Journal of International Nursing and Healthcare Research (**JINHR**)
2025, Volume 1, Issue 1 | doi: 10.63983/smn.jinhr.v1i1.04
http://saintekmedikanusantara.co.id/ojs/index.php/jinhrc

Open Access

Original Article

Implementation of Diet Education Nursing Intervention in Improving The Appetite of Children with Pulmonary Tuberculosis

Nurul Mawaddah[1], Ika Suhartanti[1], and Nura Cendrakasih[1]*

Authors Information:
[1]Program Studi S1 Ilmu Keperawatan Stikes Majapahit, Mojokerto, Jawa Timur, Indonesia

Corresponding Author:
[1]Program Studi S1 Ilmu Keperawatan Stikes Majapahit, Mojokerto, Jawa Timur, Indonesia
Email: mawaddah.ners@gmail.com

Article Information:
Year: 2025
Volume: 1
Issue: 1
Page: 22 - 29
Doi: 10.63983/smn.jinhr.v1i1.04

Article History:
Received: 4 June 2025
Revised: 13 July 2025
Accepted: 14 July 2025

Keywords:
appetite, diet education, pulmonary tuberculosis

Abstract

Background: Pulmonary tuberculosis is a contagious disease that remains a public health concern. One of the common symptoms experienced by children with pulmonary tuberculosis is a decreased appetite. This study aimed to determine the effect of dietary education nursing intervention on the appetite of children with pulmonary tuberculosis.

Methods: The research employed a pre-experimental design with a one-group pretest-posttest approach. The population included all parents and pediatric pulmonary tuberculosis patients aged 2–5 years at the Pediatric Outpatient Clinic of Reksa Waluya Hospital, Mojokerto. Using purposive sampling, 40 participants were selected. The instrument used was an observation sheet for assessing children's appetite based on the Indonesian Nursing Outcome Standards (SLKI). Data were analyzed using the Wilcoxon Signed-Rank Test.

Results: Results showed that before the intervention, all children experienced decreased appetite ranging from moderately to significantly reduced. After receiving dietary education based on the Indonesian Nursing Intervention Standards (SIKI), there was a notable improvement in appetite. The Wilcoxon test revealed a p-value of 0.000, indicating that the dietary education intervention significantly improved the children's appetite.

Conclusion: Therefore, dietary education is effective in enhancing appetite among children with pulmonary tuberculosis. Nurses are recommended to routinely incorporate dietary education into pediatric tuberculosis care to support recovery and nutritional rehabilitation.

Introduction

Pulmonary tuberculosis is a contagious disease that remains a public health problem to this day. This disease is considered highly transmissible, affecting both children and adults. Other common complaints experienced by patients include shortness of breath, fluctuating fever, chest pain, drastic weight loss, and loss of appetite.[1] Several symptoms of tuberculosis in children include decreased appetite, weight loss or failure to gain weight according to growth charts, growth failure, and lack of physical activity (fatigue, lethargy, chronic malaise).[2] Tuberculosis in pediatric patients may present with non-specific clinical signs such as weight loss, chronic cough, and notably, reduced appetite, which significantly differs from adult manifestations.

According to the WHO Global Tuberculosis Report 2023, 34 million people worldwide were reported to have tuberculosis, with approximately 15.5 million currently undergoing treatment. Indonesia ranks second after India in terms of the highest number of tuberculosis cases. The prevalence of pulmonary tuberculosis in Indonesia in 2023 was 10%.[3] In 2022, there were 724,309 cases of pulmonary tuberculosis in Indonesia, consisting of 613,428 adult cases (84.7%) and 110,881 pediatric cases (15.3%). In East Java alone, 78,334 cases were reported, with pediatric pulmonary tuberculosis accounting for 14.7% (11,515 cases).[4] In Mojokerto City, there were 241 pulmonary tuberculosis cases reported in 2022.[5]

A preliminary study conducted at Reksa Waluya Hospital, Mojokerto, on June 3, 2024, showed that within the past six months, 68 children aged 2 to 5 years were diagnosed with pulmonary tuberculosis. This figure ranked ninth among the top 10 most common diseases in the pediatric outpatient clinic, with the top three being upper respiratory tract infections (including pneumonia), diarrhea, and unspecified fever. Interviews with five parents of children diagnosed with pulmonary tuberculosis revealed that their children had decreased appetites, often spitting out food, holding it in their mouths without chewing, and being selective with food types. Mothers reported giving appetite-boosting vitamins but did not apply other approaches due to a lack of knowledge.

Pulmonary tuberculosis is caused by *Mycobacterium tuberculosis*. Secretions containing the bacteria cause droplet infections that enter through the respiratory tract and attach to the lungs, triggering inflammation. This inflammation can spread to other organs, including the digestive system, causing anorexia, nausea, and vomiting, ultimately leading to reduced appetite in children.[6] A decreased appetite can lead to malnutrition, which contributes to growth failure. Growth failure lowers the child's immune system, making them more susceptible to infections.[7] Malnourished children also tend to recover more slowly from infectious diseases.[8]

One effort to increase appetite in children with pulmonary tuberculosis is through education, specifically dietary education. Dietary education involves teaching the amount, type, and schedule of planned food intake.[9] This education aims to improve parents' knowledge about children's nutrition and diet so that mothers can apply appropriate feeding practices, ultimately enhancing the child's nutritional status and overall health.[10] Appetite plays a critical role in pediatric growth, immune response, and treatment outcomes. Malnutrition and poor appetite in children with TB can lead to delayed recovery and increased morbidity. Based on the studies above, the researcher is

interested in examining the effect of dietary education on the appetite of children with pulmonary tuberculosis.

Methods

This study employed a pre-experimental design using the one group pretest-posttest approach. The population in this study consisted of all parents and pediatric TB patients aged 2–5 years at the Pediatric Outpatient Clinic of Reksa Waluya Hospital, Mojokerto, totaling 68 children. Using the Slovin formula and purposive sampling technique, a total of 40 respondents were obtained. This study was declared ethically feasible by the Research Ethics Committee (KEPK) of STIKES Majapahit Mojokerto. Parents or caregivers were directly involved in receiving the dietary education sessions, as they play a key role in food preparation and feeding practices at home. Their active participation ensured the intervention's effectiveness in improving the child's appetite.

The research instrument used a checklist sheet to assess children's appetite based on appetite criteria (L.03024) listed in the SLKI PPNI, which includes the following criteria: 1) Desire to eat, 2) Food intake, 3) Fluid intake, 4) Energy for eating, 5) Ability to taste food, 6) Ability to enjoy food, and 7) Stimulus to eat. Each criterion was assessed using a score range of 1 (decreased), 2 (slightly decreased), 3 (moderate), 4 (slightly increased), and 5 (increased). The dietary education guide referred to the SIKI PPNI, consisting of observational actions, therapeutic actions, and educational actions. Respondents who met the inclusion and exclusion criteria were given informed consent and underwent a pretest, followed by the provision of dietary education intervention using leaflets and flipcharts. At the end of all research phases and examination procedures at the clinic, a posttest was conducted on the respondents.

Results

The table above shows that children's appetite before receiving dietary education mostly fell into the "slightly decreased" category, with 37 children (92.5%), and 3 children (7.5%) were in the "moderate" category. The appetite score values included: desire to eat slightly decreased, food intake slightly decreased, fluid intake slightly decreased, energy to eat slightly decreased, ability to taste food slightly decreased, ability to enjoy food slightly decreased, and eating stimulation slightly decreased. Meanwhile, children's appetite after being given dietary education at the Pediatric Clinic of Reksa Waluya Hospital, Mojokerto City, showed that all respondents experienced an improvement (100%) to the "slightly increased" category, marked by improved desire to eat, increased food intake, increased fluid intake, increased energy to eat, improved ability to taste food, improved ability to enjoy food, and increased eating stimulation.

Table 1. Frequency Distribution of Appetite Before and After Dietary Education

Appetite	Pre test		Post test	
	f	%	f	%
Increasing	0	0	0	0
Quite increasing	0	0	40	100
Moderate	3	7.5	0	0
Quite decreasing	37	92.5	0	0
Decreasing	0	0	0	0
Total	40	100	40	100

Table 2. The Effect of Dietary Education on Children's Appetite with Tuberculosis

Appetite	N	Mean	Min-Max	SD	*p-value*
Pre-test	40	13.20	9-15	1.159	0.000
Post-test	40	24.78	23-27	1.143	

The results of statistical tests showed that the data distribution was not normal, so bivariate analysis used the Wilcoxon test. The result obtained was p-value = 0.000 < 0.05, which means there is an effect of dietary education on the appetite of children with Pulmonary Tuberculosis at the Pediatric Clinic of Reksa Waluya Hospital, Mojokerto City.

Discussion

Appetite of Children with Pulmonary Tuberculosis Before Being Given Dietary Education

Almost all children had a slightly decreased appetite. Decreased appetite can occur due to several factors, one of which is the disease itself. Pulmonary tuberculosis is caused by the bacterium Mycobacterium tuberculosis, which causes infection in the lungs, and the inflammation process spreads to other organs such as the digestive tract, leading to anorexia, nausea, and vomiting, resulting in decreased appetite in children.[6] The decrease in children's appetite is also influenced by the lack of effort from parents to stimulate the child's willingness to eat by providing or serving more varied foods, both in type and composition.

The results of this study show that most fathers of children with Pulmonary TB have a moderate level of education (high school or equivalent), namely 24 people (60%), and most mothers of children with Pulmonary TB also have a moderate level of education (high school or equivalent), namely 29 people (72.5%). The education and knowledge level of mothers are categorized as moderate, but that does not necessarily mean they are capable of selecting types of food and serving food for the family, especially for children who are currently undergoing pulmonary tuberculosis treatment that requires a high-calorie and high-protein nutritional intake. Maternal education is very important in relation to knowledge about nutrition and fulfilling the family's nutritional needs, especially for children, because mothers with low education will have difficulty absorbing nutritional information.[11] Even though parents' education is at a moderate level, health education is not always obtained through formal education, so not all parents with moderate or high education levels have good knowledge about child nutrition and health, especially for children with Pulmonary TB. Therefore, when children lose their appetite, they do not know how to deal with it and only give appetite-enhancing vitamins or just let it be, assuming it is something that commonly happens to toddlers.

The study results also show that almost all fathers of children with Pulmonary TB work as entrepreneurs, namely 34 people (85%), and most mothers of children with Pulmonary TB work, namely 24 people (60%). Working mothers who help support the family's economy can also be a reason for the lack of attention during children's mealtimes at home. Occupation is a socio-economic indicator that generates income, and most of it falls into the regional minimum wage (UMR) of Mojokerto City, which is approximately 2.5 million rupiahs per month. Income is one of the important factors that describes the purchasing power of the community for their needs, especially sufficient and safe food needs. The low availability of food threatens a decrease in the consumption of diverse, nutritious, balanced, and safe foods at the household level.[11] Families with low income must divide their finances for all life expenses such as education, household needs, so food needs cannot meet a diverse and balanced menu for toddlers and the family, which causes

children to lose appetite because the mother serves monotonous food variations.

Children's Appetite After Being Given Dietary Education for Pulmonary TB

Based on data analysis, it can be seen that after dietary education was given to 40 respondents, appetite scores increased to "slightly increased," showing that there was an improvement in children's appetite after being given dietary education. Efforts to improve the appetite of children with Pulmonary Tuberculosis are through providing dietary education to parents, especially mothers, to improve children's appetite by teaching the amount, type, and schedule of food intake as programmed.[9] Dietary education is carried out to improve parental knowledge about nutrition and children's diets so that mothers can implement adequate feeding practices for children. Mothers are able to stimulate their children to be willing to eat, which in turn will improve the child's nutritional status and health.[10]

In addition, the method of education for children follows SIKI guidelines, using therapeutic communication in language that is easy for children to understand so that they are willing to listen and comprehend that they need to eat more, especially foods high in protein such as eggs, fish, meat, and milk to recover quickly. Although the direct recipients of the educational content were caregivers, the intervention indirectly benefited the children through improved feeding practices. Interactive elements such as colorful food charts and meal examples were used to visually engage both children and parents, promoting better understanding and acceptance of nutritious foods. During the implementation of dietary education, respondents were also given biscuits and milk as a medium to stimulate the child's willingness to eat and drink, so the child's appetite could be directly observed i.e., the child had the willingness to eat and showed an increased appetite after receiving dietary education, leading to the child's desire to eat. (The child expressed willingness to eat and drink) with an average "slightly increased," food intake (the child ate the provided snack) with an average "slightly increased," fluid intake (the child drank the provided milk) with an average "slightly increased," energy to eat (the child was seen chewing food) with an average "slightly increased," ability to taste food (the child commented on the taste) with an average "slightly increased," ability to enjoy food (the child finished the provided snack) with an average "slightly increased," and stimulation to eat (the child picked up the snack and food independently) with an average of "moderate." This was due to the provision of biscuits and milk as stimulation during dietary education.

The increase in appetite was also due to the use of educational leaflets with cute pictures and dolls, making the children like and be willing to eat what was provided by the researcher.

The Effect of Dietary Education on Appetite in Children with Pulmonary Tuberculosis

There was an increase in children's appetite after being given dietary education. The Wilcoxon test showed a p-value = 0.000 ≤ 0.05, which means there is an effect of dietary education on the appetite of children with Pulmonary Tuberculosis at the Pediatric Clinic of RS Reksa Waluya Mojokerto.

Nutritional fulfillment must be a concern for patients with Pulmonary Tuberculosis because patients with Pulmonary TB will experience symptoms of anorexia (loss of appetite) and increased metabolic needs. The type of food highly needed by these patients is high-calorie, high-protein (TKTP)

food. To improve knowledge among Tuberculosis patients, dietary education should be provided by nurses.[12] TKTP dietary education will increase the knowledge of Tuberculosis patients and their families about fulfilling nutritional needs to address anorexia or decreased appetite in Pulmonary Tuberculosis patients.[13]

Previous research has shown that health education can increase children's appetite, such as education about Tui Na massage, in which education was provided once and evaluation was done immediately afterward to determine the mother's increased knowledge on how to improve appetite through Tui Na massage. Another study on health education that improved children's appetite was education about "Isi Piringku," where education was given once and evaluation was carried out 14 days after the education to assess increased appetite.[14]

All respondents who were given dietary education experienced an increase in appetite scores, although the score increases varied for each child. Dietary education was conducted using illustrated leaflets, therapeutic communication techniques appropriate to the child's age and language comprehension so that the child could receive balanced nutrition. The education was not limited to showing leaflets and images but also included motivating the child to consistently take TB medication to ensure successful treatment and recovery.

Conclusion

The appetite of children with Pulmonary Tuberculosis at the Pediatric Clinic of RS Reksa Waluya in Mojokerto City before receiving dietary education experienced a decrease with criteria ranging from slightly decreased to moderate, and after being given dietary education, all respondents experienced an increase in appetite with the criteria of slightly increased. This study shows that the nursing intervention of dietary education according to the Indonesian Nursing Intervention Standards (SIKI) by PPNI is effective in increasing appetite in children with Pulmonary Tuberculosis at the Pediatric Clinic of RS Reksa Waluya in Mojokerto City. Further research is recommended to explore the long-term impact of diet education on nutritional status and treatment adherence in pediatric TB cases. Additionally, future studies could compare different modes of education delivery (e.g., digital, group-based, or home visits) to optimize intervention effectiveness in diverse healthcare settings.

Declaration of Interest

The authors declare that they have no conflict of interest regarding the publication of this article. This research was conducted independently, and no financial or commercial relationships were involved that could be interpreted as a potential conflict of interest.

Acknowledgement

The authors would like to express their sincere gratitude to RS Reksa Waluya Kota Mojokerto for their permission and support during the data collection process. Special thanks are also extended to all participants, especially the parents and children involved in the study, for their time and cooperation. We also acknowledge the ethical review board of STIKES Majapahit Mojokerto for granting the ethical clearance to carry out this research.

References

1. Ludiana AC, Wati YR. Gambaran Pengetahuan tentang Penyakit Tuberkulosis Paru pada Keluarga Penderita di Puskesmas X. *J Ris Kedokt*.

Published online 2022:107-116. doi:10.29313/jrk.vi.1511

2. Gunasekera KS, Vonasek B, Oliwa J, et al. Diagnostic Challenges in Childhood Pulmonary Tuberculosis—Optimizing the Clinical Approach. *Pathogens*. 2022;11(4):1-11. doi:10.3390/pathogens11040382
3. WHO. Global Tuberculosis Report 2023. WHO. Published 2023. Accessed May 13, 2025. https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2023
4. Dirjen P2P. Laporan program penanggulangan tuberkulosis tahun 2022 - Google Search. Published 2023. Accessed May 13, 2025. https://tbindonesia.or.id/pustaka_tbc/laporan-tahunan-program-tbc-2021/
5. Dinkes Kota Mojokerto. Rencana Strategi Tahun 2018-2023. Published 2023. Accessed May 13, 2025. https://ppid.mojokertokota.go.id/userfiles/2021/01/f118b-rencana-strategis-renstra-tahun-2018-2023-sekretariat-daerah-kota-mojokerto_opt.pdf
6. Putri PA, Setyoningrum RA, Handayani S, Rosyid AN. Correlation Between Demographic Factors and Tuberculosis Prevention: A Literature Review. *Int J Res Publ*. Published online 2022:379-385. doi:10.47119/IJRP10011511220224317
7. Asih Y, Mugiati M. Pijat Tuna Efektif dalam Mengatasi Kesulitan Makan pada Anak Balita. *J Ilm Keperawatan Sai Betik*. 2018;14(1):98. doi:10.26630/JKEP.V14I1.1015
8. Pratama IGBA, Darwinata AE, Hendrayana MA. Karakteristik Pasien Tuberkulosis Paru dengan Multidrug Resistance di Rsup Sanglah, Bali Tahun 2017 – 2018. *E-Jurnal Med Udayana*. 2021;10(4):63. doi:10.24843/MU.2021.V10.I4.P10
9. Hu B, Ren G, Zhao L. Effect of Health Education Combined with Dietary Guidance on Nutritional Indicator, Immune Level, and Quality of Life of Patients with Pulmonary Tuberculosis. *Comput Math Methods Med*. 2021;2021(1):9463577. doi:10.1155/2021/9463577
10. Sefrina A, Imanah NDN. Edukasi Nutrisi dan Pola Makan Anak Guna Peningkatan Pengetahuan Ibu Balita di Desa Wlahar, Kecamatan Adipala, Cilacap. *J Abdimas BSI J Pengabdi Kpd Masy*. 2024;7(1):40-48. doi:10.31294/JABDIMAS.V7I1.15133
11. Nurmalasari Y, Anggunan A, Febriany TW. Hubungan Tingkat Pendidikan Ibu Dan Pendapatan Keluarga Dengan Kejadian Stunting Pada Anak Usia 6-59. *J Kebidanan Malahayati*. 2020;6(2):205-211. doi:10.33024/jkm.v6i2.2409
12. Latifah U, Ardiana A, Purwandari R, Asmaningrum N. Persepsi Pasien Tuberkulosis Paru tentang Peran Perawat sebagai Edukator di Wilayah Kerja Puskesmas Kabupaten Banyuwangi. 2023;11(3):183-192.
13. Oktofani LA, Zuraida R, Kedokteran F, Lampung U. Perbaikan Asupan Makan Pada Pasien Tuberkulosis Anak Setelah Dilakukan Pendekatan Kedokteran Keluarga. 2021;10.
14. Putri NR, Megasari AL. Edukasi Pijat Tui Na Dalam Meningkatkan Nafsu Makan Balita. *JMM (Jurnal Masy Mandiri)*. 2022;6(6):9-11.
15. Haynes RB, Ackloo E, Sahota N, McDonald HP, Yao X. Interventions for enhancing medication adherence. *Cochrane Database Syst Rev*. Published online April 2008. doi:10.1002/14651858.CD000011.pub3

16. Marquis BL, Huston CJ. *Leadership Roles and Management Functions in Nursing: Theory and Application*. 10th ed. Wolters Kluwer; 2021.