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Analysis of Influencing Factors on Participation Compliance, Slide Preparations Quality and Microscopic Reading Quality of Acid-Resistant Bacteria Slides at Ciamis Regency

I Dewa Ayu Sriwardani[1*], Asep Dermawan[1], Iis Kurniati[1], Sonny Feisal[1]

[1]Department of Medical Laboratory Technology Poltekkes Kemenkes Bandung, West Java, Indonesia
*Corresponding author: aryn.soka@gmail.com

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ABSTRACT

Background & Objective: To find out the factors that influence participation compliance, slide preparations quality and microscopic reading quality in the External Quality Control program of Microscopic Cross Tests Acid Resistant Bacteria in Ciamis Regency in 2022-2023.
Method: The research design is cross-sectional, with a population and total sampling of 27 respondents. Data analysis is Chi-Square with Fisher's Exact Test.
Result: Research data shows that the sig-p value of the period of employment variable for participation is 0.057, for the quality of slide preparations per quarter 0.695, 0.447, 0.550, 0.305, and the microscopic reading quality 0.036. The sig-p value of the training variable on participation is 0.226, on the quality of slide preparations per quarter 0.043, 0.388, 0.212, 0.219, and the microscopic reading quality 0.298. The sig-p value of the workload variable for participation is 0.204, for the quality of slide preparations per quarter 0.502, 0.091, 0.332, 0.502, and for the microscopic reading quality 0.050. The sig-p value of the microscope condition variable for participation is 0.005, for the quality of slide preparations per quarter 0.063, 0.106, 0.149, 0.323, and the microscopic reading quality 0.036. The sig-p value of the incentive variable for participation is 0.001, for the quality of slide preparations per quarter 0.528, 0.302, 0.586, 0.189, for the microscopic reading quality of 0.013.
Conclusion: There is a relationship between microscope conditions and incentive on participation compliance, there is a relationship between training on the slide preparations quality in the 4th quarter of 2022, there is a relationship between period of employment, workload, microscope conditions and incentive on microscopic reading quality.

Keywords: AFB; tuberculosis; Quality

Introduction

Tuberculosis or TB is a disease of the lungs that can be life-threatening if not treated promptly and appropriately. This disease is caused by infection with *Mycobacterium tuberculosis*, a rod-shaped bacterium that is acid-resistant and is known as Acid-Fast Bacilli (AFB). The symptoms of tuberculosis are respiratory problems in the form of chronic cough and shortness of breath, night sweats and fever. To avoid the risk of antibiotic resistance, tuberculosis treatment lasts for at least six months with a strict regimen.

More than 10 million people continue to get TB every year, even though this disease can be prevented or cured. In 2022, TB will be ranked second in the world as the cause of death due to a single infectious agent after the coronavirus disease (COVID-19) and causes almost twice as many deaths as due to HIV/AIDS. (Global Tuberculosis Report, 2022)

Based on data obtained from the Indonesian Tuberculosis Dashboard at the Ministry of Health in 2022, there are 1,060,000 estimated TB cases, including 12,531 confirmed cases of MDR TB, 110,881 cases of childhood TB, 15,375 cases of HIV TB, 86% Treatment Success Rate and 16,528 TB patients died.

There are five key components of the tuberculosis control strategy developed by WHO and IUATLD (International Union Against Tuberculosis Lung Disease) known as the DOTS (Directly Observed Treatment Shortcourse) strategy. Namely: the government's commitment to increasing and continuing funding, case finding through microscopic examination, standardization of treatment with supervision and support for patients, a management system and availability of Anti-Tuberculosis Drugs (ATD) and a system for assessing treatment and program performance through monitoring, recording and reporting. (Pedoman Nasional Pengendalian Tuberkulosis, 2011)

The tuberculosis prevention and control program in Indonesia has established a laboratory examination in the form of a microscopic examination as the main diagnostic tool for confirming the diagnosis of tuberculosis until changes to the Flow of Diagnosis and Treatment of Tuberculosis in Indonesia are implemented through Circular Letter of the Indonesian Ministry of Health Number HK.02.02/III.1/936/2021. It was explained that Xpert MTB/RIF Assay is the main diagnostic tool used to confirm the diagnosis of tuberculosis. Health facilities constrained by distance or do not have Xpert MTB/RIF Assay technology can still use microscopic examination as the main examination. Likewise, Xpert MTB/RIF Assay examination cannot be used for the examination of patients undergoing tuberculosis treatment (follow-up).

Internal Quality Control and External Quality Control through cross-test programs are part of efforts to monitor and improve laboratory quality. The health facility laboratory sends several negative preparations, and all positive preparations are sent to the AFB microscopic cross-testing intermediate reference laboratories. Indicators of cross-test success are 90% coverage and routine, respectively, with a frequency of participation of four times per year; readings in the "good" category are no readings found without major errors and less than three minor errors. Data was obtained from the Ciamis District Health Service in 2021. Tuberculosis microscopic cross-test coverage in Quarter I was 66.7%, in Quarter II was 44.4%, in Quarter III was 48.15%, and in Quarter IV was 40.7%. In the performance of microscopic reading quality in Quarter I, there was 1 Major error and 1 Minor Error; in Quarter III, there were 2 Major Errors; and in Quarter IV, there were 1 Minor Error and 2 Major Errors.

The commitment of TB laboratory microscopists in health facilities to supporting External Quality Control is very important for the success of AFB microscopic cross-test activities. Various internal and external laboratory factors influence the performance of laboratory staff and their commitment to following the External Quality Control of the AFB Microscopic Cross-Test.

Objective

To find out the factors that influence participation compliance, slide preparations quality and microscopic reading quality in the AFB Microscopic Cross Test in the External Quality Control for the period 2022-2023.

Method

The research design used is analytical research with a cross-sectional design, namely, measurements or observations of all dependent and independent variables. This research design carries out measurements or observations simultaneously between risk factors.

This research involved 27 health facility laboratory workers who performed microscopic examinations for tuberculosis in the Ciamis Regency. In this study, Total Sampling was used, namely samples collected from the entire population during the research, totalling 27 people.

The data analysis was univariate and bivariate using Chi-square analysis with Fisher's Exact Test.

Results

The questionnaire was first tested on 20 respondents, and a correlation test was carried out between the score (value) of each question and the total score of the questionnaire. Validation tests can be carried out using computerization with the SPSS application. The test item is valid if the r-Count value > r-Table. The r-Table value uses the r-Table Value Distribution Table 5% Significance Level.

TABLE 1 Validity Test Result of the Workload Questionnaire

Variable	No. Question	r-calculate	r-table	Description
Workload	1	0.719	0.444	Valid
	2	0.646	0.444	Valid
	3	0.516	0.444	Valid
	4	0.723	0.444	Valid
	5	0.696	0.444	Valid

TABLE 2 Validity Test Result of the Microscope Condition Questionnaire

Variable	No. Question	r-calculate	r-table	Description
Microscope condition	1	0.786	0.444	Valid
	2	0.616	0.444	Valid
	3	0.616	0.444	Valid
	4	0.909	0.444	Valid
	5	0.622	0.444	Valid
	6	0.654	0.444	Valid

TABLE 3 Validity Test Result of Incentive Questionnaire

Variable	No. Question	r-calculate	r-table	Description
Incentive	1	0.572	0.444	Valid
	2	0.877	0.444	Valid
	3	0.820	0.444	Valid
	4	0.877	0.444	Valid
	5	0.658	0.444	Valid

TABLE 4 Reliability Test Result

Variable	Cronbach's Alpha	Factor	Description
Workload	0.682	0.60	Reliable
Microscope Condition	0.795	0.60	Reliable
Incentive	0.826	0.60	Reliable

Univariate Analysis

TABLE 5 Frequency Distribution of Characteristics of Respondents for Acid-Fast Bacteria Microscopic Health Facilities Officers in Ciamis Regency for the period 2022 - 2023

No	Respondents's Characteristics	F	%
	Period of Employment		
1	≥ 10 years (Old)	9	33
2	< 10 years (New)	18	67
	Total	27	100
	Training Status		
1	Have Training	12	44.4
2	Never Have Training	15	55.6
	Total	27	100
	Workload		
1	Low	7	26
2	High	20	74
	Total	27	100
	Microscope Conditions		
1	Good	18	66.7
2	Poor	9	33.3
	Total	27	100
	Incentive		
1	Good	16	59.3
2	Poor	11	40.7
	Total	27	100
	Participation Compliance		
1	Good	10	37
2	Not Good	17	63
	Total	27	100
	Slide Preparation Quality of Quarter 4 2022		
1	Good	6	50
2	Poor	6	50
	Total	12	100

No	Respondents's Characteristics	F	%
	Slide Preparation Quality of Quarter 1 2023		
1	Good	5	33,3
2	Poor	10	66.7
	Total	15	100
	Slide Preparation Quality of Quarter 2 2023		
1	Good	9	52.9
2	Poor	8	47.1
	Total	17	100
	Slide Preparation Quality of Quarter 3 2023		
1	Good	6	46
2	Poor	7	54
	Total	13	100
	Microscopic Reading Quality		
1	Good	7	26
2	Poor	20	74
	Total	27	100

Bivariate Analysis

TABLE 6 Correlation Between Independent Variables and Dependent Variables

No	Variable	Relate to Variable					
		Participation Compliance	Slide Preparation Quality on Quarter				Microscopic Reading Quality
			4 of 2022	1 of 2023	2 of 2023	3 of 2023	
1	Period of Employment	0.057	0.695	0.447	0.550	0.305	**0.036**
2	Training	0.226	**0.043**	0.338	0.212	0.219	0.298
3	Workload	0.204	0.502	0.091	0.332	0.502	**0.050**
4	Microscope Condition	**0.005**	0.063	0.106	0.149	0.323	**0.036**
5	Incentive	**0.001**	0.528	0.302	0.586	0.189	**0.013**

Note :
Sig-p value ≤ 0.05 indicates relationship between two variables

Discussion

Experience is a combination of knowledge and human behaviour, where knowledge is obtained from knowledge after a person perceives a certain object. At the same time, behaviour is a series of individual responses to the environment. Length of work is synonymous with experience. The longer someone works is synonymous with experience; the longer someone works, the more their experience increases. Experience influences the increase in a person's knowledge because a person's knowledge is also obtained from experience (Wibowo et al. M, 2013).

The longer a person's work period, the better they will carry out their duties. Thus, working time is more concentrated than those who have just started working (Robbins S.P, 1996). A person's working period determines his work performance, which is the basis for organizational achievement and performance (Gibson J.L, 2017). The longer someone works for a company, their performance will improve. This is proven by the high level of sales and influencing

company profits, making it possible to get promotions or promotions. Thus, the length of the work period will affect performance. The longer the work period, the more the quality of abilities and skills will increase. The results of the research show that a person's working hours are not related to performance in preparing AFB Microscopic Cross Test for External Quality Control program, factors such as boredom, boredom or a tendency to be lazy about doing the same work (monotonously) from time to time. This indicates the importance of monitoring and evaluation efforts towards health services from the Ciamis District Health Service as a policy maker, especially in controlling tuberculosis. The results of the research show that a person's length of service is not related to participation compliance in sending acid-resistant bacteria (AFB) Microscopic Cross Test for the External Quality Control program; the reason for this could be due to the feeling of self-confidence gained from longer work experience, thereby increasing the feeling of security by not participating in the External Quality Control activities that should be followed. A relatively longer work period does not guarantee that someone will always behave according to standard operational procedures (Suherreni, 2014).

Research shows that as many as 12 respondents have undergone AFB microscopic training, and as many as 15 respondents have never undergone AFB microscopic training. However, the last training held was training held by the West Java Provincial Health Service in 2018, so in approximately five years In recent years, no new training has been received, so there is a possibility that there will be a decline in the quality and skills of laboratory staff in carrying out AFB microscopic examinations. For laboratory officer respondents who have never undergone AFB microscopic training, along with the experience gained from the work period they have undertaken, it is possible to further improve their expertise and skills in AFB microscopic examination.

Even though the training did not have a relationship with participation compliance and the microscopic reading quality or significantly with the slide preparations quality, it was deemed necessary to provide information and input to the Ciamis District Health Service as the guardian of tuberculosis control policies to plan to budget for refreshing technical guidance for laboratory staff who had already undergone training. as well as new technical guidance for laboratory staff who have never undergone AFB microscopic training.

According to the research, 20 respondents had a high workload, and 7 had a low workload. However, the workload in the form of additional duties for laboratory officers, apart from their main duties, was only sometimes carried out at all times. It was carried out at certain times so that the workload was not always high (excessive) at all times and was not the dominant factor influencing the participation compliance and slide preparation quality in the AFB Microscopic Cross Test for External Quality Control program. However, the microscope reading performance has a significant influence. This could be caused by the microscope reading being carried out at the end of the AFB preparation. Accuracy and sufficient time are required to observe the preparation under a microscope (minimum 100 fields of view) to obtain accurate and reliable results. Errors in results can occur if the readings taken do not reach the correct number of visual fields. The additional workload can lead to inaccuracies or readings carried out quickly by laboratory staff when examining preparations so that inaccurate results are obtained. Laboratory officers are often given additional duties in

other fields outside of the field laboratory fields, such as assets and administration. Laboratory staff should be placed in areas outside their competence for reasons such as limited staff. This will result in them needing help to do their work optimally, disrupting their performance.

Research shows that the condition of the microscope influences the quality of AFB microscopic reading results. Based on the results of the questionnaire, there are still many microscopes that have yet to be calibrated in the past year. Officers have yet to carry out routine maintenance on the microscope, as evidenced by the fact that there is no recording of routine maintenance in the logbook, and they do not even have a special logbook for routine maintenance. Storing microscopes that are not stored in a special lighted cupboard will increase the risk of the microscope becoming mouldy due to high levels of humidity and parts of the microscope that are more easily exposed to dust.

Providing benefits through good incentives can improve work discipline (Abdurrakhman, 2007) and organizational commitment (Robbins S.P, 1996). In Hasibuan's opinion, incentives motivate employees to increase their usability, effectiveness and efficiency. Therefore, if incentives are given correctly, employees will be happier and more motivated to achieve company goals. However, if employees feel that the incentives provided could be more appropriate, there could be a significant decline in performance, motivation and work commitment. A reflection of the value of work for employees can be seen from the amount of incentives. This could be why the incentive factor still motivates laboratory staff in their participation compliance and microscopic quality performance in the External Quality Control for the AFB Cross Test.

An opinion that is contrary to research that supports the influence of incentives on employee performance is that the perception of the strength of the need for motivation only lasts for a while because if it is fulfilled, it will weaken or lose its motivational strength. (Nawawi) This could be the reason that the incentive variable does not affect the quality of making AFB slide Cross Test for External Quality Control program in Ciamis Regency for the 2022 - 2023 period, namely that the incentives are not always budgeted for by health facilities or the disbursement of incentives is not always on time so that the incentives are not felt to be something attractive. and effective as encouragement in the AFB Microscopic Cross Test for External Quality Control program.

Conclusion

Based on the research results, it can be concluded that:

There is a relationship between microscope conditions and incentive on participation compliance; there is a relationship between training on the slide preparations quality in the 4th quarter of 2022; there is a relationship between the period of employment, workload, microscope conditions and incentive on microscopic reading quality.

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Conflict of Interest

No conflict of interest.

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