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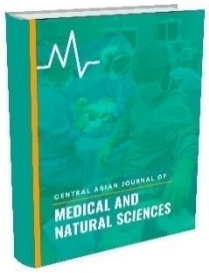

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Impact of Covid19 and Different Variables on Default from Tuberculosis Treatment

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Abstract: tuberculosis was once one of the most common in low- and middle-income countries due to its high death toll (up to 1.5 million per year) among infected individuals. According to the World Health Organization's national tuberculosis control program, Iraq is a high-burden country with an annual death rate from TB of over 3000. This places Iraq at number 17 out of 22 countries in the eastern Mediterranean region. The most common issue with tuberculosis treatment is a relapse after initial treatment has been completed. The World Health Organization (WHO) defines "default" as two months or more without treatment, a correlation between defaulting status and demographic factors such as age, family income, smoking, anti-tuberculosis medicine side effects, and chronic conditions,covd19 pandemic, so The World Health Organization's DOTS strategy must be put into place with the help of all relevant organizations.

91 TB patients who live in Baghdad city involved in this study,41 of them are defaulters.

The other TB non defaulter patients ,a comparison between both group to estimate the effect of different variables on default TB treatment.

The results of this study show a correlation between defaulting status and demographic factors such as age, family income, smoking, anti-tuberculosis medicine side effects, and chronic conditions. There was no correlation between default state and variables like gender, location,.

Conclusion:- The World Health Organization's DOTS strategy must be put into place with the help of all relevant organizations, both private and public. Raise health education, help patients stay on their treatment.

Key words: TB defaulters, Baghdad city, Variables , Covid19.

INTRODUCTION:-

The lungs are commonly infected with the bacterium Mycobacterium TB when an infected person coughs, sneezes, or even spits the bacteria into the air. Even though it is a curable disease, tuberculosis was once one of the most common in low- and middle-income countries due to its high death toll (up to 1.5 million per year) among infected individuals, especially those with impaired immune systems or those who fail to adhere to treatment regimens. Studies show that while 25% of the population has tuberculosis, only 5--15% have active tuberculosis while the rest are asymptomatic and contagious[1]. .Disease incidence in Saudi Arabia has ranged from 14 to 17 per 100,000 people per year over the past 20 years, in Iran 12 per 100,000, however this varies widely from nation to country due to the large amount of diversity in illness prevalence around the world [2,3]. community-based studies have found rates as high as 255 per 100,000 in central India(4) and as low as 145 in Vietnam[5]. However, a nationwide TB prevalence survey in the Philippines [6] reported that the rate of TB was the same in both urban and rural areas.

According to the World Health Organization's national tuberculosis control program, Iraq is a high-burden country with an annual death rate from TB of over 3000. This places Iraq at number 17 out of 22 countries in the eastern Mediterranean region [7] .To combat tuberculosis, the government instituted a stringently monitored and supervised program known as directly observed therapy (DOTS) between 1989 and 1998[8].

Slow program expansion, however, meant that in 1999 it only reached 23% of all infections that were treated.

More than 22 million lives were saved between 1995 and 2005 thanks to the Stop TB Strategy's implementation of the DOTS program, during which 56 million people were successfully treated for tuberculosis (TB). [9] In 2013, there were an estimated 9 million new cases, with the vast majority (55%) occurring in Asia and up to 29% in Africa; of these, 13% were infected with HIV. However, only 6.1 million cases were reported to the World Health Organization (WHO).[10]

The most common issue with tuberculosis treatment is a relapse after initial treatment has been completed. The World Health Organization (WHO) defines "default" as two months or more without treatment. with a high risk of spreading the disease to others if the sputum sample comes back positive for AFB. There is an increased danger of dying because of the treatment itself. [2,3]

Essential TB services have been severely impacted by the COVID-19 pandemic since the end of 2019, resulting in massive health, social, and economic consequences. COVID-19 poses a threat to recent progress toward global TB targets through lockdowns and reassignments of health staff and equipment, and the UN secretory report in 2020 declares the possibility of losing the TB control program and focusing on disease that conceders it as a priority recommendation needed to maintain global TB control and prevention [11]. Because of the setback imposed by COVID-19, progress toward the global TB targets outlined in the UN Sustainable Development Goals and the WHO End TB Strategy is now more urgent than it was before[12]. Loss of personnel due to illness or quarantine or both accounted for a significant portion of the Preventive health measures, such as the BCG vaccine which have been hampered by a lack of personnel. [13,14]

COVID-19 shares symptoms with tuberculosis[15]; Because of the lack of public awareness regarding COVID-19 and the stigma associated with both diseases those who are afflicted with it tend to avoid social contact with anyone outside of their immediate families. Several people with newly diagnosed TB avoided medical care out of fear of contracting the COVID-19 virus [16,17]

MATERIAL &METHODS:-

All defaulters TB patients collected from respiratory specialized center in Baghdad ,were involved in this cross sectional study from April/2019 to July/ 2022. Another non defaulters TB patients as volunteers participants included in the study(control group) who attended to Baghdad TB center.

In special questionnaire form to this study , clinical registries ,data had been collected ,also direct interview and phone calling . the information and results assessed by using excel tables and figures .Spss analysis. The significance of association was tested using Pearson Chi-square test. Statistical significance was considered whenever the p value was equal or less than 0.05.

91 TB patients who live in Baghdad city involved in this study,41 of them are defaulters.

Ethical Consideration

- A written permission for data access was given by the TB Centers\Baghdad \Rusafa and Karkh.
- The information of the patients is kept anonymous and confidential.

RESULTS:-

Many critical factors responsible for default in TB treatment were identified through comparisons of 41 TB treatment defaulters and 50 non defaulter TB patients who participated in this study; these factors are mentioned below with tables and figures.

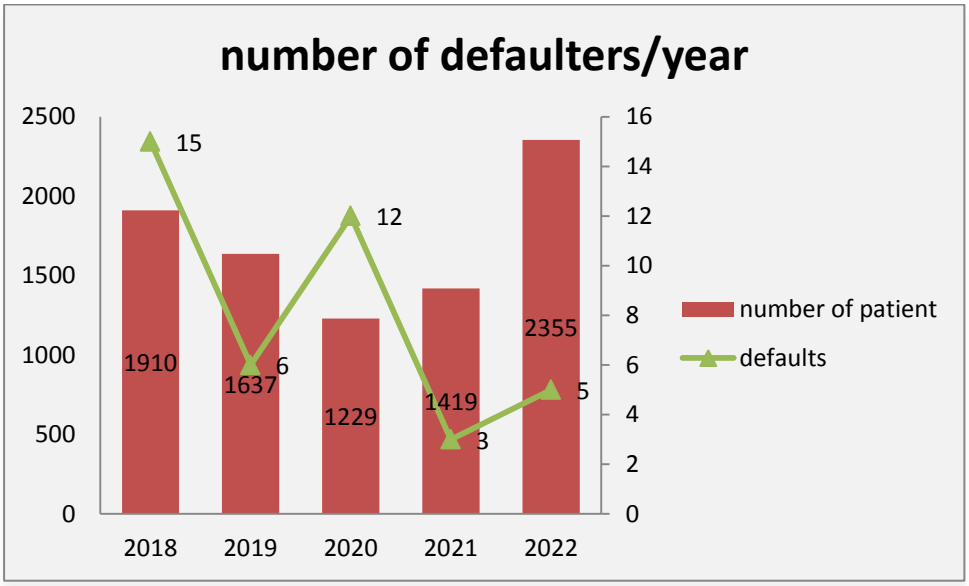
Participants older than 45 years old had the highest defaulter prevalence (60%) in the current study, and there was a very significant connection (p=0.001) between participant age and defaulter prevalence. Seventy-one Percent of research participants with default were in the middle socioeconomic class, showing a highly significant correlation (P=0.001) between default prevalence and family socioeconomic class.

Table 1 shows that there was no statistically significant correlation between the participants' place of residence, sex, or the rate of default($P \geq 0.05$) as seen un table(1).

Table (1): Association between prevalence of default and general characteristics

Variable	Default (%) n= 41	Non-default(% n= 50	Total (%) n=91	P- Value
Age Group (Years)				
<24	2(22%)	7 (78%)	9 (100%)	0.001
25 – 44	16(51%)	15 (49%)	31 (100%)	
≥ 45	23 (45%)	28 (55%)	51 (100%)	
sex				
Male	21(42%)	28(58%)	49(100%)	0.135
Female	20(45%)	22(53%)	42(100%)	
Residence				
Urban	34 (47%)	38 (53%)	72 (100%)	0.056
Rural	7 (32%)	12 (68%)	19 (100%)	
Socioeconomic level				
Low	35 (49%)	36 (51%)	71 (100%)	0.001
Middle	6 (30%)	14 (70%)	20 (100%)	

Figure 1 .the TB incidence and the defaulter from 2019 till 2022



In this study, (0.68%) of participants are default from treatment in 2020& 2021. (0.20%) in 2022.which the years of covid19 pandemic.

Table (2): Association between prevalence of default and risk factors

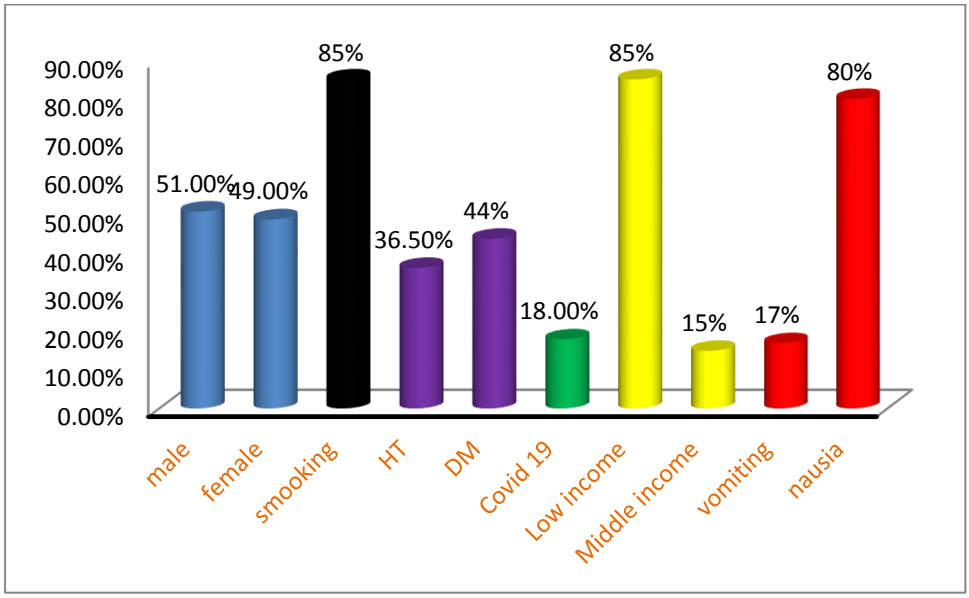
Variable	Default (%) n= 41	Non default n= 50	Total (%) n=91	P- value
Smoking				
Smoker	35 (55%)	29 (45%)	64(100)	**0.01**
non Smoker	6 (23%)	21 (77%)	27 (100)	
Chronic disease				
HT	15 (36)	12 (54.4)	27 (100)	**0.001**
DM	18 (75)	6 (25)	24 (100)	
NON	8(20)	32(80)	40(100)	
Side effect				
Nausea	33(51)	32 (49)	65 (100)	**0.001**
Vomiting	8 (88)	1 (12)	9 (100)	
NON	0	17	17(100)	

Smoking was found to have a highly significant association (P= 0.001) with the prevalence of default in this study (85% of defaulters were smokers).

There is a highly significant correlation (p0.001) between the prevalence of default and the presence of chronic disease, including diabetes mellitus and hypertension, where 44% of defaulters are diabetic and 36.5% of patients with hypertension. based on data in table (2).

There was a highly significant correlation between anti-tuberculosis drug side effects and the defaulter (p=0.001), as shown in the table, and all patients who experienced vomiting were defaulter 4 (100%). (4.8).

Figure 2- the factor's percent that effect the treatment defaults



In this figure , we compare the percentage value of the numbers of the main factors responsible for the failure of tuberculosis treatment, including the Corona pandemic, for the years after 2019.

DISCUSION:-

A TB defaulter is a patient who, at any given time following registration, has not taken their medication for two months or more. This definition comes from the World Health Organization's guidelines for managing tuberculosis programs. The prevalence of treatment noncompliance in the world from 2018 to 2022 was [5, 4.3, 7.5, 7,6.25][18,19] , while in this study the prevalence of TB noncompliance among TB patients in Baghdad was [0.78,0.36,0.97, and 0.21].

There were 91 TB patients who took part in the study throughout the suburbs and city of Baghdad.

This research covered the time frame of April-2019 to July-2022G, when most diagnostic and treatment medical facilities, including those for tuberculosis, were shut down due to the global spread of the acovid19 pandemic[20] . Figure(1) from this study shows that the number of new TB cases detected decreases by about 30% between 2019 and the years of maximum covid19 spread in Baghdad (2020, 2021). This finding is consistent with the findings of a study by Philippe Glaziou et al., which found that the number of new TB cases detected worldwide decreases by an average of 25% over a the same period (when compared to the level of detection before the pandemic). Together, these findings suggest that an additional 190 000 (56 000 – 406 000) average TB deaths (a 13% increase) [20] ,to increase by around 5–15% over the next 5 years, amounting to hundreds of thousands of additional TB deaths worldwide [21,22]

There was also little drop in the number of defaulters seen in Figure 1, especially in 2021, the year of large burden of covid19 in Iraq; this could be due to the difficulty in following the real data during this severe pandemic time. But other studies show that the number of people who stop taking their TB medication is expected to rise by about 5 Percent worldwide by 2021. This suggests that there will be more patients who do not comply to the approved TB treatment regimen[23] .

As can be seen in Table 1, there is a statistically significant correlation between participant age and default prevalence (p=0.001), but no such correlation was found between defaulter gender and prevalence. This finding runs counter to those of W M Jakubowiak et al, in six Russian regions in

2007[24] and the findings of Panel G.Kigozia C. et al. in South Africa in 2016[25] , where significantly higher proportions of cases were male.

There was a substantial relationship was identified between defaulter and low income (table 1 & figure 2) The findings corroborate those of a 1997 study conducted in the new york city by Pablos-Mendez A et al. also the 2013 Moroccan research by Slama K. et al. (26)

This study found a strong correlation between being in a defaulter and experiencing side effects from anti-tuberculosis medication. this concurs with Salla A. Munro et al., Uxbridge; and Jaiswal A. et al., Lessons from the urban context of Delhi, India (2003). (United Kingdom) [27]

In the current study there are a substantial correlation between defaulting and side effects of drug, smoking and age>45, this coincide with Imad Cherkaoui et al at 2014 in Morocco. [28]

In figure 2 there was a strong association between diabetes and TB treatment default more than hypertension , incidence of DM and hypertension within the TB population would continue to expand in the next years. Numerous questions remain unresolved regarding these complicated and concomitant disorders. (29)

The results of this study show a correlation between defaulting status and demographic factors such as age, family income, smoking, anti-tuberculosis medicine side effects, and chronic conditions. There was no correlation between default state and variables like gender, location,.

Recommendation

1-The World Health Organization's DOTS strategy must be put into place with the help of all relevant organizations, both private and public. Raise health education, help pateints stay on their treatment. aware patients of the role that drinking and smoking play bad role in making the default state worse.

Because TB is a dangerous and important issue in our country, we need to do more “advanced studies and research on this important health topic”.

REFERENCES:-

1. World Health Organization Global tuberculosis report 2021. World Health Organization; 2021.
2. Al-Orainey I, Alhedaithy MA, Alanazi AR, Barry MA, Almajid FM. Tuberculosis incidence trends in Saudi Arabia over 20 years: 1991–2010. Ann Thorac Med 2013; 8 (3): 148– 52.
3. Moosazadeh M, Khanjani N, Nasehi M, Bahrampour A. Predicting the Incidence of Smear Positive Tuberculosis Cases in Iran Using Time Series Analysis. Iran J Public Health. 2015 Nov;44(11):1526-34.
4. World Health Organization (2010) Global tuberculosis control: WHO report 2010. WHO/HTM/TB/2010.7.
5. Hoa NB, Sy DN, Nhung NV, Tiemersma EW, Borgdorff MW, Cobelens FG. National survey of tuberculosis prevalence in Viet Nam.Bull World Health Organ 2010; 88 (4): 273– 80.
6. Tupasi TE, Radhakrishna S, Rivera AB, Pascual ML, Quelapio MI, et al. (1999) The 1997 Nationwide Tuberculosis Prevalence Survey in the Philippines. Int J Tuberc Lung Dis 3 (6) 471–477.
7. MOH. Overview of National Tuberculosis Control program. NTP -Iraq.Iraq-Ministry of Health ; 2014. http://www.ntpiraq.zaghost.com/ntpoverview.h
8. Mahler H. The tuberculosis programme in the developing countries. *Bull Int Un Tuberc*. 1966;37:77–82. [Google Scholar]

9. Raviglione MC, Pio A. Evolution of WHO policies for TB control, 1948-2001. *Lancet.* 2002;359:775–8. doi: 10.1016/S0140-6736(02)07880-7. [PubMed] [CrossRef] [Google Scholar]
10. Uplekar M, Raviglione MC. The"vertical-horizantal" debates:Bull World Health Organ.2007.
11. report of the Secretary-General. [accessed on January 27, 2021]. Available from: https://mailchi.mp/who/un-secretary-generaloutlines-priority-recommendations?e=5b995e9d69 . [Ref list]
12. World Health Organization. Global tuberculosis report. 2020. [accessed on January 27, 2021]. Available from: https://www.who.int/publications/i/item/9789240013131 .
13. Khan MS, Rego S, Rajal JB, Bond V, Fatima RK, Isani AK, et al. Mitigating the impact of COVID-19 on tuberculosis and HIV services: A cross-sectional survey of 669 health professionals in 64 low and middle-income countries. medRxiv. 2020 doi: https://doi.org/10.1101/2020.10.08.20207969. [PMC free article] [PubMed] [Google Scholar]
14. India Spend. COVID-19 disrupted India's routine health services. [accessed on January 27, 2020]. Available from: https://www.indiaspend.com/covid-19-disrupted-indias-routine-health-services/
15. Udwadia ZF, Vora A, Tripathi AR, Malu KN, Lange C, Sara Raju R. COVID-19 -Tuberculosis interactions: When dark forces collide. Indian J Tuberc. 2020;67:S155–62. [PMC free article] [PubMed] [Google Scholar]
16. Civil Society Report on TB and COVID. The impact of COVID-19 on the TB epidemic: A community perspective. [accessed on January 27, 2021]. Available from: http://www.stoptb.org/assets/documents/resources/publications/acsm/Civil%20Society%20Report%20on%20TB%20and%20COVID.pdf?fbclid=IwAR3SOY4kyBs5a_35HIeUhcvwRIWspePA4vVHESqcQxio7G4irivJ90cSU8k .
17. Shrinivasan R, Rane S, Pai M. India's syndemic of tuberculosis and COVID-19. BMJ Glob Health. 2020;5:e003979. [PMC free article] [PubMed] [Google Scholar]
18. World Health Organization. "Global tuberculosis report 2018." (2017).
19. World Health Organization. "Global tuberculosis report 2019." (2020).
20. doi: https://doi.org/10.1101/2020.04.28.20079582 This article is a preprint and has not been peer-reviewed [what does this mean?]. It reports new medical research that has yet to be evaluated and so should *not* be used to guide clinical practice.
21. Cilloni L, et al. The potential impact of the COVID-19pandemic on the tuberculosis epidemic a modelling analysis.EClinicalMedicine 2020; 28: 100603.
22. World Health Organization. Impact of the COVID-19pandemic on TB detection and mortality in 2020. Geneva,
23. McQuaid CF, Vassall A, Cohen T, Fiekert K, White RG. The impact of COVID- 19 on TB: a review of the data. Int J Tuberc Lung Dis. 2021;25(6):436–446. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8171247).
24. Jakubowiak WM, Bogorodskaya EW, Borisov ES, Danilova DI, Kourbatova EK. Risk factors associated with default among new pulmonary TB patients and social support in six Russian regions. *The International Journal of TB and Lung Disease.* 2007;**11**(1):46–53
25. Kigozi, G., et al. "Factors influencing treatment default among tuberculosis patients in a high burden province of South Africa." International Journal of Infectious Diseases 54 (2017): 95-102.

26. Slama, K., et al. "Factors associated with treatment default by tuberculosis patients in Fez, Morocco." (2013).

27. Raj, Yujwal, et al. "Modelling and estimation of HIV prevalence and number of people living with HIV in India, 2010–2011." International journal of STD & AIDS 27.14 (2016): 1257-1266.

28. Cherkaoui, Imad, et al. "Treatment default amongst patients with tuberculosis in urban Morocco: predicting and explaining default and post-default sputum smear and drug susceptibility results."*PloS one* 9.4 (2014): e93574.

29. Cáceres G, Calderon R, Ugarte-Gil C. Tuberculosis and comorbidities: treatment challenges in patients with comorbid diabetes mellitus and depression. Ther Adv Infect Dis. 2022 May 20;9:20499361221095831. doi: 10.1177/20499361221095831.