Technologists in different age groups as determined by one-way ANOVA. The knowledge score was significantly higher in Medical Laboratory Technologists between 21 and 30 years of age (54.08±24.06) compared to the Medical Laboratory Technicians more than 50 years old (28.82±28.31).

A statistically significant difference was observed in the knowledge scores of Medical Laboratory Technologists in different professions as determined by one-way ANOVA. The knowledge score was significantly higher in Medical Laboratory Scientists (65.20±21.01) compared to the Medical Laboratory Technicians (27.19±25.12, p=0.019) and Senior Medical Laboratory Technicians (36.00±15.70, p=0.000). There was one laboratory manager included in the study with a post graduate qualification. The knowledge score of that participant was significantly high (96.00).

There was a statistically significant difference for the knowledge scores in the Medical Laboratory Technologists in different education levels as determined by one-way ANOVA. The knowledge score was significantly higher in Graduates (57.05±25.15) compared to diploma holders (25.72±23.31, p=0.000). There was only one study participant with post graduate qualifications. The knowledge score of that participant is significantly high (96.00) indicating the value of higher education on the aspect of laboratory accreditation.

A statistically significant difference was observed in the knowledge scores of Medical Laboratory Technologists with different work experience as determined by one-way ANOVA. Medical Laboratory technologists with less than ten years of experience(50.70±27.8) have a significantly higher knowledge score when compared to Medical Laboratory technologists with more than ten years of experience (26.18±25.71, p=0.002)

There was no statistically significant difference in knowledge between Medical Laboratory Technologists with respect to their gender (p =0.193) or working organization (0.137).

Attitude of Medical Laboratory Technologists on Medical Laboratory Accreditation

Among the study participants, 82.69% (n=43) were of the view that medical laboratories should be accredited. About 88.46%(n=46) of the sample agreed that they needed more information about accreditation.

Among the study participants,75%(n=39) believe that medical laboratories can gain international recognition by being accredited; 82.69%(n=43) of the participants think that accreditation is a way to laboratory errors, 57.69%(n=30) think that waste generated in the laboratory can be reduced by accreditation, 69.23%(n=36) think that accreditation improves the competency of the laboratory, and 78.84%(n=41) think that quality of results and laboratory service can be improved by accreditation.48.07 % (n=25) think that turnaround time (TAT) for a test can be reduced by accreditation while75%(n=39) think that standardization of the laboratory processes could be done by accreditation.

Among the study participants 42.31 % (n=22) believe that accreditation increases the workload. At the same time 38.46% (n=20) think that it will be difficult to apply for accreditation since they already have heavy workloads. About 48.0%(n=25) think that accreditation will cause financial problem to the organization, while 50%(n =26) think that accreditation increases paper work. About 30.78%(n=16)of the sample think that obtaining accreditation for their laboratories will be difficult, since it is difficult for them to adapt new procedures. Nearly half of the participants (48.0%,n=25) think that it will be difficult for them to apply for accreditation for their laboratories, since there are not enough staff members. More than half of the sample (51.92%, n=27) are of the view that there are not enough resource persons to educate them on accreditation. About 46.15 % (n=24) think that lack of laboratory equipment will be an obstacle and 42.31 % (n=22) think that lack of reagents and consumables will be an obstacle. 40.38%(n=21) agree that they have a poor knowledge on accreditation, 38.46% (n=20) think that Medical Laboratory Technologists have a poor attitude about accreditation, and59.61% (n=31) agree that they do not have sufficient support from the higher authorities to apply for accreditation.

DISCUSSION

Laboratory services are an integral part of clinical decision making. Also, laboratory services play a vital role in diagnostic and therapeutic decisions for patients, and disease monitoring and prevention. Medical Laboratory Accreditation ensures the validity of laboratory system management and to promote continuous quality improvement.Although the accreditation concept was

introduced to the Sri Lankan Medical field in the year 2005, only a limited number of Medical Laboratories have obtained ISO 15189 certification up to date(2020).Lack of knowledge regarding accreditation and poor attitudes of the medical laboratory personnel towards accreditation are the mainobstacles for obtaining ISO 15189. Previous Sri Lankan literature about knowledge and attitude of Medical Laboratory Technologists toward accreditation is extremely sparse.

According to the present study the mean knowledge score of the study participants was 40.33 ± 29.35. This is a very poor level. However, the knowledge score was significantly higher in Medical Laboratory Scientists (65.20±21.01) compared to Medical Laboratory Technicians (27.19±25.12) and Senior Medical Laboratory Technicians (36.00±15.70).The knowledge score was also significantly higher in Graduates (57.05±25.15) compared to diploma holders (25.72±23.31), and that of the study participant with post-graduate qualifications was very high (96.00). This may be due to the inclusion of novel concepts such as accreditation into graduate and post-graduate curricula. Further, the knowledge scores of newly recruited Medical Laboratory Technologists (50.70±27.81) are higher than those of the experienced Medical Laboratory Technologists (26.18±25.71).This reflects that education and new knowledge have a greater impact on knowledge about accreditation.

Among the study participants, 82.69% (n=43) were of the view that medical laboratories should be accredited, while88.46% (n=46) of the sample agreed that they need more information about accreditation. Most of the study participants think that gaining international recognition (n=39), reducing laboratory errors (n=43), standardization of the process (n = 39), reduction in waste (n=30), improving the competency of the laboratory (n=36), improving quality of results (n=41) and reducing turnaround time (n=25) are advantages of accreditation. However, some misunderstandings of the Medical Laboratory Technologists were identified. Among the study participants, 42.31% (n= 22) believe that accreditation increases the workload, 38.46%(n=20) think that it will be difficult to apply for accreditation since they already have heavy workloads, 48.0%(n=25) think that accreditation will cause financial problems to the organization, 50.0%(n=26) think that accreditation increases paper work, 30.78%(n=16)think that obtaining accreditation to their laboratories will be difficult since it is difficult for them to adapt to new procedures, 48.0%(n=25) think that it will be difficult for them to apply for accreditation for their laboratories, since there are not enough staff members, 51.92%(n=27) are of the view that there are not enough resource persons to educate them on accreditation, 46.15 % (n=24) think that lack of laboratory equipment will be an obstacle, and 42.31% (n=22) think that lack of reagents and consumables will be an obstacle;40.38 % (n=21) agree that they have a poor knowledge about accreditation, 38.46 % (n=20) think that Medical Laboratory Technologists have a poor attitude about accreditation, and 59.61% (n=31) of the participant agree that they do not have sufficient support from the higher authorities to apply for accreditation.

Astudy, which was conducted in Ethiopia on perception and attitude of laboratory professionals, shows similar findings to the present study. According to that study, about 85% of the laboratory professionals emphasized that accreditation is important for a quality laboratory process(Lulie*et al.*, 2014).But a survey which was conducted among laboratory personnel in Belgium and the Netherlands showed conflicting results. In that study, 87% of the study participants did not think that the accreditation process improved the quality of the laboratory results. Also, most of the study participants preferred to work in non-accredited laboratories (Verstraete, van Boeckel, Thys&Engelen, 1998).In a survey which was conducted among Clinical Pathology laboratories, 75% of

laboratories agreed that accreditation improved laboratory services by introducing more documentation and better health and safety training procedures (Gough & Reynolds, 2000).

There are no published data about the knowledge and attitude of Medical Laboratory Technologists towards accreditation in Sri Lanka. So comparison of the results obtained fromthe present study is not possible.

CONCLUSIONS

The mean knowledge score among the study participants was 40.33 ±29.35, which is poor when compared to studies done elsewhere. So workshops, conferences, or awareness programs should be introduced to fill the knowledge gap. The knowledge score was significantly higher among Medical Laboratory Scientists compared to Medical Laboratory Technologists. Further, the knowledge scores of newly recruited Medical Laboratory Technologists are higher than those of experienced Medical Laboratory Technologists. The accreditation concept was introduced into the Medical Laboratory Curriculum recently, so newly passed out Medical Laboratory Technicians have a considerably better knowledge than experienced Medical Laboratory Technicians. The attitude of Medical Laboratory Technologists towards accreditation is significantly good. The present study was conducted in and around the Galle District. We assume that knowledge scores will be much poorer in the rural laboratories since they possess fewer opportunities for continuous education compared to urban laboratories.

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