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A RESEARCH STUDY TO ASSESS THE AWARENESS LEVEL OF GENERAL MEDICAL INTERN'S ABOUT TUBERCULOSIS AND DRUG-RESISTANCE

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Abstract:

Tuberculosis (TB) most commonly affects the respiratory system and it is among the most malicious disease in the world. It affects the 1/3rd of the global population with a mortality rate of 1.7 million annually. Majority of the younger adults are under threat of Tuberculosis. Multi-drug resistancet TB proportions have touched epidemic proportions. Our research highlights various aspects of Tuberculosis in the perspective of Pakistan along with an awareness level of drug-resistancet and TB among the general population.

Keywords: *Drug Resistancece, Tuberculosis, Anti-TB drugs, Mortality, Global and Epidemic.*

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INTRODUCTION:

Tuberculosis primarily contributes to the world disease burden and it has also achieved prime attention in recent times especially in the countries with the middle and lower economic condition [1]. It is an infectious disease which is an outcome of M. Tuberculosis. It is a lung disease which leads to pulmonary TB. TB can also affect meninges, intestine, joints & bones, skin, lymph glands and other body tissues. This chronic disease also holds various clinical features [2]. Animals are also no exception for this disease as cattle suffer from bovine TB which also transfers from animals to man. Among infectious diseases, TB causes a huge mortality rate as it is ranked second among lethal infections [3]. Every year eight million new cases are introduced especially in the productive age groups. These higher rates cause an economic burden. Pakistan is also ranked among high prevalence countries contributing to global disease burden as it is at the sixth position for TB burden. Drug-resistancet TB realizes that available knowledge is not sufficient along with known also does not suffice the requirement. Gaps are persistent in the knowledge about drug-resistancet TB as healthcare professionals highlight the same issue of scarcity of knowledge [4].

General Features (Mycobacterium Tuberculosis):

It is slightly curved slender rod, (Wax D) waxy arabinogalactan cell wall layer which is an active immunoadjuvant incomplete Freud's adjuvant. According to Cole, the Mycobacterium tuberculosis presents complex peptidoglycan–arabinogalactan mycolate cell wall that is sixty percent lipid [5]. Mycobacterium TB has poor staining with gram stain; whereas, no endotoxin and highly cross-linked peptidoglycan. Mycobacterium TB is acid-fast bacillus retaining carbol fuchsin even in the decolorized state caused by acid alcohol due to mycolic acids. Mycobacterium TB is also resistancet to alkali and acid that allows sputum treatment to reduce normal bacterial contamination before culturing. Mycobacterium TB grows slowly due to single ribosomal gene copies. It is resistancet to many disinfectants and drying. It also stimulates an immune response which is strong and cell-mediated among healthy hosts [6].

The Global TB Epidemic:

About 1.7 million deaths were reported back in 2009 due to TB along with 9.4 million new cases especially in African and Asian regions [7, 8]. From several years these rates are falling. With a growing population, the total number is at an increase [9]

Mode of Transmission:

Infectious droplet released through cough, sneeze, dust droplets filled with tubercle bacilli may get inhaled after being swept, handling of food, use of infected utensils and files may also carry and transmit the infection from food sputum. Other possible reasons for disease spread are contaminated milk, kissing and common Huqqa smoking [10]. Its incubation period spans from 3 – 6 weeks. Various risk factors include children (under five years of age), intravenous drugs users, prisoners, detained patients, weak immune system, kidney disease, diabetes, immune suppressant drugs, transplantation and pregnancy [11].

Pathogenesis of Tuberculosis:

Droplet nuclei containing tubercle bacilli when inhaled infect the humans and causes MTB (Mycobacterium Tuberculosis). These droplets are also expelled through infected patients. Due to small size usually between one to ten micrometres they can remain in the air for a longer time period. Infection may also result from skin or ingestion [12].

TB is a highly infectious disease initiated by infected individuals such as students, school teachers, drivers or so many others around us. Human response varies for tubercle bacilli and the onset of active disease results from primary infection of quiescent infection reactivated [13].

Active TB symptoms include weight loss, cough tiredness, fever, night sweats, breath shortness, lymph nodes enlargement and chest pain [14]. Its screening is possible through Mantoux tuberculin skin test, QuantiFERON-TB Gold, interferon-γ release assays, chest photofluorography and T-SPOT.TB [15]. Physical assessment includes crackles (unusual breath sounds), fluid around the lung, enlarged lymph nodes and clubbing. Various range of the test is also available such as biopsy, chest CT scan, bronchoscopy, interferon-gamma blood test, chest x-ray and QFT-Gold. Sputum culturing and assessment includes TB skin test and Thoracentesis; tuberculin skin test.

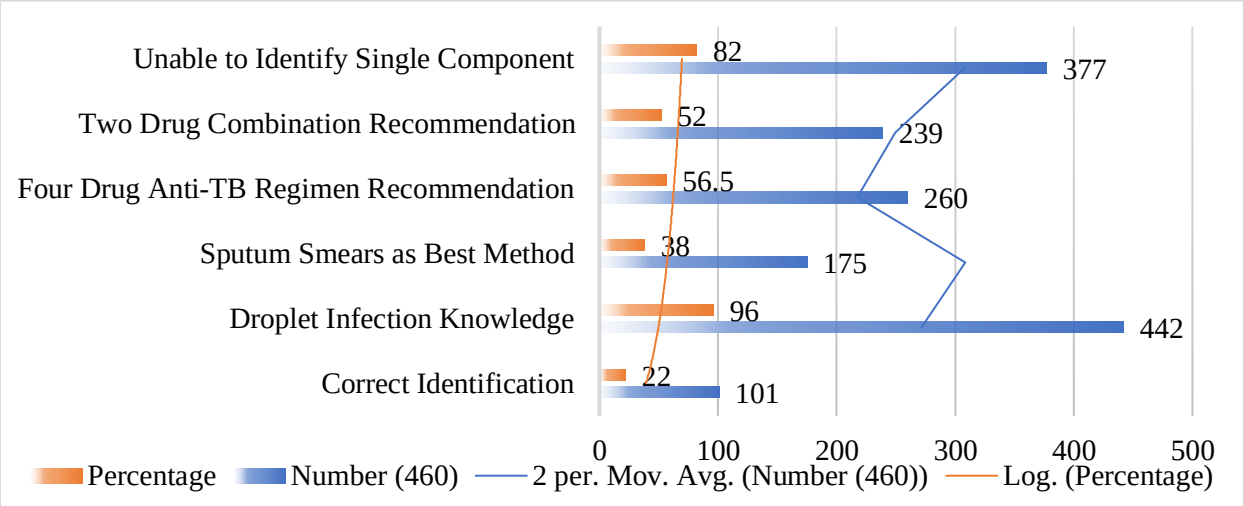
Disease outcomes are not altered through bed rest as few of the cases need hospitalization. Continuous self-administration of the drugs for six months is helpful for TB treatment; whereas, poor compliance causes reduced outcomes. Longer hospitalization is also mandatory is persistently required specially from non-cooperating patients using alcohol or homeless. Commonly used drugs for the treatment of TB are Isoniazid, Pyrazinamide, Rifampin, Amikacin, Ethambutol, Moxifloxacin, Ethionamide, Streptomycin and Paraaminosalicylic acid.

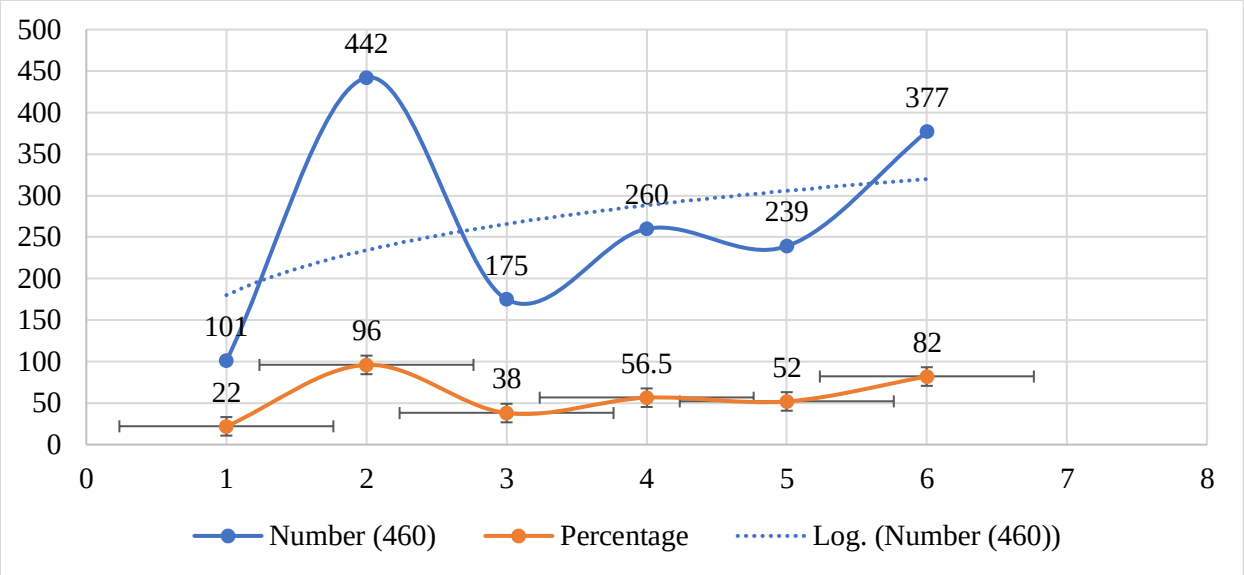
MDR-TB refers to resistancece to two effective drugs rifampin and isoniazid. Extensively drug-resistancet TB (XDR-TB) is a type of TB which is resistancet to rifampin, isoniazid and second-line drugs used for MDR-TB management. Mortality rates for XDR-TB patients are similar to pre-antibiotic era patients.

Medical Intern's knowledge of TB in Pakistan: Khan reported the different level of knowledge among medical interns in his survey as reflected in the given table [16].

Table: Knowledge of Medical Intern's

Medical Intern's Knowledge	Number (460)	Percentage
Correct Identification	101	22
Droplet Infection Knowledge	442	96
Sputum Smears as Best Method	175	38
Four Drug Anti-TB Regimen Recommendation	260	56.5
Two-Drug Combination Recommendation	239	52
Unable to Identify Single Component	377	82





Prevalence of Primary Multidrug Resistancece to anti-TB Drugs:

We selected samples of sputum from all over the country which included 742 untreated samples to assess primary drug-resistancet prevalence. A total of 672 patients were positive showing 76 samples resistancet for more than one drugs (11.3%). Various values of resistancece were as streptomycin was (10 µg/ml) among 36 patients (5.4%), isoniazid (1 µg/ml) in 51 patients (7.6%), rifampicin (5 µg/ml) in 15 patients (2.2%), ethambutol (10 µg/ml) in 12 patients (1.8%) and pyrazinamide 22 patients (3.3%). Single treatment was extended to 46 isolates (6.8%), 10 patients to two drugs (1.5%), 12 to three drugs (1.8%) and 6 to four drugs (0.9%); whereas, 2 isolates to five agents (0.3%). According to Javed, primary MDR-TB was found in 12 patients (1.8%) (RMP 5 µg/ml, INH 1 µg/ml) [17 – 19]. Primary MDR-TB prevalence is below two percent in Pakistan that can be handled through the DOTS strategy.

Health Professionals Knowledge about Resistancet Tuberculosis:

The basic aim of the survey was to assess the basic awareness of the medical interns about TB resistancece patterns. We asked about MDR-TB and XDR-TB were questioned from medical professionals. Answers were recorded on the basis of experience and seniority. Our survey interviewed 200 medical professionals. Finally, 128 responses (69%) were made a part of this survey; whereas, the remaining 72 responses (31%) were not complete or regretted. Correct responses were 51 (39.85%) about MDR-TB; whereas, 71 (60.15%) responses were incorrect. Correct responses about XDR-TB were only 5 (3%); whereas incorrect responses were 103 (81%) and 21 were partially correct (16%). Wajid presented in a subset analysis of experience and reported a scarcity of knowledge was uniformly accepted [20].

CONCLUSION:

Various studies reflect poor knowledge and reduced compliance with National TB programs and WHO guidelines in the population of Pakistan. An effective TB control requires immediate action to improve knowledge among undergraduates. It also focuses on the essential education of national and WHO guidelines.

REFERENCES:

1. Farmer P, Bayona J, Becerra M (1998). The dilemma of MDR-TB in the global era. Int. J. Tuberc. Lung Dis., 2: 869-876.
2. Frieden TR, Sterling TR, Munsiff SS, Watt CJ, Dye C (2004). Tuberculosis. Lancet., 362(9398): 1858-1859.
3. Pio A, Luelmo F, Kumaresan J, Spinaci S (1999). National tuberculosis program review: experience over the period 1990-1995. Bull WHO.,75(6): 569-81.
4. Russell S (2004). The economic burden of illness for households in developing countries: a review of studies focusing on malaria, tuberculosis and HIV/AIDS. Am. J. Trop. Med. Hyg. 71(2): 147–155.
5. Siddiqi K, Walley J, Khan MA, Shah K, Safdar N (2006). Clinical guidelines to diagnose smear-negative pulmonary tuberculosis in Pakistan, a count Trop Med. Int. Health.,11: 323-331.

6. Siddiqi SH, Stauffer JC, Ali MA, Middlebrook G (1976). Some bacteriologic aspects of the epidemiology of pulmonary and extrapulmonary tuberculosis. Am. J. Epidemiol.103(1):101-111.
7. Van Rie A (2006). XDR tuberculosis: an indicator of public-health negligence. Lancet, 368: 1554-1556.
8. Vinay A, Abul K, Fausto, Nelson and Mitchell, Richard N (2007). Robbins Basic Pathology (8th ed.). Saunders Elsevier. pp. 516–522.
9. Wajid A, Arshad N, Mohammad H, Shahzad, Fehmida N (2010), Status of Health Professionals Awareness about Resistancet Tuberculosis, Pak J. Ch Med., 16(1): 345-350.
10. Wright J, Walley J, Philip A, Push Ananthan S, Dlamini E, Newell J (2004). Direct observation of treatment for tuberculosis: A randomized controlled trial of community health workers versus family members. Trop. Med. Int. Health., 9: 559-565.
11. Munro SA, Lewin SA, Smith HJ, Engel ME, Fretheim A, Volmink J (2007). Patient adherence to tuberculosis treatment: a systematic review of qualitative research, PLoS Med., 24: 4(7): 238.
12. Nolan CM, Goldberg SV, Buskin SE (1999). Hepatotoxicity associated with isoniazid preventive therapy: a 7-year survey from a public health tuberculosis clinic. J. Am. Med. Assoc., 281: 1014-1018.
13. Armstrong JA (1975). Phagosome-lysosome interactions in cultured macrophage infected with virulent tubercle bacilli. J. Exp. Med., 142:1-16.
14. Aziz MA, Wright A, Laszlo A, De Muynck A, Portaels F, Van Deun A, Wells C, Nunn P, Blanc L, Raviglione M (2006). Epidemiology of anti-tuberculosis drug resistancece (The global project on anti-tuberculosis drug resistancece surveillance): An updated analysis. Lancet., 368 (9553): 2142-2154.
15. Black FL (1975). Infectious diseases in primitive societies. Science; 187: 515-518.CDC (2009). Plan to combat extensively drug-resistancet tuberculosis: recommendations of the Federal Tuberculosis Task Force. MMWR Recomm Rep.; pp. 58:1-43
16. Cole ST, Brosch R, Parkhill J (1998). Deciphering the biology of Mycobacterium tuberculosis from the complete genome sequence. Nature, 393: 537-544.
17. Dye C (1999). Consensus statement. Global burden of tuberculosis: estimated incidence, prevalence, and mortality by country (WHO Global Surveillance and Monitoring Project). J. Am. Med. Assoc.,282: 677–686.
18. Gleissberg VG, Maksimova ZD, Golubchikova VT, Wares DF, Banatvala N (2001). Developing nursing practice as part of the collaborative TB control program. Int. J. Tuber. Lung. Dis., 3: 878-885Global tuberculosis control– epidemiology, strategy, financing. WHO report 2009. Geneva, World Health Organization, 2009(WHO/HTM/TB/2009.411).
19. Javaid A, Hasan R, Zafar A, Ghafoor A, Pathan A.J, Rab A, Sadiq A, Akram CM, Burki, Shah K, Ansari M (2008). Prevalence of primary multidrug resistancece to anti-tuberculosis drugs in Pakistan, Intern. J.Tub. Lun Dis. 2008; 12(3): 326-331
20. Lawn SD, Bekker LG, Middelkoop K, Myer L, Wood R (2006). Impact of HIV infection on the epidemiology of tuberculosis in a peri-urban community in South Africa: The need for age-specific interventions. Clin. Infect. Dis., 42: 1040-1047