FLIPCHART AND BOOKLET AS MEDIA TO INCREASE CADRE'S KNOWLEDGE ABOUT LATENT TUBERCULOSIS PREVENTION IN CHILDREN

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ABSTRACT

Educating and empowering the community through tuberculosis cadres is crucial in the early detection of latent tuberculosis infection (LTBI) in primary healthcare settings. From the wide variety of educational media that can be used, flipcharts and booklets have a strong impact on engaging the participants through visual media. Therefore, this community service aims to determine the effect of education through flipcharts and booklets on TB cadres to increase LTBI finding in children. A total of 20 TB cadres of Dr. Soetomo Primary Health Care Surabaya participated in this study. Statistical analysis to evaluate the difference between the pre-test and post-test was used with the Wilcoxon test. The result of the pretest showed insufficient knowledge about latent tuberculosis with an average score of 74%. The post-test average score of 91% indicated a 17% increase in score. There was a significant difference in the score of the test before and after giving the material (p=0.001), indicating an increase in LTBI knowledge of the TB cadres after giving health education using flipchart and booklet as evidenced by the increase in average score between pre-test and post-test.

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INTRODUCTION

Based on data from WHO Global Tuberculosis Report 2020 Indonesia ranks second as the country with the most cases of tuberculosis (TB) in the world after India. It is estimated that 17% of 845,000 cases of tuberculosis in 2019 are children. Most cases of pediatric TB go undetected. Only 522,000 (44%) of the predicted 1.2 million pediatric TB cases in 2019 were reported[1]. Children have a higher chance of developing active illness after contracting *Mycobacterium tuberculosis* (MTB) due to their undeveloped immune systems. The risk over the course of five years is 33% in children under the age of five[2]. Additionally, the degree of exposure is related to the likelihood of MTB infection in children. Compared to children who have previously been exposed in the community, those with home contact are more likely to get infected[3].

Latent tuberculosis infection (LTBI) is a condition of bacterial infection of MTBI which elicits a persistent immune response in the body without clinical manifestations of active TB. Children with LTBI do not exhibit any signs of active disease but might do so in the distant or immediate future through a process known as TB reactivation. As a result, tracing and screening of pediatric household contacts of TB patients has a significant potential to identify and treat children with TB and LTBI early[4]. One of the solutions to the problem described above can be done through early detection of LTBI in primary healthcare settings by educating and empowering the community through TB cadres. Cadre is the key to the success of increasing knowledge and skills in the public health sector. The presence of TB cadres in the community is very strategic. Cadres can act as a counselor, help find suspects early, refer TB suspects to primary healthcare, and at the same time as supervisor for TB drug control[5].

There are a wide variety of educational media that can be used to educate the community. The choice and use of media are crucial elements. In human, eyes are among the five senses that convey knowledge to the brain (about 75–87%), whereas the other senses account for 13–25% of human knowledge[6]. Therefore, the use of flipcharts and booklets as media for health education provides more eye-catching and engaging health promotion. The media has a significant impact since it facilitates the delivery of content and serves to illustrate a point that the health educator is trying to convey[7]. Based on a prior study comparing the use of audio vs. audio-visual media in teaching students carried out by Nindiyana, it was found that the usage of audio-visual information had a stronger impact on students than audio material[8]. Research conducted by Muwakhidah *et al.* which compared the use of booklet, leaflet, and poster in educating teenagers about anemia, found that the increase in the percentage of knowledge only occurred in the use of booklet, with a 35% increase of teenagers who had a post-test above the average compared to the pre-test. Whereas in other media groups (posters, leaflets) the percentage of knowledge above the average tends to remain the same[9]. Thus, it is crucial to determine the effect of education through flipcharts and booklets on TB cadres to improve LTBI findings, diagnosis, and prophylaxis therapy in children exposed to MTB.

MATERIALS AND METHODS

The community service consists of a series of programs to educate primary health care (PHC) workers in Surabaya regarding LTBI in children. The program was carried out in Dr. Soetomo Primary Health Care involving 20 TB cadres as participants. This community service was conducted in December and was approved by the ethical committee of Faculty of Medicine, Universitas Airlangga No. 176/EC/KEPK/FKUA/2022. In the preparation stage, the team prepared several educational media including booklets and flipcharts to help increase the health workers' knowledge and awareness about LTBI in children. These educational media compiled the topics on definition, etiology, transmission route, signs and symptoms, diagnostic methods, prophylaxis therapy, and prevention of LTBI. The booklet and flipchart topics have been well prepared by being approved and consulted with experts in the field of pediatrics respirology. Validation of the flipchart and booklet

media was carried out by three expert validators. The evaluation obtained was used as a reference in product revision to produce a final product that is suitable for use. Based on the average results of validation by the validator, the developed flipchart and the booklet were valid and can be used.

During the implementation phase, the community service events were carried out started with opening, then the pretest, material provision, and closed with a post-test. The pretest was carried out before giving the material to determine the participant's initial understanding of LTBI. The activity of providing material was carried out in lectures and discussions by competent experts so that the participants could have well comprehension regarding LTBI. TB cadres in the PHC also had the chance to ask questions about the materials that had not been understood.

The materials presented were mainly about latent TB detection, diagnosis, and prophylaxis treatment. Education about prophylaxis treatment was conducted for the TB cadres based on the recent guidelines from the Indonesia Ministry of Health. The purpose of giving these topics is to increase the TB cadre's comprehension regarding LTBI and could also prepare them to educate the community so that they will be well prepared when in contact with families with children who have a positive TB family member. The post-test was carried out after a discussion session on all topics. The pretest and post-test used a questionnaire consisting of five variables. After participating in health education activities, the health workers were given the booklet and flipchart as a guide for further education in the community.

RESULTS

The level of knowledge of the respondents was measured twice through a questionnaire before and after the presentation of the materials. The results of the measurement of the respondent's level of knowledge can be seen in Table 1. Table 1 shows that the participant's level of knowledge before and after being given the material about latent tuberculosis experienced a significant change. The result of the pretest showed insufficient knowledge about latent tuberculosis with an average score of 74%. The post-test average score of 91% indicated a 17% increase in score. Based on the pretest, knowledge related to prophylaxis treatment for LTBI in children was most lacking as there were 80% of the participants answered incorrectly.

Knowledge related to symptoms of tuberculosis in children was most understood with only 1 participant (5%) answering incorrectly. Almost all the participants had a good understanding of the etiology, risk factors, and examination method for tuberculosis with more than 85% of the participants answering correctly regarding this topic. Based on the post-test, there was an increase in knowledge of all the variables. Although the question about LTBI was most answered incorrectly (35%), there was the most significant increase in the score from 20% to 65% correct answers in the post-test.

Based on Table 2, it was known that both the pre-test and post-test values of the respondents were not normally distributed because of the significant value which was less than 0.05. Hence Wilcoxon test was used for the statistical analysis. It can be seen in the Wilcoxon test that the value was $0.001 < 0.05$, meaning that there was a

difference between the knowledge of the TB cadres at the time of filling out the questionnaire before and after material provision.

Table 1. Level of TB Cadres Knowledge About Tuberculosis

Knowledge variables	Pre-test		Post-test	
	Right (N %)	Wrong (N %)	Right (N %)	Wrong (N %)
Etiology of tuberculosis	18 (90%)	2 (10%)	19 (95%)	1 (5%)
Symptoms of tuber-culosis in children	19 (95%)	1 (5%)	20 (100%)	0 (0%)
People at risk for latent tuberculosis	16 (80%)	4 (20%)	19 (95%)	1 (5%)
Tuberculosis screening in children	17 (85%)	3 (15%)	20 (100%)	0 (0%)
Therapy for latent tuberculosis	4 (20%)	16 (80%)	13 (65%)	7 (35%)

Table 2. Statistical Analysis of Pre-Test and Post-Test of TB Cadres

Type of test	N	Mean	Normality test	Wilcoxon Test
Pre-test	20	74	0.000 (<0.05)	0.001
Post-test	20	91	0.000 (<0.05)	

DISCUSSION

This study assessed the knowledge of TB cadres in primary healthcare in Surabaya about childhood tuberculosis before and after the provision of materials in booklets and flipcharts. According to a research by Owa and Rochmawati, there is an increase in knowledge score in group receiving health promotion interventions compared to those with no interventions[10]. Booklets and flipcharts as educational media are very effective to be used as a medium of health education in primary health care settings for TB prevention. The simple and understandable language and illustrations make it easier for the respondents to comprehend. It also attracts the respondent's attention which leads to an increase motivation and interest in reading. Both booklets and flipcharts are also portable and can be studied at home[11,12]. Almost all respondents knew that TB is caused by MTB and symptoms of tuberculosis in children, similar to findings from other studies in Indonesia[13].

Knowledge of people at risk for latent tuberculosis was high before and after the intervention. Although there is no previous study, similar research conducted by Boy about knowledge of people at risk for tuberculosis in health cadres at Medan showed the same result[14]. Research conducted by Oktobianobel found that there is also a high score about knowledge of children at risk for tuberculosis in general society[15]. This became important so that cadres could increase awareness about tuberculosis patients of transmission to people at risk.

Research conducted by Munir found improved involvement of TB cadres after education and training. There was a significant relationship between cadre training and new case detection at the Tuban District Health Center. Health centers which had conducted training for cadres detected more TB suspects than the community health centers which did not conduct cadre training[16]. This was also in accordance with the research of Fadhilah et al. which stated that there was a significant difference between cadres who had high knowledge compared to cadres with low

knowledge in the behaviour of TB suspect detection[17]. Therefore, it is important for TB cadres to receive adequate information and training regarding LTBI to increase outreach for suspected LTBI in children to reduce cases of active TB and prevent further morbidity and mortality[18].

Knowledge on therapy for LTBI was found lowest which is both worrying and understandable in the context of a primary healthcare setting. The socialization of LTBI diagnosis and prophylaxis treatment has not been widely informed in Indonesian primary health care. Even though Indonesian Ministry of Health has conducted various efforts in increasing the understanding of LTBI in children, awareness about the importance of LTBI detection and prophylaxis treatment is still lacking[19]. Even though prophylaxis treatment is universally recommended by WHO, it is seldom used in countries with low resources[20]. LTBI in young children must be identified for public health reasons because they are more likely than adults to acquire active TB[4].

CONCLUSION

In this community service activity, there is an increase in knowledge of TB cadres after receiving material using flipcharts and booklets about LTBI in children. The increase in knowledge of the cadres will prepare them to detect LTBI in the community and increase the outreach of the suspects. If detected appropriately, TB prophylaxis treatment for children can be given to prevent infection from developing into an active disease. Research needs to be done to assess whether counseling and an increase in the knowledge of health cadres correlate with an increase in case detection in the health center area of each cadre. Flipcharts and booklets media can be used for future educational methods as an effort to improve the cadre's knowledge about LBTI in children.

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CONFLICT OF INTEREST

All Authors have no conflict of interest.

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AUTHOR CONTRIBUTION

All authors have contributed to all processes in this research, including preparation, data gathering, and analysis, drafting, and approval for publication of this manuscript.

REFERENCES

1. World Health Organization. Global tuberculosis report 2020. Geneva: World Health Organization; 2020.
2. Sloot R, Van der Loeff MF, Kouw PM, Borgdorff MW. Risk of tuberculosis after recent exposure. A 10-year follow-up study of contacts in Amsterdam. American Journal of Respiratory and Critical Care Medicine.2020;190(9): 1044–1052.

3. Martinez L, Shen Y, Mupere E. Transmission of mycobacterium tuberculosis in households and the community: a systematic review and meta-analysis. American Journal of Epidemiology. 2017; 185(12): 1327–1339.
4. Ghanaie RM, Karimi, A, Azimi L, James S, Nasehi M, Mishkar AP, et al. Diagnosis of latent tuberculosis infection among pediatric household contacts of Iranian tuberculosis cases using tuberculin skin test, IFN- γ release assay and IFN-γ-induced protein-10. BMC Pediatrics. 2021; 21(1): 76.
5. Pebryanty P, Restuastuti T, Zahtamal Z. Pengetahuan dan Tindakan Kader Tb dalam Upaya Pengendalian Penyakit Tb Paru di Kabupaten Kepulauan Meranti. Jurnal Online Mahasiswa Fakultas Kedokteran Universitas Riau. 2017; 4(2): 1–14.
6. Maulana HDJ. Promosi Kesehatan. Jakarta: PT. Penerbit Buku Kedokteran EGC; 2009.
7. Notoatmodjo S. Promosi Kesehatan dan Ilmu Perilaku. Jakarta: Rineka Cipta; 2014.
8. Nindiyana A. The Use of Audio Media vs. Audio-Visual Media in Teaching Listening. RETAIN (Research on English Language Teaching in Indonesia). 2021; 9(1):8–12.
9. Muwakhidah, Fatih FD, Primadani T. Efekvitas Pendidikan Dengan Media Boklet, Leaflet Dan Poster Terhadap Pengetahuan Tentang Anemia Pada Remaja Putri. Proceeding of The 13th University Research Colloquium 2021: Kesehatan dan MIPA. 2021;438–46.
10. Owa MG, Rochmawati E. Efektifitas Edukasi TB melalui Booklet Berbahasa Tetun Terhadap Pengetahuan dan Sikap Keluarga Dalam Pencegahan Penularan TB Di Centru Saude Comoro, Dili, Timor Leste. Wiraraja Medika : Jurnal Kesehatan. 2020; 10(1): 29–35.
11. Rahmad AH, Almunadia. Pemanfaatan Media Flipchart Dalam Meningkatkan Pengetahuan Ibu Tentang Konsumsi Sayur dan Buah. Jurnal Kedokteran Syiah Kuala. 2017; 17(3): 140–146.
12. Prasetyowati CD, Wahyuni S. Pendidikan Kesehatan dengan Booklet dalam Meningkatkan Health Literacy Pasien TB Paru di Puskesmas Wilayah Kota Kediri. Jurnal Nusantara Medika. 2020; 4(1): 1–10.
13. Yahya IRE, Sinuraya RK, Puspitasari IM. Pengetahuan, Sikap, dan Praktik Tenaga Kesehatan terhadap Penyakit Tuberkulosis: Sebuah Review.Indonesian Journal of Clinical Pharmacy. 2020; 9(3): 255.
14. Boy E. Efektifitas pelatihan kader kesehatan dalam penanganan tuberkulosis di Wilayah Binaan. Jurnal Pendidikan Kedokteran Indonesia: The Indonesian Journal of Medical Education. 2015; 4(2): 83-9.
15. Oktobiannobel J, Hasbie NF, Buldani A, Kurniawan AN, Puspitaningdiyah AN, Aini F, et al. Evaluasi Hasil Pre/Post-Test Penyuluhan Pengenalan dan Pengendalian Penyakit Tuberculosis Paru pada Masyarakat Umum di Kecamatan Kemiling Kota Bandar Lampung Tahun 2022. Syntax Literate; Jurnal Ilmiah Indonesia. 2022; 7(9): 13181-7.
16. Munir M. Hubungan Antara Pelatihan Kader Komunitas TB DOTS dengan Jumlah Suspek TB yang Terjaring di Puskesmas Kabupaten Tuban. Sains Medika. 2011; 3(031): 67–73.

17. Fadhilah N, Nuryati E, Duarsa A, Djannatun T, Hadi RS. Cadre Behavior in Tuberculosis Suspect Detection. Jurnal Kesehatan Masyarakat Nasional. 2014; 8(112):280–3.
18. Rakhmawati W, Fitri SYR., Sriati A. Hendrawati S. Pengembangan Kapasitas Kader Kesehatan dalam Penemuan Kasus Tuberkulosis pada Anak di Tengah Pandemi COVID-19. Media Karya Kesehatan. 2021; 4(1): 28–45.
19. Pangestika R, Fadli RK, Alnur RD. Edukasi Pencegahan Penularan Penyakit Tb melalui Kontak Serumah. Journal Solma. 2019; 8(2):229.
20. Chakaya J, Khan M, Ntoumi F, Aklillu E, Fatima R, Mwaba P, et al. Global Tuberculosis Report 2020 – Reflections on the Global TB burden, treatment and prevention efforts. International Journal of Infectious Diseases. 2021; 113S(2021) : S7–S12.