

# **DIVERSION OF PUBLIC HEALTH RESOURCES TO COVID-19 PREVENTION AND CONTROL AND ITS EFFECTS ON NATIONAL TUBERCULOSIS PROGRAM: A QUALITATIVE STUDY AMONG HEALTHCARE WORKERS IN ACEH BESAR DISTRICT, INDONESIA**

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## **ABSTRACT**

The objectives of our qualitative study with focus group discussion were to describe: 1) the nature of public health resource diversion from the Indonesian National Tuberculosis Program to COVID-19 prevention and control efforts, and; 2) the extent that the Indonesia National Tuberculosis Program implementation was affected by this diversion. We performed qualitative research through one session of focus group discussion with 7 healthcare workers in Aceh Besar District, Aceh Province. Participants reported diversion of human resources in the TB program to support COVID-19 prevention and control. However, the TB program budget was not affected, and the effect on material was also moderate. TB program activities continued during the COVID-19 pandemic, but case finding and sputum testing became more difficult from stigma related to COVID-19. However, participants also reported positive effects of the pandemic on the TB Program, e.g. apparent improvement on respiratory hygiene. To our knowledge, our study was the first qualitative study on the effects of the COVID-19 pandemic on National TB Program in the study area. However, caveats regarding lack of generalizability and lack of depth of the study data should be considered in the interpretation of the study findings.

**Keywords:** COVID-19, Diversion of Resources, Tuberculosis

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## การเบนทรัพยากรด้านสาธารณสุขไปป้องกันและควบคุมโรคโควิด-19 และผลกระทบต่อแผนงานวัณโรคแห่งชาติ: การวิจัยเชิงคุณภาพในกลุ่มเจ้าหน้าที่การแพทย์ในอำเภออาเจะฮ์เบอซาร์ ประเทศอินโดนีเซีย

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### บทคัดย่อ

วัตถุประสงค์ของการวิจัยเชิงคุณภาพโดยใช้การอภิปรายกลุ่มนี้ คือ เพื่อบรรยาย 1) ลักษณะของการเบนทรัพยากรสาธารณสุขจากแผนงานวัณโรคแห่งชาติของอินโดนีเซีย ไปงานป้องกันและควบคุมโรคโควิด-19 และ 2) ผลกระทบของการเบนทรัพยากรต่อการดำเนินแผนงานวัณโรคแห่งชาติ คณะผู้วิจัยทำการวิจัยเชิงคุณภาพโดยจัดการอภิปรายกลุ่มหนึ่งรอบ โดยมีเจ้าหน้าที่การแพทย์ 7 คน ในพื้นที่อำเภออาเจะฮ์เบอซาร์ จังหวัดอาเจะฮ์ ผู้เข้าร่วมการวิจัยรายงานว่ามีการเบนทรัพยากรมนุษย์จากแผนงานวัณโรคไปงานป้องกันและควบคุมโรคโควิด-19 อย่างไม่ดี งบประมาณวัณโรคไม่ได้รับผลกระทบ และมีผลต่อครุภัณฑ์แค่พอประมาณ กิจกรรมตามแผนงานวัณโรคยังดำเนินต่อในช่วงการระบาดของโรคโควิด-19 แต่การค้นหาผู้ป่วยและการทดสอบเสมหะลำบากขึ้นเนื่องจากการตีตราบาปของโรคโควิด-19 อย่างไม่ดี ผู้เข้าร่วมการวิจัยได้รายงานผลดีของการระบาดโรคโควิด-19 ต่อแผนงานวัณโรคด้วย เช่น การมีอนามัยทางเดินหายใจดีขึ้น การวิจัยนี้เป็นการวิจัยเชิงคุณภาพชิ้นแรกกว่าด้วยผลกระทบของการระบาดโรคโควิด-19 ต่อแผนงานวัณโรคแห่งชาติในพื้นที่ศึกษา อย่างไม่ดี ผู้อ่านควรพิจารณาข้อควรระวังว่าด้วยความจำกัดของขอบเขตและความลึกของข้อมูลวิจัยในการอ่านและตีความผลการวิจัย

**คำสำคัญ:** โควิด-19, การเบนทรัพยากร, วัณโรค

**ข้อมูลอ้างอิง:** อาริฟ ซาปุตรา และ วิทย์ วิชัยดิษฐ์. (2566). การเบนทรัพยากรด้านสาธารณสุขไปป้องกันและควบคุมโรคโควิด-19 และผลกระทบต่อแผนงานวัณโรคแห่งชาติ: การวิจัยเชิงคุณภาพในกลุ่มเจ้าหน้าที่การแพทย์ในอำเภออาเจะฮ์เบอซาร์ ประเทศอินโดนีเซีย. *Procedia of Multidisciplinary Research*, 1(12), 9

## INTRODUCTION

Indonesia is a middle-income country with one of the highest burdens of tuberculosis (TB) worldwide. During the COVID-19 pandemic, most of the healthcare facilities in Aceh Besar District, Indonesia shifted their focus on preventing COVID-19, including the National TB Program. Although the TB burden in Aceh Besar District is not as high as in other districts in Aceh Province, Indonesia, the target to eliminate TB in 2050 is still far from being achieved (Kementrian Kesehatan Republik Indonesia, 2021). Moreover, over the past 2 years, TB program in Aceh Besar District was disrupted by the COVID-19 pandemic resulting in unavoidable changes to the TB program. On the other hand, changes that were made during the COVID-19 pandemic to the TB program are a challenge among TB patients. During the COVID-19 pandemic, it was reported that the number of TB case notifications declined by 29% from 2019 to 2020. The success rate and cure rate also reported have declined by 3% and 17% respectively in the same period of time (Dinas Kesehatan Provinsi Aceh, 2019, 2020). However, there is limited information regarding the effect of public health resources diversion for COVID-19 prevention and control on the implementation of the National Tuberculosis Program in Indonesia, particularly data that are first-hand accounts from healthcare workers involved in the Program's implementation during the pandemic period. Such data can yield insights for TB program-related stakeholders to plan and prepare for future crises, especially in the Indonesian context. The objectives of our qualitative study with focus group discussion were to describe: 1) the nature of public health resource diversion from the Indonesian National Tuberculosis Program to COVID-19 prevention and control efforts, and; 2) the extent that the Indonesia National Tuberculosis Program implementation was affected by this diversion.

## LITERATURE REVIEW

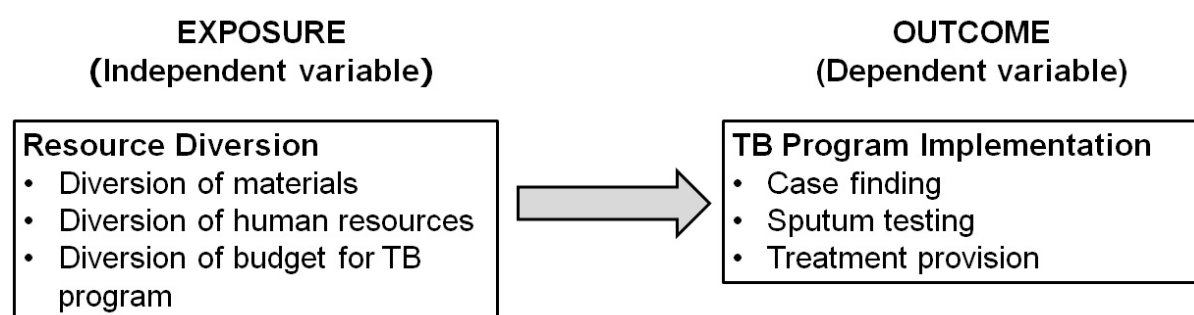
Since the first COVID-19 case was confirmed in 2019 in Wuhan, China (WHO, 2021) several preventive measures were implemented by the WHO which were later modified by the Aceh government in order to suit the local context. However, those preventive measures have unintended consequences to the TB Program. During the COVID-19 pandemic, TB case notification was reported declining 13% in Sierra Leone (Lakoh et al., 2021), 14% in Eswatini (Masina et al., 2022), 19% in South Korea (Min et al., 2020), 10% in Pakistan (Malik et al., 2022) and 28% in Papua, Indonesia (Lestari et al., 2022). However, the COVID-19 pandemic impacted variously in terms of TB treatment outcomes. During the COVID-19 pandemic, the overall treatment success rate in Sierra Leone increased by 56% (Lakoh et al., 2021) but declined by 6.5% in South Korea (Min et al., 2020). This might be attributed to the evaluation of the treatment outcome during the study period in South Korea was registered in the third quarter of 2018 and second quarter of 2019. Therefore, the true impact of the COVID-19 pandemic on the treatment outcome in South Korea could not be measured properly (Min et al., 2020). Additionally, the treatment success rate did not change significantly in Papua, Indonesia even though the proportion of TB-related deaths increased significantly during the COVID-19 pandemic (Lestari et al., 2022). Changes in the TB program in Spain during the COVID-19 pandemic resulted in a reduction of 30% of the healthcare workers in Spain (Aznar et al., 2021). Focus and responsibilities among the healthcare workers were shifted and reallocated from TB program as well, resulting in barriers and difficulties in diagnosis and follow-up TB patients. Furthermore, healthcare-seeking behavior among TB patients changed during the COVID-19 pandemic due to barriers to accessing healthcare facilities, fear of getting COVID-19 infection by

interacting with other people, and lack of healthcare provider resources. Additionally, barriers to healthcare facilities are higher among patients who live in remote and low-income areas (Aznar et al., 2021).

TB patients in Peru were experiencing additional costs for COVID-19 treatments due to symptoms' similarities between TB and COVID-19 (Millones et al., 2022). During the COVID-19 pandemic, access to TB services was reduced. Public hospitals put their focus more on managing COVID-19 and cut back on other services during the pandemic. Although private hospitals were much more accessible than public hospitals, TB evaluation was not generally performed in the private sector in Peru (Millones et al., 2022).

### Study Hypothesis

There is an association between diversion of human and capital resources and changes in implementation and outcomes of the Indonesian National Tuberculosis Program (*Figure 1*)



**Figure 1.** Conceptual framework of the study hypothesis

## METHODOLOGY

### Study Design and Setting

We conducted a qualitative study using focus group discussion among the TB healthcare workers in Aceh Besar District, Indonesia.

### Study Participant

The study participants are the TB healthcare workers who were registered to work at the Aceh Besar District Health Office. We included those who were: 1) working in the TB program for at least 30 cumulative days during the COVID-19 pandemic; and 2) working at the Aceh Besar District since January 1<sup>st</sup>, 2018. Using purposive sampling, 7 eligible TB healthcare workers were included as the participants in this study.

### Data Collection

Semi-structured Focus Group Discussion was conducted in Bahasa Indonesia based on a guideline to thoroughly explore TB healthcare workers' perceptions and experiences. FGD was audio-recorded in the Seminar Room of the Faculty of Mathematics and Natural Sciences, Universitas Syiah Kuala, Darussalam, Banda Aceh, Indonesia, and lasted for approximately 120 minutes. The guideline included topics on TB healthcare workers' perceptions and experiences regarding the diversion of TB-related resources during the COVID-19 pandemic.

### Data Management and Analyses

All voice recordings in Bahasa Indonesia were transcribed into Roman script and translated into English. We then used the English version for qualitative data analyses. Specifically, we followed the procedures for theoretical thematic analysis to address our research questions. The second author (WW) developed the initial

codes for the analyses. Both authors (AS and WW) then mutually identified themes based on current knowledge regarding TB program management, separately allocated the codes into broader themes, compared and corroborated the findings, and resolved discrepancies based on discussion and mutual consensus. The allocation of the codes into themes was not mutually exclusive, i.e., a given code can appear on multiple themes. The authors then discuss the findings and selected example quotes to present as a part of the study results.

### Ethical Considerations

This qualitative study received ethical approval from the Human Research Ethics Unit, Faculty of Medicine, Prince of Songkla University (REC.66-266-18-2).

## RESULTS

In total, 7 participants accepted our invitation to participate in the focus group discussion session. Our session lasted approximately 120 minutes. All of the participants are female with the median age of 44 years old. The youngest participant was 28 years old, and the oldest participant was 54 years old. One participant was a TB program supervisor, five participants were the person-in-charge (PIC) for the TB Program at a *Puskesmas* (Health Center), and one participant was the PIC for the TB Program at a district hospital. Participants provided remarks regarding resource diversion during the pandemic and the effects of the pandemic on the national tuberculosis program (*Table 1*).

**Table 1** Thematic analysis findings from the focus group discussion session

| Theme                             | Sub-theme  | No. of references                                | Example quotes or excerpts   |
|-----------------------------------|--|--|--|
| Diversion of TB-Related Resources | Top-down approach to diversion                   | 10, 26   | “Of course [we have an official notification letter], but there is no official decentralization from the government.” (04)   |
|                                   | Diversion of Human Resources from TB to COVID-19 | 2, 3, 10, 11, 18, 24, 26, 45, 45, 74, 76, 78, 79 | “We are all [increasing workload], we didn't take care of the TB program [during COVID-19 pandemic. They [the government] said we could do it later, because now we have to focus on [preventing] COVID-19. We are busy helping to swab [suspected COVID-19]. ...” (05)<br><br>“What has definitely increased is the burden on the [health] services and the workload community health centers will definitely be more. But [the extent of workload] for each health facility] is different...” (03) |
|                                   | Diversion of funding (or absence thereof)        | 28, 47, 48, 49, 54, 58, 59, 61, 63               | “... for the TB [program], there has never been a problem regarding budget so far. The funds have always been sufficient. Frankly, we actually don't get support from the regional government. ....” (03)  |

| Theme  | Sub-theme   | No. of references  | Example quotes or excerpts  |
|--|---|--------------------|---|
|  |   |                    | "It's [the budget for TB Program] the same, whether there is a COVID-19 [pandemic] or not." (06)<br>"Because the budget is also divided into spending on materials and transportation." (03)  |
|  | Diversion of materials                                      | 31, 32, 33         | "So, actually the COVID-19 [pandemic] is a high risk. [but] people don't know it. After this they can be [wiser] so that the number of cases decreases. For example, wearing [complete PPE]." (03)  |
|  | Modification of SOP   | 30, 31             | "SOP development is in place, minimum use of barriers and PPE." (03)  |
| Effects of the Pandemic on Tuberculosis Program Implementation | Stigma against COVID-19 hindering TB case finding           | 2, 3, 11, 18       | "During the COVID-19 period, I went into the community but was chased away [by them]. This is because the stigma of COVID-19 in the community is very serious. They said "sorry ma'am, at this time we cannot allow you to visit the village". Even though our goal is to look for sputum samples. At that time, COVID-19 cases were actually increasing and TB cases were low...." (05)  |
|  | Difficulty in obtaining sputum                              | 11, 19             | "... we asked for their sputum, but the patients [were] suspicious of being suspected for COVID-19. So the stigma of patients who are afraid of being diagnosed as a COVID-19 patient is the biggest cause of reducing TB suspicions during the COVID-19 [pandemic]." (03)  |
|  | Positive effects of the COVID-19 pandemic on the TB program | 35, 36, 38, 40, 41 | "Like giving masks to TB suspects. Friends, now when treating patients [you should] wear a mask. Because TB suspects also have a lot of [risks]. That's why the patient's sitting position is now also one meter. [Because the person] speaking is not wearing a mask, there could be [a risk of] infection. The fault is not the patient, [but] the health workers [health workers] why don't they ask [patients] to wear masks. Maybe [there should be] direct demands." (03) |

### **Diversion of TB-Related Resources**

Top-down approach to diversion: During the COVID-19 pandemic, most of the health services shifted their focus to preventing COVID-19, including TB program. Participants described there was an official notification regarding the focus-shifting, which suggested a top-down approach to diversion.

**Diversion of Human Resources from TB to COVID-19:** The workload of healthcare workers increased, especially those who were lab technicians. However, several participants agreed that the burden was varied for every health facilities and did not significantly affected their work in TB program.

**Diversion of funding (or absence thereof):** Participants also described the budget for TB program was remained the same without raising any concerns. Despite the increased workload for healthcare workers, there was no corresponding increase in the budget. Participants who went to the community were not offered incentives in any form, they only received reimbursement for transportation expenses.

**Diversion of materials:** During the COVID-19 pandemic, using personal protective equipment (PPE) is mandatory for both healthcare workers and patients. Expenses for PPE procurement was substantially increased during the COVID-19 pandemic, but it did not impact the TB program as these expenses were covered from other funds.

**Modification of SOP:** Participants described that there was development of standard operating procedures

### **Effects of the COVID-19 Pandemic on National Tuberculosis Program Implementation**

**Stigma against COVID-19 hindering TB case finding:** Participants described stigma against COVID-19 was the main reason TB case finding was constrained in their area of responsibility.

**Difficulty in obtaining sputum:** As the person-in-charge for TB Program in their respective health facility, participants were responsible to derive sputum sample from TB suspect in order to reach the target for TB case finding. However, during the COVID-19 pandemic, the sputum sample was more difficult to obtain. One participant reported that the stigma against COVID-19 partly contributed to this difficulty.

**Favorable effects of the COVID-19:** On the other hand, participants reported that the COVID-19 pandemic also had a positive impact on the TB program. Prior the COVID-19 pandemic, healthcare workers did not consistently use PPE when interacting with TB patients. The pandemic appeared to raise awareness about respiratory infectious diseases, and respiratory hygiene seemed to have improved.

## **DISCUSSION AND CONCLUSIONS**

In this qualitative study involving one session of focus group discussion, we aim to describe the nature of public health resource diversion from the Indonesian National Tuberculosis Program to COVID-19 prevention and control efforts and the extent that the Indonesia National Tuberculosis Program implementation was affected by this diversion in Aceh Besar District. We found that during the COVID-19 pandemic, TB program was stalled in term of case finding due to stigma associated with COVID-19. The increased of workload among TB healthcare workers was notable, lab technicians who were responsible for TB diagnosis was actively engaged in the COVID-19 activities. However, adjustment on the standard operational procedures (SOP) of the health services during the COVID-19 pandemic yielded favorable impact. The findings of this study have implications for stakeholders in TB program implementation and infectious diseases prevention and control, particularly those in the Indonesian context.

We found that TB healthcare worker faced difficulties on finding TB cases during the COVID-19 pandemic due to stigma against COVID-19 in the community. This stigma might be associated with increased social media use during the pandemic (González-Padilla & Tortolero-Blanco, 2020) and subsequent exposure to misinformation (Bastani & Bahrami, 2020). Interestingly, patients refused to provide sputum sample due to fear

of being suspected with COVID-19, despite the notion that COVID-19 testing did not involve sputum collection. The refusal suggested that the patients were either possibly unaware of the difference between COVID-19 and TB, or suspicious that public health workers would also perform COVID-19 on their sputum specimen without their consent, potentially leading to a quarantine and loss of freedom, ergo the refusal. Unfortunately, we did not probe for the stated reason for refusal. Future studies on sputum testing refusal among suspected TB cases should include probing of reasons for refusal.

Diversion of human resources was frequently mentioned during the focus group discussion session. Even before the pandemic, most TB healthcare workers already burdened with multiple responsibilities, including being the implementers of other programs. The immediate changes during the COVID-19 pandemic resulted on the person-in-charge for TB program facing difficulties in maintaining the program due to involvement in COVID-19 prevention work (Aznar et al., 2021). Despite the increase in workload, incentives were not always offered to healthcare workers. However, financially the TB program seems unaffected by the COVID-19 disruption. This could be due to the fact that procurement of COVID-19-related materials was done using the Unexpected Expenditure budget, which left the TB program unaffected. The lower number of TB cases during the pandemic was thus more likely to be attributed to human resource shortage than lack of funding.

Despite the drawbacks, COVID-19 yielded positive impact to the TB program. Prior the pandemic, healthcare workers and patients rarely use PPE, such as mask, when interacting to each other. This situation increased the likelihood of healthcare workers infected by TB, even latent TB infection (Chen et al., 2019; Park, 2018). During the COVID-19 pandemic, a strict regulation on using PPE were imposed, healthcare workers and patients were required to use mask to prevent COVID-19 transmission. Evidently, this practice yielded favorable effects toward TB program.

One caveat of our study was the use of purposive sampling. The Aceh Besar District was large with a wide variety of geographical terrains (Badan Pusat Statistika Kabupaten Aceh Besar, 2023). However, to ensure that participants would be able to attend the focus group discussion session, we purposively sampled healthcare workers at facilities near the discussion venue. This can lead to lack of representativeness even though the participants being from completely different backgrounds than those in other parts of the District (Daly & Lumley, 2002). Our participants worked at health facilities with adequate resources to access the GeneXpert machines, thus the findings of our study may not be generalizable to health facilities in more resource-scarce settings.

Our study was likely the first qualitative study to describe the diversion of TB-related resources during the COVID-19 pandemic in Aceh Besar District, Indonesia. Our study not only included participants who were directly implemented the TB program in healthcare facilities as the person-in-charge but also included participant from the District Health Office to acquire a comprehensive finding. However, a number of limitations should be considered in the interpretation of the study findings. Firstly, we only conducted one session of focus group discussion among TB healthcare workers from only one district, which limited the generalizability of our study findings. Secondly, we did not adequately probe the participants for details of their answers, which limited the depth of the study findings.

In conclusion, our findings provide a depiction of the TB program during the COVID-19 pandemic in Aceh Besar District, Indonesia. Maintain TB program during the COVID-19 pandemic posed significant difficulties for healthcare worker, especially in term of case findings. Although workload among healthcare workers increased,



there were no additional incentives provided during the pandemic. In addition, the COVID-19 pandemic yielded positive impact to the TB program by enhancing awareness of using PPE among both healthcare workers and patients. Strengthening the existed systems in the TB program is highly suggested in order to eliminate TB. As the status of COVID-19 transitions away from global pandemic, it become imperative to restore and improve health systems, fostering resilience to potential future crises.

## RECOMMENDATIONS

The Unexpected Expenditure Budget line should be maintained by the Indonesian Ministry of Health in order to ensure financial robustness during the next pandemic. A human resource contingency plan, including incentives, should be developed in order to further minimize the effect of pandemics on healthcare human resources.

## SUGGESTIONS FOR FUTURE STUDIES

To ensure the representativeness of the findings, future studies should include participant from other districts with different backgrounds. More than one session of focus group discussion also highly suggested, consider separating participants based on certain characteristics (e.g. job roles, experiences, and location) to obtain more diverse findings. Future studies should also explore the issue of COVID-19 stigma on TB case finding in greater depths.

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**Data Availability Statement:** The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

**Conflicts of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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