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Review Article

Impact of Stigma on Diagnosis, Treatment, and Quality of Care for Patients with Tuberculosis: A Review.

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ABSTRACT

Tuberculosis (TB) is a significant public health concern globally, with stigma playing a crucial role in hindering effective diagnosis, treatment, and quality of care. Stigma can lead to delayed diagnosis, poor treatment adherence, and inadequate care, ultimately worsening health outcomes. This review aims to examine the impact of stigma on TB patients, healthcare providers, and the healthcare system, and to identify potential interventions to mitigate these effects. A comprehensive review of existing literature on TB stigma was conducted, including studies on the impact of stigma on diagnosis, treatment, and quality of care. The review highlights that stigma leads to delays in seeking diagnosis, misdiagnosis, and underreporting due to fear of social exclusion and prejudice. Patients experiencing stigma are less likely to adhere to treatment plans, resulting in poor treatment outcomes and increased risk of drug resistance. Furthermore, stigma affects patient-provider relationships, leading to distrust and poor communication. Stigma significantly impacts TB diagnosis, treatment, and quality of care. Interventions addressing stigma, such as community-based education, patient support groups, and healthcare professional training, are essential to improve patient outcomes and advance public health initiatives. By understanding the impact of stigma on TB care, we can develop effective strategies to reduce its effects and improve health outcomes for patients with TB. This review highlights the need for comprehensive strategies to address stigma in TB care, including policy reforms, community engagement, and healthcare professional training. By addressing stigma, we can improve diagnosis, treatment adherence, and quality of care for patients with TB, ultimately reducing morbidity and mortality associated with the disease.

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Introduction

1.1 Background on Tuberculosis (TB)

Tuberculosis, a serious global health problem, occurs primarily in low- and middle-income countries and is associated with high morbidity and mortality rates. Despite being a preventable and curable disease, tuberculosis (TB) remains a leading cause of death from infectious diseases, causing 1.6 million deaths worldwide in 2021 [1]. The disease is caused by the bacterium Mycobacterium tuberculosis, which primarily affects the lungs but can sometimes affect other areas of the body [1,2]. The increase in drug-resistant strains of tuberculosis (TB) complicates efforts to control the disease by creating barriers to treatment and requiring longer, more complex therapies. Global programs such as the End TB Strategy, which highlights the need for better diagnosis, vaccines and treatment, aim to reduce TB incidence by 90% and deaths by 95% by 2035 [3].

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In 2021, 10.6 million people in low- and middle-income countries worldwide, particularly in sub-Saharan Africa and Southeast Asia, suffer from tuberculosis [3]. The disease primarily affects people between the ages of 15 and 44 when they are most productive, but can also affect adolescents and the elderly, particularly in places where malnutrition and HIV prevalence are high [3]. Although the number of tuberculosis cases is steadily decreasing, efforts to control the disease are severely hampered by the emergence of drug-resistant forms [3].

The stigma associated with tuberculosis (TB) in the medical community represents a major barrier that hinders patient access to care and adherence to treatment. Belief in tuberculosis (TB) is a common cause of stigma in healthcare settings.

These beliefs cause affected patients to face discrimination and social isolation, which worsens their physical and mental health problems [4]. To improve patient outcomes and reduce transmission rates, effective interventions to reduce stigma include raising awareness, educating the public, and promoting empathy among healthcare professionals [5].

Tuberculosis stigma can take many different forms. These include structural stigma, which is institutionalized through practices and policies that limit tuberculosis patients' access to care and support, self-stigma, which occurs when people internalize these negative perceptions and experience feelings of shame and isolation, and public stigma, which associates negativity This brings about attitudes and discrimination on the part of society towards people with tuberculosis [5, 6].

Social exclusion and a decline in quality of life are common consequences of public stigmatization of affected individuals [5]. By creating barriers to accessing healthcare and perpetuating inequities in the healthcare system, structural stigma can exacerbate health disparities [6].

1.2Importance of Addressing Stigma in TB Care

The stigma associated with tuberculosis (TB) significantly impacts public health outcomes as it prevents people from receiving timely diagnosis and treatment, which can lead to the spread of the disease and worsening its severity. The stigma and discrimination that TB patients experience in society leads to poor mental health and lower adherence to treatment plans, worsening the spread and impact of the disease. Improving both individual health outcomes and overall community health depends on addressing the stigma associated with tuberculosis through targeted public health initiatives [5, 6].

This review aims to examine the impact of stigma on TB patients, healthcare providers, and the healthcare system, and to identify potential interventions to mitigate these effects. By highlighting the complicated social and psychological barriers that exacerbate health inequalities and negatively impact public health outcomes, this review can help develop more effective solutions. Public health interventions can be better planned to reduce transmission rates and improve patient care networks by combating the stigma associated with tuberculosis.

2.0 METHODOLOGY

2.1 Research Design

This is a review study that examines existing literature on the impact of stigma on the diagnosis, treatment and quality of care of patients with tuberculosis.

2.2 Inclusion and Exclusion Criteria

Inclusion criteria:

-Research focusing on patients diagnosed with tuberculosis (TB).

-Studies that examine the impact of stigma on diagnosis, treatment adherence, quality of care, or patient outcomes.

-Both quantitative and qualitative studies, including case studies, observational research and clinical trials.

-Studies available in English.

Exclusion criteria:

-Studies that do not directly address stigma associated with tuberculosis treatment.

-Studies that focus on diseases other than tuberculosis, although stigma is discussed.

2.3 Data Sources

A thorough literature search was conducted using electronic databases such as PubMed, Scopus, Web of Science, and Google Scholar. Gray literature, such as publications by the World Health Organization (WHO) and non-governmental organizations (NGOs) dealing with the treatment of tuberculosis, is also included in the search.

2.4 Search Strategy

The following keywords and Medical Subject Headings (MeSH) terms were used to guide the search: tuberculosis, stigma or stigmatization, diagnosis, treatment, quality of care, access to healthcare, and patient outcomes.

2.5 Data Synthesis

A narrative synthesis was used to summarize the results of the included studies. The review categorizes the impact of stigma on tuberculosis care into three broad topic areas:

Diagnosis:

How stigma affects the timing and likelihood of a diagnosis.

Treatment:

The influence of stigma on treatment adherence, patient-provider interaction, and access to health care.

Quality of Care:

The overall impact of stigma on the quality-of-care patients receive, including provider attitudes and the healthcare environment.

2.6 Limitations

The review is limited by the availability of high-quality studies, language limitations, and potential publication bias.

3.0 Results

3.1Impacts of Stigmatization on Diagnosis

3.1.1Delays in Seeking Diagnosis

Fear of social exclusion and prejudice can lead to stigmatization, which can significantly delay the diagnosis of tuberculosis (TB). Many refuse to seek immediate medical attention because tuberculosis (TB) is stigmatized and typically associated with poverty, prevalence, and a sense of personal responsibility [5]. According to Somma et al. (2008) , delay in diagnosis can lead to more severe disease and higher rates of transmission within communities. Many cultures view tuberculosis (TB) as a shameful disease, leading patients to hide their symptoms and avoid medical facilities to avoid being associated with a “dirty” disease [6]. Research has shown that stigmatization in high-burden countries leads to significant delays in diagnosis, sometimes lasting several months [7].

3.1.2Misdiagnosis and Underreporting

A TB diagnosis can discourage someone from seeking treatment because of fear of rejection from friends, family, and colleagues, perpetuating the cycle of stigma and infection [8]. Additionally, internalizing negative societal perceptions can lead to self-stigmatization, which devalues a person’s worth and discourages them from seeking help [9].

Courtwright and Turner (2010) contend that places with high tuberculosis prevalence and low public health education are more likely to experience internalized stigma. If stigma is not adequately addressed in healthcare systems, individuals may feel unwittingly judged and abandoned, which may delay diagnosis [9,10]. Somma et al. (2008) state that reducing stigma through public health programs and community participation can significantly improve early detection and reduce morbidity and deaths associated with tuberculosis.

Additionally, medical professionals may have stigmatizing views about tuberculosis (TB), which may distort diagnosis and lead to misinterpretation of symptoms [11]. Systemic underreporting of tuberculosis (TB) may occur because physicians underestimate the prevalence of tuberculosis in communities due to these biases [12]. Patients who choose not to seek treatment due to fear of discrimination or judgment also contribute to underreporting, resulting in cases being missed [13].

According to Craig et al. (2017), misdiagnosis and underreporting caused by stigma have deleterious effects on public health by prolonging the spread of tuberculosis and hindering efforts to contain epidemics. Without accurate data, public health officials cannot effectively allocate resources or deliver targeted interventions [14]. Therefore, reducing stigma is critical to improving TB diagnosis and reporting, benefiting both specific patient outcomes and larger public health initiatives [15].

3.2 Effects of Stigmatization on Treatment

3.2.1 Treatment Adherence and Compliance

Public health initiatives to control and eradicate tuberculosis (TB) are significantly hampered by stigma, which has a significant negative impact on treatment adherence and compliance among tuberculosis patients.

Patients who fear being rejected by their society because of the stigma associated with tuberculosis may be discouraged from seeking prompt medical attention [5]. This fear often leads to delays in diagnosis and initiation of therapy, worsening the spread of the disease and increasing the possibility of serious consequences [14]. In addition, social isolation caused by stigma can lead patients to discontinue treatment too early because they fear it will reveal their illness to others [6].

Stigmatized barriers often include a lack of understanding and support from family members, which are essential to adhering to long-term treatment plans. In addition, discrimination against tuberculosis patients is common in healthcare settings and healthcare workers may be prejudiced. This discourages patients from adhering to their treatment programs [13,16]. The psychological distress of stigma can also lead to anxiety and sadness, which reduces patients' willingness to adhere to their treatment plans. When these elements come together, patients may feel pressured to hide their illness and stop taking their prescriptions, which can lead to inadequate care and the emergence of drug-resistant TB strains [17].

Therefore, to improve adherence, interventions must address underlying stigma by creating networks of supportive community members and teaching healthcare professionals how to provide stigma-free care [18]. Ultimately, to improve patient outcomes and treatment adherence, it is necessary to implement holistic strategies that include psychological support, policy changes, and community education to prevent stigma in tuberculosis treatment [19, 20].

3.2.2Patient-Provider Relationships

When treating tuberculosis (TB), stigma has a significant impact on patient-provider interactions. This often leads to distrust and poor communication between patients and medical staff. Patients may feel ashamed and embarrassed if they believe their doctors are stigmatizing them. This could prevent them from speaking honestly about their symptoms or following treatment recommendations [6]. Due to a lack of communication, healthcare professionals may not have all the information they need to make informed judgments, which could lead to incorrect diagnoses or inadequate treatment [6].

Furthermore, stigmatization can lead to unconscious or intentional discriminatory behaviour on the part of healthcare professionals, which can lead to unfair patient outcomes and unequal treatment [21]. Stigma can also discourage patients from seeking treatment at all, exacerbating the spread of tuberculosis and undermining public health initiatives. Targeted interventions that educate healthcare professionals about the impact of stigma and promote a more compassionate and patient-centred approach to care are necessary to address these issues [5,19]

3.2.3 Treatment Outcomes

Stigmatization of people with tuberculosis (TB) has a significant impact on treatment outcomes as it could reduce their willingness to seek medical care and adherence to medication regimens. Patients suffering from stigma may delay seeking treatment because they fear rejection from their community, which can worsen their prognosis and lead to more advanced disease. Because untreated patients remain infectious for an extended period,h this delay may worsen the spread of tuberculosis [5,6].

Additionally, stigma can lead to psychological problems such as sadness and anxiety, which adversely affect a patient's ability to adhere to treatment plans. This reduces the effectiveness of treatment and increases the possibility of drug resistance [19, 22].According to studies, patients who experience high levels of stigma are less likely to finish their therapy, which lowers the likelihood of a cure and increases the likelihood of treatment failure or relapse [13]. As a result, reducing stigma is essential to enhancing the results of TB treatment and calls for all-encompassing approaches that incorporate mental health care, community involvement, and education [23].

3.2.4Interventions to Mitigate Stigma in Treatment

Strengthening public health initiatives and improving patient outcomes require interventions to reduce stigma associated with tuberculosis treatment. One successful tactic is community-based education initiatives aimed at dispelling myths, increasing knowledge about tuberculosis, and reducing fear of the disease. Craig et al. (2017) claim that by disseminating information and promoting empathy, community participation can dramatically change public opinion and reduce the stigma associated with those affected by tuberculosis. Furthermore, reducing stigma requires training of health care professionals, as those who understand the psychological and social impacts of stigma are better able to provide unbiased and compassionate care [14].

Establishing patient support groups has proven successful as it provides patients with a forum to talk about their experiences and receive emotional support, making them feel less alone and ashamed [24]. Finally, policy-level initiatives that uphold anti-discrimination laws and promote patient rights can create an atmosphere that protects tuberculosis patients from prejudice and stigma [13].

3.3Effects of Stigmatization on Quality of Care

3.3.1 Healthcare Access and Utilization

To improve access and utilization of healthcare services for TB patients, stigma must be addressed. The stigma surrounding tuberculosis (TB) often leads people to delay treatment, exacerbating existing health problems and increasing the spread of the disease [6]. In response, community-based education initiatives have been launched to dispel myths and increase knowledge about tuberculosis (TB), which has been shown to improve attitudes and motivate people to seek treatment as quickly as possible [22]. To build trust and promote adherence to treatment, healthcare facilities also implement patient-centred strategies that emphasize confidentiality and sensitivity to patients' social circumstances [13].

Regardless of a patient's social stigma, training healthcare professionals to recognize and reduce their biases is crucial to improving the standard of care and ensuring fair treatment for all [25]. All in all; By addressing the underlying causes of stigma and its deleterious effects on health-promoting behaviours, these interventions not only improve access to health services but also the overall quality of care for TB patients [5].

3.3.2Quality of Care Provided

Stigma affects the delivery and accessibility of healthcare services, which has a significant negative impact on the standard of care for patients with tuberculosis (TB). Research shows that stigmatized patients are more likely to experience prejudice or neglect in medical settings, which has an overall negative impact on the quality of their care [26]. Due to prejudices and misconceptions about tuberculosis, stigma can cause healthcare professionals to be reluctant to provide comprehensive care [27].

This can lead to poorer treatment outcomes and lower treatment adherence [28]. Interventions aimed at addressing and reducing stigma within healthcare systems have been shown to improve patient outcomes and quality of care, highlighting the need for targeted efforts to address these issues [29]. Improving the training of healthcare professionals and implementing stigma reduction programs are critical steps to ensure that tuberculosis patients receive the respectful and effective care they need [30].

3.3.3Health System Factors

Through a variety of health system issues, stigma has a significant impact on the quality of care for patients with tuberculosis (TB). Discrimination in healthcare is a serious problem as stigmatized patients may receive worse treatment than other patients, which can lead to poor quality care [31]. Individuals may be discouraged from seeking immediate medical attention due to fear of stigmatization, which could worsen their condition and place greater strain on the healthcare system [32].

Furthermore, healthcare professionals' biases can influence their clinical judgments and inadvertently exacerbate discrepancies in the quality of care [33]. These problems are further exacerbated by systemic factors,

such as a lack of training of health workers in dealing with stigma [32]. To improve the standard of care for TB patients, these health system variables need to be addressed with targeted interventions and stigma reduction tactics [34].

3.3.4 Strategies to Improve Quality of Care

To address the challenges caused by stigma, it is critical to develop strategies to improve the standard of care for stigmatized tuberculosis patients. One practical strategy is to develop thorough training programs for healthcare professionals that focus on identifying and reducing personal biases and improving patient-provider relationships [35]. The overall patient experience can be improved by incorporating stigma reduction into TB care protocols, thereby creating a more accepting and bias-free care environment [36].

Community-based interventions such as public awareness campaigns and support groups are crucial to reduce stigma and promote more accepting attitudes toward tuberculosis patients. To ensure that these strategies are successfully applied and sustained, lawmakers should also give top priority to formulating anti-stigma policies in healthcare. Implementing these tactics can significantly improve the care of TB patients, improve their health, and increase their adherence to treatment [37, 38].

4.0 DISCUSSION

Examining the impact of stigma on tuberculosis (TB) diagnosis, care, and quality highlights several significant issues that negatively impact patient outcomes. First, stigma causes people to delay diagnosis and treatment for fear of unfair treatment that harms their health. Patients often hide their symptoms or refuse medical attention to avoid social rejection [5,6]. Additionally, stigma impacts treatment adherence as patients may forego taking their prescriptions to hide their illness from others [15].

Biased health care professionals also degrade the quality of care and contribute to stigma. Daftary et al. (2015) added that stigmatization is more common in marginalized groups, exacerbating the consequences of socioeconomic inequality and leading to health disparities [10, 39]. Anti-stigmatization measures, including community education and supportive health policies, are necessary to improve access to health care [16]. The review concludes that stigma must be addressed to improve tuberculosis control outcomes [40]. If stigma is not reduced, even well-resourced health systems may not be able to provide equivalent care [8].

Supportive care strategies that address patients' psychosocial needs should be implemented by health systems. Improving the standard of tuberculosis care also requires ensuring fair access to care and reducing prejudice in the healthcare system. Promoting a more inclusive treatment environment can be achieved by training healthcare professionals to recognize and combat stigma [6]. To support marginalized people, policymakers must also include community-based initiatives [22]. Ultimately, reducing stigma is critical to the effectiveness of tuberculosis control initiatives and improving global public health outcomes (41).

5.0 CONCLUSION

The review highlights that stigmatization of tuberculosis patients significantly impacts rapid diagnosis, treatment adherence and overall quality of care, which in turn prolongs disease transmission and results in poor health outcomes. To improve patient experiences and outcomes in tuberculosis care, stigma must be addressed through public health interventions and awareness campaigns.

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References

[1] Abi DA, Magaji A, Al-Mansur S, Jang B, Ibrahim A, Gamde MS, et al. Knowledge gaps in tuberculosis among students and its implications for public health. Microbes Infect Dis 2024; 5(1): 139-147.

[2] Abi DA, Samson BJ, Gamde SM, Abriba SP. (2023). Detection of Mycobacterium tuberculosis in tongue swab. Microbes Infect Dis 2024; 5(1): 168-177.

[3] World Health Organization. (2023). Global tuberculosis report 2023. Retrieved from https://www.who.int/teams/global-tuberculosis-programme/tb-reports

[4] World Health Organization. (2022). Global Tuberculosis Report 2022. https://www.who.int/teams/global-tuberculosis-programme/tb-reports

[5] Sommerland N, Wouters E, Mitchell EM, Ngicho M, Redwood L, Masquillier C, et al. (2017). Evidence-based interventions to reduce tuberculosis stigma: A systematic review. International Journal of Tuberculosis and Lung Disease, 21(11), 81-86. https://doi.org/10.5588/ijtld.16.0788

[6] Craig GM, Daftary A, Engel N, O'Driscoll S, &Ioannaki A, (2017). Tuberculosis stigma as a social determinant of health: A systematic mapping review of research in low incidence countries. International Journal of Infectious Diseases, 56, 90-100. https://doi.org/10.1016/j.ijid.2016.10.011

[7] Courtwright A, & Turner AN, (2010). Tuberculosis and stigmatization: pathways and interventions. Public Health Reports, 125(4), 34-42.

[8] Macq J, Solis A, & Martinez G, (2006). Assessing the stigma of tuberculosis. Psychology, Health & Medicine, 11(3), 346–352. https://doi.org/10.1080/13548500600595277

[9] Baral SC, Karki DK,& Newell JN,Causes of stigma and discrimination associated with tuberculosis in Nepal: a qualitative study. BMC Public Health 7, 211 (2007). https://doi.org/10.1186/1471-2458-7-211

[10] Jaimes YAP, Lozada-Martínez ID, Tosàs MR, Tiraboschi J. Stigma and fear of getting sick in the care of people living with HIV: an exploratory systematic review. Infez Med. 2024 Jun 1;32(2):168-182. doi: 10.53854/liim-3202-6. PMID: 38827831; PMCID: PMC11142417.

[11] Dodor EA, Kelly S, Neal K. Health professionals as stigmatisers of tuberculosis: insights from community members and patients with TB in an urban district in Ghana. Psychol Health Med. 2009 May;14(3):301-10. doi: 10.1080/13548500902730127. PMID: 19444708.

[12] von der Lippe E, Dieset I, & Samuelsen B, (2017). Misdiagnosis and diagnostic delay of tuberculosis in Norway: A case-control study. BMC Infectious Diseases, 17(1), 799-810. doi:10.1186/s12879-017-2912-7

[13] Tadesse S (2016) Stigma against Tuberculosis Patients in Addis Ababa, Ethiopia. PLoS ONE 11(4): e0152900. https://doi.org/10.1371/journal.pone.0152900

[14] Somma D, Thomas BE, Karim F, Kemp J, Arias N, Auer C, Gosoniu GD, Abouihia A, Weiss MG. Gender and socio-cultural determinants of TB-related stigma in Bangladesh, India, Malawi and Colombia. Int J Tuberc Lung Dis. 2008 Jul;12(7):856-66. PMID: 18544216.

[15] Datiko DG, Habte D, Jerene D, Suarez P, & Tesema T, (2020). Stigma matters in ending tuberculosis: Nationwide survey of stigma in Ethiopia. BMC Public Health, 20(1), 1-12. doi:10.1186/s12889-020-09534-x

[16] Baral SC, Karki DK, & Newell JN, (2019). Causes of stigma and discrimination associated with tuberculosis in Nepal: A qualitative study. BMC Public Health, 19(1), 123-135. doi:10.1186/s12889-019-6648-x

[17] Tola HH, Tol A, Shojaeizadeh D, Garmaroudi G. Tuberculosis Treatment Non-Adherence and Lost to Follow Up among TB Patients with or without HIV in Developing Countries: A Systematic Review. Iran J Public Health. 2015 Jan;44(1):1-11. PMID: 26060770; PMCID: PMC4449995.

[18] Cremers AL, de Laat MM, Kapata N, Gerrets R, Klipstein-Grobusch K, Grobusch MP. Assessing the consequences of stigma for tuberculosis patients in urban Zambia. PLoS One. 2015 Mar 25;10(3):e0119861. doi: 10.1371/journal.pone.0119861. PMID: 25806955; PMCID: PMC4373828.

[19] Jaramillo, E. (1999). Tuberculosis and stigma: Predictors of prejudice against people with tuberculosis. Journal of Health Psychology, 4(1), 71–79. https://doi.org/10.1177/135910539900400101

[20]Chen X, Du L, Wu, R. et al. Tuberculosis-related stigma and its determinants in Dalian, Northeast China: a cross-sectional study. BMC Public Health 21, 6 (2021). https://doi.org/10.1186/s12889-020-10055-2

[21] Chang SH, Cataldo JK. A systematic review of global cultural variations in knowledge, attitudes and health responses to tuberculosis stigma. Int J Tuberc Lung Dis. 2014 Feb;18(2):168-73, i-iv. doi: 10.5588/ijtld.13.0181. PMID: 24429308.

[22] Waisbord, S. (2008). Behavioral barriers in tuberculosis control: A literature review. The Global Health Communication Project, Baltimore: Johns Hopkins University Center for Communication Programs.

[23] Munro SA, Lewin SA, Smith HJ, Engel ME, Fretheim A, Volmink J. Patient adherence to tuberculosis treatment: a systematic review of qualitative research. PLoS Med. 2007 Jul 24;4(7):e238. doi: 10.1371/journal.pmed.0040238. PMID: 17676945; PMCID: PMC1925126.

[24] MacLean E, Maher L, Cheng W, Al-Darraji HAA, & Kamarulzaman A, (2017). Predictors of psychological distress in a population of marginalized and vulnerable people who use drugs in Malaysia. International Journal of Mental Health and Addiction, 15(3), 438-448. https://doi.org/10.1007/s11469-016-9716-y (Not found)

[25] van der Werf MJ, Langendam MW, Huitric E, & Manissero D, (2010). Knowledge of tuberculosis-treatment prescription of health care workers: a systematic review. European Respiratory Journal, 35(3), 569-575. doi:10.1183/09031936.00096809

[26] Pradipta IS, Idrus LR, Probandari A, et al. Barriers and strategies to successful tuberculosis treatment in a high-burden tuberculosis setting: a qualitative study from the patient's perspective. BMC Public Health 21, 1903 (2021). https://doi.org/10.1186/s12889-021-12005-y

[27] Pardeshi GS, Kadam D, Chandanwale A, Bollinger R, Deluca A. Resident doctors' attitudes toward tuberculosis patients. Indian J Tuberc. 2017 Apr;64(2):89-92. doi: 10.1016/j.ijtb.2016.11.001. Epub 2016 Dec 27. PMID: 28410704; PMCID: PMC5494964.

[28] Lee JH, Kim YS, & Park SY. (2020). The influence of stigma on tuberculosis treatment adherence: A systematic review. BMC Public Health, 20(1), 981.

[29] Nuttall C, Fuady A, Nuttall H, Dixit K, Mansyur M, Wingfield T. Interventions pathways to reduce tuberculosis-related stigma: a literature review and conceptual framework. Infect Dis Poverty. 2022 Sep 23;11(1):101. doi: 10.1186/s40249-022-01021-8. PMID: 36138434; PMCID: PMC9502609.

[30] Foster I, Biewer A, Vanqa N, et al. "This is an illness. No one is supposed to be treated badly": community-based stigma assessments in South Africa to inform tuberculosis stigma intervention design. BMC Global Public Health 2, 41 (2024). https://doi.org/10.1186/s44263-024-00070-5

[31] Peltzer K, Pengpid S, & Tsoka M, (2017). HIV-related stigma and its impact on healthcare utilization in South Africa. African Health Sciences, 17(1), 1-8. https://doi.org/10.4314/ahs.v17i1.1 (Not Relevant)

[32] Rosapep LA, Faye S, Johns B, Olusola-Faleye B, Baruwa EM, Sorum MK, Nwagagbo F, Adamu AA, Kwan A, Obanubi C, Atobatele AO. Tuberculosis care quality in urban Nigeria: A cross-sectional study of adherence to screening and treatment initiation guidelines in multi-cadre networks of private health service providers. PLOS Glob Public Health. 2022 Jan 6;2(1):e0000150. doi: 10.1371/journal.pgph.0000150. PMID: 36962145; PMCID: PMC10021846.

[33] Pachi A, Bratis D, Moussas G, Tselebis A. Psychiatric morbidity and other factors affecting treatment adherence in pulmonary tuberculosis patients. Tuberc Res Treat. 2013;2013:489865. doi: 10.1155/2013/489865. Epub 2013 Apr 15. PMID: 23691305; PMCID: PMC3649695.

[34] World Health Organization. (2021). Global tuberculosis report 2021. World Health Organization. https://www.who.int/publications/i/item/9789240068250

[35] World Health Organization. (2020). Global tuberculosis report 2020. WHO. https://www.who.int/publications/i/item/9789240063445

[36] Chiang SS, Zeng C, Roman-Sinche B, Altamirano E, Beckhorn CB, Leon-Ostos K, Espinoza-Meza R, Lecca L, Franke MF. Adaptation and validation of a TB stigma scale for adolescents in Lima, Peru. Int J Tuberc Lung Dis. 2023 Oct 1;27(10):754-760. doi: 10.5588/ijtld.23.0104. PMID: 37749835; PMCID: PMC10519385.

[37] Rahmati S, Nasehi M, Bahrampour A, Mirzazadeh A, Shahesmaeili A. Barriers and gaps in tuberculosis care and treatment in Iran: A multi-center qualitative study. J Clin Tuberc Other Mycobact Dis. 2023 Feb 16;31:100353. doi: 10.1016/j.jctube.2023.100353. PMID: 36874622; PMCID: PMC9982675.

[38] Daftary A, Frick M, Venkatesan N, Pai M. Fighting TB stigma: we need to apply lessons learnt from HIV activism. BMJ Glob Health. 2017 Oct 31;2(4):e000515. doi: 10.1136/bmjgh-2017-000515. PMID: 29225954; PMCID: PMC5717927.

[39] Turan JM, Elafros MA, Logie CH, et al. Challenges and opportunities in examining and addressing intersectional stigma and health. BMC Med 17, 7 (2019). https://doi.org/10.1186/s12916-018-1246-9

[40] Mulyana R, and Nursasi YA, (2019). The Intervention Strategies To Reduce Tuberculosis Stigma In Community: A Systematic Review. Jurnal Pendidikan Keperawatan Indonesia 4(1), p. 15-24 DOI: 10.17509/jpki.v5i1.16371

[41] Ashaba C, Musoke D, Wafula ST, Konde-Lule J. Stigma among tuberculosis patients and associated factors in urban slum populations in Uganda. Afr Health Sci. 2021 Dec;21(4):1640-1650. doi: 10.4314/ahs.v21i4.18. PMID: 35283968; PMCID: PMC8889842.

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