

Original Research

Received 21 May 2026

Revised 27 June 2026

Accepted 22 July 2026

Natural Resources for Human
Health 2026, Vol. 6 (10s): 1345–1363

KEYWORDS:

Tuberculosis children , support
family , caregiver, compliance
treatment , systematic literature
review.

Mentoring Compliance Consumption TB drugs for children based on Family: Systematic Literature Review

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ABSTRACT: Background: Tuberculosis (TB) in children Still become problem global health with challenge focus on compliance treatment. The child has dependence tall towards caregivers, so that support family become factor key in success therapy. However, the role support family in compliance TB treatment for children Not yet integrated in a way comprehensive in various study. Research purposes This aim for identify, evaluate, and synthesize proof scientific related role support family in increase compliance treatment tuberculosis in children.

Research methods use Systematic Literature Review (SLR) approach with referring to the PRISMA guidelines. Search literature done through the PubMed and Scopus databases using keyword combination related to “pediatric tuberculosis”, “family support”, and “treatment adherence”. Criteria inclusion covering article 2010–2025, in English English , and focus on childhood TB (0–18 years) with variables support family and obedience treatment. Of the 120 articles identified, 40 articles fulfil criteria and analyzed use approach thematic synthesis .

Results: Analysis results show that support family is determinant main compliance TB treatment in children. The role of the caregiver includes supervision therapy, support emotional, as well as taking decision related treatment. Influence support family to compliance mediated by factors knowledge and efficacy caregiver self . In addition, the factor psychosocial such as stigma and caregiver burden, as well as factor social economy like income and access service health, also influence success therapy. Approach intervention based family (family-centered care) is proven more effective in increase compliance compared to individual approach.

Conclusion: Compliance TB treatment in children is results multidimensional interactions between factor individual, family, and environment. Support family play a role as determinant main influencing factors success therapy in a way direct and No directly. Therefore that, intervention childhood TB control need integrate approach based family For improve treatment outcomes.

1. INTRODUCTION

Tuberculosis (TB) is still become problem significant global health impacts , including on populations children who are often lacking detected in the TB control program . Children have risk tall experience progression infection become disease active consequence system immunity that has not been mature , especially at the age of early . In addition , the diagnosis of TB in children more difficult Because symptoms that are not specific as well as limitations confirmation bacteriological . This is cause height underdiagnosis and delay rates therapy , which contributes to increasing morbidity and mortality children in countries with high TB burden 1

Different with patient adults , children No own independence in manage treatment so that the entire therapy process is very dependent on the caregiver, especially the parents or nuclear family . Caregivers play a role important in ensure compliance drink medicine , access service health , as well as give support emotional during the treatment process . Caregiver involvement is active contribute significant to success pediatric TB therapy and improving settlement therapy Prevention . TB treatment in children face various complex challenges , including duration duration therapy , effects side medicine , as well as limitations formulation friendly medicine children . Children often experience difficulty in consume drug because of the bitter taste or form unused supplies appropriate , so the caregiver must do various strategies for ensure compliance 2 . Research by Gao et al. (2024) show that factor family , including caregiver's ability in manage therapy , greatly affects level compliance TB treatment in children. 3

Apart from the factors clinical aspects psychosocial also plays a role role important in TB management in children . The stigma against TB still exists become obstacle main influencing factors behavior family in look for treatment . Caregivers often experience pressure social , fear to discrimination , as well as trend For hide condition child from environment around . A study by Brooks et al. (2024) confirmed that family stigma influential to sustainability treatment and caregiver involvement in maintenance TB children . From the perspective social economics , TB in children give significant impact to House stairs . Cost treatment , transportation , and need nutrition addition become burden addition for family. 4 In addition , caregivers often experience decline productivity consequence must accompany child during treatment . Fuady et al. (2023) showed that part big family with TB children experience burden substantial economy , which has the potential bother sustainability therapy . In the context of behavior health , compliance to treatment is factor key in success TB therapy in children . Compliance this is greatly influenced by the level caregiver's knowledge regarding TB disease , perception to treatment , as well as ability in manage therapy long term . 5

Support family is determinant important in increase compliance TB treatment in children . Support This covers aspect emotional , informational , and instrumental roles in help caregivers run his role optimally . A study by Kigozi et al. (2020) shows that support social and family own significant relationship with success TB treatment , including in the group child through caregiver role . Approach based family (family-centered care) is increasingly recognized as an effective strategy in Childhood TB control . Approach This emphasize involvement active family in the entire treatment process as well as integration service health with social support . 6 In addition , the approach This in line with Social Ecological Model framework that places family as factor important in influence behavior individual health . 7

Although various study has discuss aspect clinical TB in children , a comprehensive study specific integrate role support family with variables psychosocial like knowledge and efficacy caregiver self still limited . Most of study Still nature partial and not yet develop a comprehensive analytical model . Brooks et al. (2024) show that lost action continued in children with TB still high and related with factor family as well as system health services . 4 Based on background behind said , research This aim For analyze in a way comprehensive role support family in influence compliance treatment tuberculosis in children , with consider variables intermediary like knowledge and efficacy caregiver self . Research by Noor et al. (2021) shows that parental involvement own role important in success treatment of TB in children , so that approach based family become very relevant For developed further . 8.

2. MATERIALS AND METHODS

2.1 Study Material

Study This use method Systematic Literature Review (SLR) for analyze and synthesize in a way systematic various results study related support family to compliance treatment tuberculosis in children . The SLR method was chosen Because capable produce evidence that is comprehensive , objective , and minimize bias in the search and selection process literature . In addition , the

approach This allows researchers identify consistency findings , gaps research , as well as latest evidence developments about factors that influence success pediatric TB therapy . Implementation of SLR in study This referring to the PRISMA Statement guidelines version the latest developed by Matthew J. Page et al. (2021), which includes stages identification articles , screening process, assessment eligibility , up to determination articles that meet criteria inclusion . The PRISMA 2020 approach was used For increase transparency , quality reporting , as well as reproducibility systematic review results . 9

According to Matthew J. Page et al. 9 , a systematic review requires a search process . literature that is transparent , systematic , and accessible replicated For produce synthesis of quality evidence high . Therefore that , the data source in study This obtained through international databases reputable , namely PubMed and Scopus, which have coverage wide in publication field health , epidemiology , and evidence-based practice..

2.2 Literature Search Strategy

Search strategy literature done in a way systematic use keyword combination based Medical Subject Headings (MeSH), synonyms terms , and Boolean operators (AND, OR) as recommended by the Cochrane Collaboration in latest systematic review guidelines . 10 Keywords used includes “pediatric tuberculosis” OR “child tuberculosis” combined with “family support” OR “caregiver” OR “parental support” and “treatment adherence” OR “medication adherence”. In addition , Booth et al. (2021) explained that use combination synonyms and Boolean operators can increase sensitivity as well as relevance results search literature . Search article in study This limited to publication speaking English published in five years last (2010–2025), and covers article original research and relevant systematic reviews with topic study ..

2.3 Inclusion and Exclusion Criteria

Criteria inclusion covering articles that discuss tuberculosis in children age 0–18 years , review role family or caregiver, as well as research compliance treatment or therapeutic outcome. 2 Temporary that , criteria exclusion covers articles that only focused on adult TB without context family , articles clinical pure without variables social , as well as non- research publications such as editorials or comments. 7

2.4 Study selection process

Selection roses article done in a way gradually follow PRISMA Statement version flow the latest developed by Matthew J. Page et al. (2021), which includes stages identification , screening , assessment eligibility and inclusion article . Use The 2020 PRISMA guidelines aim to For increase transparency , consistency , and quality systematic review reporting so that the selection process literature can replicated scientifically . 9 At the stage identification , obtained around 120 articles from results search beginning . Next the filtering process is carried out based on title and abstract For eliminate articles that are not relevant with topic research , so that remaining around 65 articles . Stage next is evaluation eligibility through reading text full -text review based on criteria inclusion and exclusion that have been established. After the selection process said, obtained A total of 40 articles met criteria and entered in analysis end

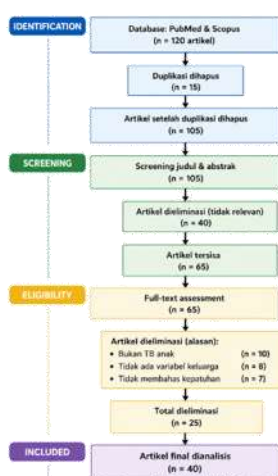


Figure 1. Prism Method Article Selection

2.5 Data extraction

Data extraction process is carried out in a way systematic use form standardized data extraction For ensure consistency , transparency , and accuracy information collected from every included articles . According to Matthew J. Page et al. (2021), the use of a structured data extraction format is part important in a systematic review for minimize bias and increase reliability synthesis of the evidence generated. 9 Extracted data covering identity author and year publication, location research, design study , characteristics sample, variables studied, and findings main related role support family and obedience TB treatment in children. 4 In addition, the limitations of each study were also noted. For identify potential bias and strength available evidence.

2.6 Data analysis and synthesis

Data analysis in study This use thematic synthesis approach to identify patterns , categories , and themes main from various analyzed studies systematically . 11 Analysis process done through coding beginning to findings main from every article , then codes the grouped to in themes main like caregiver role , support family , obedience treatment , factors psychosocial , as well as obstacle social economics that influence success tuberculosis therapy . 12

Stage end analysis done through synthesis thematic with integrate various findings study For build greater understanding comprehensive as well as develop a conceptual model about connection between the variables studied . For ensure rigor and quality results synthesis , each article assessed use critical appraisal approach according to with design their respective research , including use CASP instruments and approaches evaluation quality in qualitative evidence synthesis. 11 Evaluation quality article done with examine internal validity , risk of bias, consistency results , and strength evidence produced from every study . Study with quality more methodological Good given attention more big in the synthesis process , however all over article still considered For get comprehensive and balanced picture of the evidence . Research This using secondary data sources from publication scientific so that No need agreement ethics in a way directly . Although Thus , all stages study implemented with uphold integrity academic through use credible sources , accurate citations , and reporting results in a way transparent and systematic in accordance PRISMA 2020 guidelines . 9 Approach This expected can produce synthesis of valid and reliable evidence , and give base strong scientific in development intervention based family For increase compliance treatment tuberculosis in children. 2

3. RESULTS AND DISCUSSION

3.1 Study selection and characteristics

Table 1. Included research summary

No	Author (Year)	Country	Research Design	Sample	Main Variables	Key Results	Implications /Solutions
1	Sandoval et al. (2023) ²	Peru	Cohort	312 children	Caregiver, adherence	Caregiver support improves compliance therapy	Education family and therapy monitoring
2	Gao et al. (2024) ³	China	Cross-sectional	280	TB Knowledge	Knowledge relate significant with compliance	Children's TB education program
3	Chiang et al. (2023) ¹³	Peru	Qualitative	198	Caregiver perspective	Support family influence success therapy	Mentoring family

4	Yuen et al. (2021) ¹⁴	Multinational	Cohort	450	Preventive therapy	The role of parents dominant in therapy prevention	Caregiver empowerment
5	Skinner, D., & Claassens, M. (2016) ¹⁵	South Africa	Qualitative	41	Psychosocial factors / Stigma	stigma, barriers social and factors service health influence compliance treatment	Intervention psychosocial and patient-centered care approaches
6	Fuady et al. (2023) ¹⁶	Indonesia	Cross-sectional	220	Economic burden	Economic burden worsening therapy outcomes	Help financial
7	Alsdurf et al. (2016) ¹⁷	Multinational	Systematic review and meta-analysis	58	Preventive therapy, latent TB infection, adherence	many household contacts failed complete preventive therapy without support adequate	Strengthening follow-up and support system family /caregiver in therapy TB prevention
8	Vaz et al. (2022) ¹⁸	Multinational	Mixed-method / observational	77	Adherence treatment	Obstacle compliance TB therapy is influenced by monitoring and behavior patient	Strengthening therapy monitoring and approaches technology
9	Seddon et al. (2012) ¹⁹	Multinational	Practice-based recommendations/reviews	Literature and clinical evidence of MDR-TB in children	MDR-TB children , adherence, caregiver support	Management of MDR-TB in children need support multidisciplinary and engagement family intensive	Strengthening pediatric TB services based family and therapy monitoring intensive
10	Musiimenta et al. (2020) ²⁰	Uganda	Mixed-method	77	Social support, adherence	Support social (including technology /mHealth)	Strengthening system support patient based

						improves monitoring and compliance TB therapy	family & technology
11	Shrestha et al. (2017) ²¹	Nepal	Cross-sectional study	255	Knowledge , attitudes , practices (KAP) related to TB infection control	Level of knowledge and practice control TB infection is still varies ; there are gap implementation procedure prevention in facilities health	Required regular training , strengthening of infection control SOPs, and supervision periodically
12	Rahman, SM, et al. (2020) ²²	Multinational (literature-based, Asia & Africa studies)	Systematic reviews (PRISMA-based)	15–20 pediatric TB studies (various TB endemic countries)	Contact investigation, preventive therapy, adherence to pediatric TB	Contact investigation on children's household contacts increase detection early TB and administration therapy prevention . Compliance increase when There is support family and good follow-up system	Strengthening screening contact house , giving therapy prevention of TB (TPT) in children , as well as improvement the role of caregivers in compliance monitoring
13	Marais, BJ (2016) ²³	Multinational	Multinational	Literature global pediatric TB scientific	Epidemiology of childhood TB , diagnosis, delays , access therapy	TB in children Still often No diagnosed or late handled ; limitations access to diagnosis and therapy prevention Still become problem main	Strengthening system detection early childhood TB , increase access service health , and expansion of therapy programs TB prevention in children

						in endemic countries	
14	Chen, X., Du, L., Wu, R., et al. (2020) ²⁴	China	Cross-sectional Study	481	Support family , support social , support policy , compliance TB treatment	Support family , social , and policy national influential significant to improvement compliance TB treatment . Patients with support more strong own higher adherence level tall	Strengthening intervention based family , improvement support social community , and optimization policy national For increase success TB therapy
15	Leddy, Anna M. et al. (2022) ⁷	Multinational	Narrative review	Literature about children , adolescents , and young adults with TB	Social determinants, adherence, family support, stigma, health system	Compliance TB treatment in children and adolescents influenced multi-level factors include stigma, support family , system health , poverty , violence community , as well as health provider support	Required intervention multidimensional based family , community , and system health For increasing TB adherence in children and adolescents
16	Caroline Franck et al. (2014) ²⁵	South Africa	Qualitative study	20	Impact psychosocial , stigma, adherence, effects side treatment	Large volume of medication , effects side effects , stigma, and burden economy family become obstacle main compliance MDR-TB	Required support psychosocial , education family , and strengthening the support system for child with MDR-TB

						treatment for children . Support community and family increase resilience patient	
17	Nindrea RD, et al (2025) ²⁶	Indonesia	Cross-sectional	125	Support family , motivation , compliance TB treatment	Support family relate significant with motivation ($\beta=0.931$) and compliance TB treatment ($\beta=0.229$). Motivation also has an influence strong to compliance ($\beta=0.775$).	TB program is needed strengthen involvement family and improve motivation patient For increase success TB therapy .
18	Johnson LS, et al (2020) ²⁷	South Africa	Cross Sectional	64 caregivers of 70 TB children	TB stigma, caregiver perception , well-being psychosocial	common stigma appear is concern to gossip society and feelings child due to TB diagnosis. Internalized stigma is more low However still influence psychosocial family	Understanding TB stigma in children need strengthened so that intervention psychosocial and support family can increase quality life TB child
19	Awaluddin ., et al (2020) ²⁸	Malaysia	Qualitative	15 thousand	Parents ' experiences , motivation , support family , success childhood TB treatment	Success pediatric TB therapy influenced by beliefs to service health , support family , support power health ,	Support caregiver psychosocial and relationships Good with power health need maintained For increase success TB

						and parental motivation .	treatment for children .
20	Zeladita - Huaman J., et al (2021) ²⁹	Peru	Cross-sectional	550	knowledge , caregiver perception , resolution therapy TB prevention	IPT non-completion is related with low caregiver knowledge , perception negative towards IPT, dissatisfaction to service health , and dysfunction family .	education , counseling , improvement interpersonal relations of labor health , and monitoring effect side important For increase success of children's IPT
21	DeAtley T., et al(2021) ³⁰	South Africa	Cohort	1202	Ecosystem factors children , social status economy , caregiver health , pulmonary TB child	Malnutrition children , smoking in caregivers, types sex male , history care accommodati on , and social status economy low relate with pulmonary TB child .	Childhood TB intervention need covers approach socio-ecological like protection social , improvement economy family , and screening caregiver health .
22	Mandalakas et al. (2021) ³¹	South Africa	Cohort	966	Therapy TB prevention (TPT/IPT), TB exposure , HIV, childhood TB risk	Children who receive IPT have 82% higher risk low experiencing incident TB compared to children who do not receive IPT. Risk more high in children <5 years , HIV positive , and home TB exposure ladder	TPT/IPT based program community is very effective and must be prioritized especially in children with HIV and aged <5 years .

23	Hamada., et al. (2019) ³²	Global/WHO	Systematic review	Global child data contact TB's housemate	prevention , contact same house children , therapy TB prevention	It is estimated there are 1.27 million child age <5 years who meet condition therapy TB prevention in 2017 , but coverage global only around 23%.	Need improvement coverage therapy prevention of childhood TB globally for achieve the target of the WHO End TB Strategy.
24	Saqib ., et al (2019) ³³	Pakistan	Cross-sectional	269	Support social family and community factors social economy	Support social TB patients still low . Support more Good found in patients male , age more old , income height , and ownership House .	TB treatment must be combined with support social family and community For increase compliance and well-being patient .
25	Li C., et al. (2022) ³⁴	China	Multicenter prospective study	851	Molecular diagnosis of childhood TB , CPA method, factors TB risk	Positive TB rate in children by 9.5%; pulmonary TB more tall compared to extra TB lungs . A history of TB contact increases the risk of risk infection in a way significant .	Inspection effective CPA molecular used for early diagnosis of childhood TB and is important For screening child with history TB contact .
26	Song WM et al. (2021) ³⁵	China	Systematic review & meta-analysis	23,652	Drug-resistant TB, MDR-TB, factors national economy	global proportion of MDR-TB in children is 3.7%. The MDR-TB rate is higher higher in middle-	Strengthening detection early detection and control of resistant TB medication in children is very important especially in

						income countries such as China and South Africa compared to high-income countries	developing countries .
27	Yuen., et al. (2022) ³⁶	Global WHO	Scoping review	47 Studies	Child and adolescent TB service model , family-centered care, decentralization service	Decentralization service , service based community , and family-centered care improve the diagnosis, treatment , and prevention of TB in children and adolescents .	Strengthening primary care , approach family and support community important For improving childhood TB outcomes .
28	Perez-Porcuna (2021) ³⁷	Spanish	Prospective multicentric observational study	500	active TB , exposure to cigarette smoke , travel to TB endemic countries	LTBI was found in 2.6% of children and active TB in 0.4%. Exposure to secondhand smoke House ladder increase LTBI risk in general significant .	Traveling child to the country with high TB incidence need LTBI screening and intervention preventive more strict .
29	Atkins S., et al. (2022) ³⁸	Global	Scoping review	36	Impact social economics of TB in children and adolescents	TB causes impact social economy weight in children and adolescents in the form of poverty , stigma, separation family , disturbance education , malnutrition ,	Required protection social sustainable , support psychosocial , and life-course approaches to minimize the impact of TB on children and adolescents .

						and disorders psychosocial .	
30	Burusie A., Enquesilasie F., Salazar-Austin N., & Addissie A. (2024) ³⁹	Ethiopia	Matched case-control study	256 cases of childhood TB and 256 controls	BCG vaccination , contact same house TB, HIV, exposure to cigarette smoke	Children without BCG vaccine , contact household TB, exposure to cigarette smoke , and HIV have risk more tall experiencing TB. Household TB contact increases risk until mORadj =4.28.	Prevention of childhood TB must strengthen BCG vaccination , control contact house , reduction exposure to cigarette smoke , and HIV screening
31	Schopfer K (2015) ⁴⁰	Cambodia	Molecular epidemiology study	260	genotype , resistance medicine , epidemiology molecular	The East African-Indian genotype was the most dominant (59%). MDR-TB was found in 1.9% of children and the Beijing strain was associated significant with resistance streptomycin .	Epidemiologic al monitoring molecular and resistance drug important For detect transmission of resistant TB in children in a way early .
32	Berra TZ, et al. (2020) ⁴¹	Brazil	Ecological Study	21,391 cases of pneumonia and 238 TB deaths in children	Determinant social , pneumonia and TB deaths in children	Childhood pneumonia and TB deaths relate with height TB incidence , inequality social (Gini Index), and low coverage service	Strengthening primary care and intervention social economy required For lower TB and pneumonia mortality in children

						primary health care	
33	Jerene D., et al. (2022) ⁴²	Ethiopia	Comparative before-after study	Contact child same house TB patients	Intervention community women , TPT, compliance therapy	Intervention based community by group Woman increase TPT initiation from 28.7% to 63.5% and completion rate reached 99% in children <5 years .	Involvement group Woman community effective increase therapy prevention of childhood TB and proper expanded in a way national .
34	McInziba A., et al. (2014) ⁴³	South Africa	Qualitative	17 MDR-TB children and caregivers (48 interviews) deep)	Children's MDR-TB experiences , caregiver support , effects treatment	Children and caregivers experience delayed diagnosis, difficulty giving drug Because effect side effects and bad taste of the medicine , as well as pressure psychosocial and economic family .	Required intervention psychosocial holistic and more comprehensive MDR-TB regimen friendly child For reduce impact negative treatment .
35	Machado DC, Moreira MCN, & Sant'Anna CC (2015) ⁴⁴	Brazil	Qualitative	Caregiver and energy health in 6 situations health TB child	The meaning of TB in children , stigma, interaction family and health workers	TB in children influenced by stigma, poverty , relationships family , and difficulties access service health . Support power health is very important in the process of	Approach social family and interpersonal communication is necessary strengthened For increase quality pediatric TB care .

						diagnosis and treatment .	
36	Dave PV, et al (2016) ⁴⁵	India	Cluster-randomized non- inferiority trial	624 new TB children	Family DOT, compliance treatment , success therapy	Success treatment in groups family DOT was 95.8% and non-family DOT was 93.2%; family DOT was not inferior to non-family DOT.	Supervision treatment by members family can made into alternative effective For increase compliance TB treatment for children .
37	Paz-Soldán VA,(2013) ⁴⁶	Peru	Qualitative	43 adult and elderly TB patients TB child	Support social , psychosocial , TB stigma	Support family and energy health is very important For compliance treatment , reducing stigma, and supporting welfare psychological TB patients .	TB program is needed strengthen support psychosocial , education family , help nutrition and support economy patient .
38	An Y., et al. (2022) ⁴⁷	Cambodia	Cross-sectional	330 horsepow er health	Knowledge, attitude, practice (KAP) of TB detection in children	energy health in the region with TB detection in children tall have attitude and practice more Good related investigation pediatric TB contacts compared to areas with detection low .	Training and improvement capacity power health important For increase TB detection in children .
39	Martínez L., et al. (2024) ⁴⁸	Uganda	Prospective cohort study	1,718 contacts TB child	Symptoms of TB in children , HIV,	Children with TB symptoms have risk distant coprevalent	Approach screening symptomatic is very important

					screening contact	TB more tall compared to child without symptoms (23% vs 3%; $p<0.0001$). In HIV- positive children , the difference more large (48% vs 7%).	especially in HIV positive children and those aged early
40	Liang Y., et al. (2025) ⁴⁹	Global	Global burden analysis (GBD study)	GBD Data 1990–2021	Global burden of childhood TB , mortality , drug-resistant TB	In 2021 there were 799,047 cases new cases of childhood TB and 81,870 deaths . Drug-resistant TB is increasing significant especially in low SDI areas	Investment sustainable in the pediatric TB program and control of drug-resistant TB drug must become global priorities

3.2 Discussion

This Systematic Literature Review show that support family is determinant main in success treatment tuberculosis (TB) in children . Based on synthesis thematic Of the 40 articles analyzed , it can be seen that consistency findings that caregiver involvement in direct influence compliance treatment , good in aspect supervision consumption medicine , access service health , as well as support emotional during therapy taking place . The study by Sandoval et al. (2023) 2 and Gao et al. (2024) 3 confirm that the caregiver who has involvement active capable increase compliance therapy in a way significant , while Brooks et al. (2024) 4 show that lack of support family contribute to height number loss to follow-up in pediatric TB patients .

Based on the search process literature through PubMed and Scopus, obtained a total of 120 articles at this stage identification beginning . After done deletion duplication and filtering title as well as abstract , there are 65 articles remaining that meet the criteria. criteria initial stage furthermore is evaluation eligibility through full-text review , which resulted in 40 articles that met the criteria . all over criteria inclusion For analyzed more Continued . Selection and synthesis process article in study This follow PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines developed by Matthew J. Page, Joanne E. McKenzie, Patrick M. Bossuyt, Isabelle Boutron, and colleagues in 2021. 48 Guidelines This used For increase transparency , consistency , and replication in systematic review through stages identification , screening , eligibility, and inclusion article in a way Systematic . PRISMA 2020 Statement BMJ Analysis against 40 articles show that part big study use design cross-sectional study , followed by cohort study , mixed-methods study , and various studies observational other in evaluate factors that influence compliance treatment and prevention tuberculosis in children . Distribution geographical dominated by countries with high TB burden such as Ethiopia, South Africa, India, and Indonesia. This show that issue compliance childhood TB treatment and role family is very relevant in developing countries with limitations source health power . 50 In addition , variations design study such as cross-sectional, cohort, case-control, and studies observational other give strength in expand generalization findings on various population and context service health . However thus , some big non- experimental studies Still own limitations in explain connection causal in a way direct Because existence potential

confounding bias, selection bias, and limitations control to variables outside . Therefore that , interpretation results study need done in a way Be careful with consider internal validity and quality methodology every analyzed studies . 9

Synthesis results show that caregivers are actor main in TB treatment for children . All analyzed studies confirm that child No own autonomy in undergo therapy , so that success Treatment is highly dependent on caregiver involvement . Sandoval et al. (2023) 2 show that involvement active caregiver increases compliance therapy in a way significant , Meanwhile that , Megan B. Brooks et al. (2024) found that lack of support family and caregivers, barriers communication with power health , as well as low mentoring during therapy contribute to increasing number loss to follow-up in pediatric and adolescent TB patients . 51

Caregiver knowledge about TB is factor key influencing factors compliance treatment . Study by Gao et al. (2024) 3 show that caregiver with level good knowledge tend have more compliance tall in treatment children . In addition , the efficacy caregivers also play a role important in ensure sustainability therapy . Yuen et al. (2021) 29 confirm that the caregiver who has trust self in manage treatment more capable face challenge therapy term long . With Thus , knowledge and efficacy self functioning as variables mediation in connection between support family and obedience treatment .

Psychosocial factors , especially stigma against tuberculosis (TB), still become obstacle main in success TB treatment in children . Research latest show that stigma causes family feel Afraid ostracized so that reluctant access service health in a way open and consistent . In addition , the child caregiver with frequent TB experience pressure emotional in the form of stress , anxiety , and fatigue psychological that can lower ability they in accompany the treatment process children . Fuady et al. (2024) reported that TB stigma is related significant with depression and decline quality live , and height need support psychosocial in patients and families affected by TB. Condition the impact No only on caregivers, but also on welfare psychological child as well as compliance treatment , so that intervention based support psychosocial and mentoring family become very important in the TB control program . 5

Analysis show that TB in children give burden significant economic to family . Fuady et al. (2023) 5 report that cost treatment and transportation become obstacle main in sustainability therapy . Condition low economy is one of the factor important things that influence compliance treatment tuberculosis (TB). Limitations financial often cause family experience difficulty in fulfil cost transportation to facility health , needs nutrition during therapy , as well as lost income due to the treatment process term long . Research latest show that TB patients from group economy low own risk more tall experience non-compliance treatment and breakup therapy compared to group with economic status more good . A study by the World Health Organization confirms that burden high economy contribute to low success TB treatment , especially in poor families who face cost catastrophic during treatment . Therefore that , support social and financial become component important For increase compliance treatment and success TB therapy . 52

Environment family and community own role important in control tuberculosis (TB) in children , especially in the detection process early , prevention transmission , and success treatment . Research latest show that contact same house is source main TB transmission in children , so that screening contact House ladder be an effective strategy For find case in a way early and prevent delay in diagnosis. In addition , the involvement of family in supervision drink medication and support during therapy proven increase compliance as well as success treatment of childhood TB . Recent studies also confirm that approach based family and community more effective compared to individual approach because capable strengthen support social , improving monitoring therapy , as well as reduce risk separated treatment . Therefore that , pediatric TB intervention need integrate empowerment family and community as part important from the TB control program . 53

Findings from 40 articles show that compliance childhood TB treatment is results multidimensional interactions between factor individuals , families , and systems health . This is in line with Social Ecological Model framework , which emphasizes that behavior health influenced by various levels of determinants . Research latest show that support social from family and community is factor important things that influence success therapy tuberculosis (TB). Support family in form supervision drink medicine , support during treatment , as well as motivation emotional proven increase compliance patient to TB therapy . In addition , the involvement of community through education health and support the community also contributes in lower number separated treatment and improvement success treatment . Report latest from the World Health Organization confirmed that approach based support social and community become component important in patient-centered care strategies for improve TB therapy outcomes , especially in groups prone to like children and families low income . 52

Based on all over results analysis , a conceptual model is formed that shows that support family influence compliance treatment through mechanism mediation like knowledge and efficacy caregiver self . Research latest show that intervention based community and family own role important in increase success treatment tuberculosis (TB) in children . The family-centered care approach has been proven capable strengthen support emotional , supervision therapy , as well as involvement family in the process of treatment so that increase compliance drink medicine and success therapy . In addition , the involvement of community through cadre health , education community and assistance family also contributes in strengthen system support social for pediatric TB patients . Although thus , some big available research Still use cross-sectional design so that ability in explain connection causal between variables Still limited . Literature methodology study health latest confirm that longitudinal design and analysis multivariate advanced techniques , such as Structural Equation Modeling (SEM), are required For evaluate connection cause and effect in a way more comprehensive as well as strengthen the conceptual model related factors that influence compliance TB treatment for children . Differences context social culture interregional also becomes factor important things that need to be done considered in generalization research results . 52.

4. CONCLUSION

Based on results of a Systematic Literature Review of 40 articles analyzed use PRISMA guidelines , can concluded that support family is determinant main in compliance treatment tuberculosis in children . The role of caregivers has proven to be very dominant Because child Not yet own independence in undergo therapy , so that success treatment is highly dependent on the involvement of family in supervision consumption medication , taking decisions , and support emotional .

Synthesis results show that influence support family to compliance treatment No nature direct only , but mediated by factors important like knowledge , efficacy caregiver self , and support psychosocial factors . In addition , external like condition social economy , stigma against disease , as well as access to service health participate strengthen or weaken compliance treatment . With Thus , compliance TB treatment for children is multidimensional phenomena influenced by interactions complex between factor individuals , families , and the environment , as explained in the Social Ecological Model.

Approach the most effective intervention based on the results of the review are approach based family (family-centered care) , which integrates caregiver education , assistance treatment , support psychosocial , as well as intervention community . Although thus , some big research analyzed Still use cross-sectional design , so that strength proof causal Still limited . Therefore that , is necessary development of more analytical models comprehensive For understand connection between variables in a way more deep .

5. SUGGESTIONS

Based on results of the Systematic Literature Review with PRISMA guidelines , research furthermore recommended For develop more analytical models comprehensive with enter mediator variables such as knowledge and efficacy caregiver self , as well as use longitudinal approach or Structural Equation Modeling (SEM) to strengthen connection causal . In practice service health , approach based family (family-centered care) is necessary optimized through caregiver education , assistance treatment and support psychosocial For increase compliance TB therapy for children . In addition , support policy in the form of intervention social economy , such as help financial and strengthening of community-based programs community , is very necessary For overcome obstacle compliance . Research continuation is also necessary consider factor culture and stigma so that interventions are developed more contextual and effective.

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