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SOCIOECONOMIC AND DEMOGRAPHIC FACTORS LEADIN G TO NON-COMPLIANCE TOWARDS ANTI-TUBERCULOUS TREATMENT

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Abstract:
The incidence of Tuberculosis (TB) has revived and has become one of the emergent cause of tension in the healthca re sector specially in the tropical countries causing huge number of deaths. Non-adherence to the TB control progra ms is also one of the serious issues. A cross-sectional research determined for the investigations of the restricted co mpliance with anti-TB treatment in the patients of TB was conducted in 2015 targeting the Gujranwala. Research sa mple was 200 patients including 100 TB cases with default treatment record and remaining hundred were treatment compliers. Interview were conducted for the collection of data and also consulted the clinical investigations. Every p atient showed an improvement, adverse drug effects and significant non-compliance reasons. Awareness in the patie nts is very much required about the duration of treatment and outcomes if treatment is not completed. Serious patien ts should be treated by keeping them under supervision so that adverse effect managed effectively. There is need to i mprove the diagnostic capability of health care centers so that patients were properly diagnosed and treated.

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INTRODUCTION:

Tuberculosis (TB), highly contagious, ubiquitous, chronic granulomatous infection of the bacteria that leads to ultimate adults to death all over the world. The new face of this disease has returned to the world with even bitter results. Almost one third of the total inhabitants of the world are directly affected of this disease. This incidence is adding 8 million every year and per annum deaths attributed to TB are 2 million (WHO, 2003). After AIDS the second common most deadly disease is TB [1]. Countries like India and Pakistan it has become endemic and also resurgent in the developed nations linked with the incidence of HIV. In reference to the African countries there is a strong link between TB and HIV, its rate in South Africa and neighboring countries has exceeded up to sixty percent [2].

Mortality range has been observed in the range of 50 – 80 percent in the individuals not managed for smear positive and inconsistent cases were 30% that has been decreased with the TB control programs as five percent through DOT and programs of the TB control through various organizations. All TB forms, cases of infections and mortality in the population of 100,000 [3]. The age of the majority was in the range of 15 – 49 years in the total of 5 – 6 million. Asia and South Africa are most affected cases as their prevalence is 33 percent all over the globe. However, in the estimates of 2003, Sub-Saharan Africa incidence was double as the incidence of South-East Asia, observed as 290 – 350 cases in the total population of 100,000 [1, 3].

M. tuberculosis is an airborne, highly contagious, slow-growing, Gram-positive aerobic rod-shaped acid-fast bacillus disease. There is high content of lipid in the walls of the cell that allows the survival of the bacteria in the macrophages. Many common drugs are also resisted through this barrier [4, 5].

Primary host of this bacteria is human. Airborne dissemination is the way of disease spread through nuclei droplet of diameter 1 – 5 µm carrying droplets of M. tuberculosis for one infected person to another. The infectious nuclei droplet is lodged and inhaled in alveoli in distal airways. After that M. tuberculosis is carried by alveolar macrophages, which initiates an events cascade resulting in the shape of successful infection containment or development in the shape of active disease. Active disease risk development changes according to infection time, age and host immunity; however, disease life-time risk for recently affected young is estimated ten percent [1, 6, 7].

Along with all known factors most important is the unsolved TB challenge its control and complete treatment. Treatment is considered complete if the drugs are complete taken as prescribed by the physicians. TB can be worse if the treatment is not properly complied with and it may cause resistance to drugs. Drug resistance is another hindrance in the treatment of TB. Fox (1983) states that over the world the compliance of TB is estimated as low as forty percent in the under-developed countries and also considered as the major cause of the failure of treatment. Management is critical in the compliance assurance in the presence of chemotherapy full course. Recommended course rate by WHO is 85% in the diagnosed cases (1992). For the full achievement the compliance is required to be in the rage of 85 – 90 percent.

Poor compliance factors study therefore becomes important and drug resistance is responsible for the abandoned and poor compliance that also increases the TB disease. Reported factors linked with the compliance are DOTs and combined regimen of short courses (Freeman, 1972; Feinstein et al, 1959; Stradling 1970; Chaulet et al, 1967; Strong, 1970; Albert et al, 1976). The incidence of TB in Pakistan has been observed as 231 / 100,000 and per year new cases diagnosed with TB are 420,000.

Another research also studies the non-compliance of the treatment and its associated factors, attitude and knowledge that may possibly influence the TB treatment compliance particularly in Pakistan. Other countries have also studies the same subject in the setting of their population but still there is a need to conduct certain research studies on the aspects including culture, socio-economic status, demography, level of knowledge, side effects tolerance and drugs used. The outcomes may differ from region to region but possible solutions can be identified through these research studies and they may also in the disease spread control. Intervention measures can also be planned through these studies.

MATERIALSAND METHODS:

Study design

Design of the research was cohort and retrospective. Data was gathered through a form and cohort of the patients of TB who attended any healthcare facility for treatment in the time period of Apr, 2015 to June, 2015 was also considered.

Study location

Study was held in TB clinic of Gujranwala. Gujranwala is a city in Pakistan's Punjab province. In the light of census (1998) the population of Gujranwala was 3,400,940 people and urban ratio was observed as 50.17%. This makes it an advanced district of Punjab and

its present population is 4,308,905 [4].

Sampling method

Research included 200 patients including 100 with de fault and 100 with complete treatment from the Gujra nwala TB clinics in the period 1st Apr, 2015 to June, 2015.

Definition of data for analysis

Standard definition of WHO were used for the classif ication of TB, its treatment and registration (2003) an d (International Union Against Lung and TB Disease, 1996).

Data collection

We retrospectively reviewed TB clinical records and registers were consulted to record the data of 200 pati ents (100 successfully completed their treatment and 100 defaulted) TB patients of all age treated in TB cli nic Gujranwala between 1st April, 2015 and June 201 5. Assistance and support of TB control Officer was e xtended by his office at Gujranwala, through his supp ort we were coordinating with the TB control progra m supervisor and also had an access to all the related record. We gathered all the required information fro m the registers and records and collected it on the pre -designed form. Our research questions required data about the demographic background, person, risk facto rs of TB, treatment, condition and associated outcom es. Abstraction form was completed by the health trai ned staff and verification was carried out in order to c onfirm completion by the supervisors who collected t he data about TB.

Inclusion criteria

1). Cohort group patients were made a part of the rese arch diagnosed with TB and also treated for the TB di sease within the settings and framework of TB clinics of Gujranwala from April – June, 2015. Treatment o utcomes were also considered.

2). All those patients were made a part of the research who completed their treatment.

3). All the defaulted patients who did not managed to complete and left clinic and not visited again were int erviewed at their home or through different means of communications.

Exclusion criteria

1) Very severe cases close to death.

2) Transferred to another clinic or city.

3) Default cases which don't have any communication.

Data analysis

For the description of the features of the patients we measured median and proportions. Chi Square test w as used for the comparison of categorical variables. Medians were compared for the continuous variables. Association between p-value and categorical variabl es was made through Chi-Square test and presented t he data in tables and graphs with significant p-value a s (0.05)

RESULTS:

In the total research sample patients were under treat ment in the Gujranwala TB clinics from April – June, 2015. Among these patients 105 male cases (52.5%) were also included. The participants were divided int o 3 groups. First group contained participants below 20years, second contained between 20 to 39years and third group contained 40 & above (mean 37.2 ± 16.3 years). Default was highest 55.4% among the ages ra nge 20 to 39 years followed by young age group i.e. b elow 20 years 48.6%. This was not statistically signif icant (p = 0.41). In the female and male default patien ts no difference was observed as (51.6% versus 48.6 %, p-value = 0.671). Age and sex distribution is show n in Table – I and other socio-economic status of part icipants. Table 2 presents the demographic status agai nst their percentage for default and success cases. Th e rest of the variables are presented in Table I, II and III.

Table – I: Socio-Demographic Status of the Participants

Mean ± SD		**37.2 ±16.3**	
Details		**Number**	**Percentage**
Age (Years)	Below 20	35	17.5
	20-39	83	41.5
	40 & above	82	41
Sex	Male	105	52.5
	Female	95	47.5
Occupation	No work	36	18
	Housewife	63	31.5
	Student	25	12.5
	Unskilled worker	76	38
Marital status	Married	137	68.5
	Unmarried	63	31.5
Education	Illiterate	99	49.5
	Under matric	51	25.5
	Matric & above	50	25
Type of Family	Nuclear	25	12
	Joint	176	88
Family size	3 and less	12	6
	4 to 5	62	31
	6 to 7	84	42
	More than 7	42	21
Past history of ATT	No	171	85.5
	Yes	29	14.5

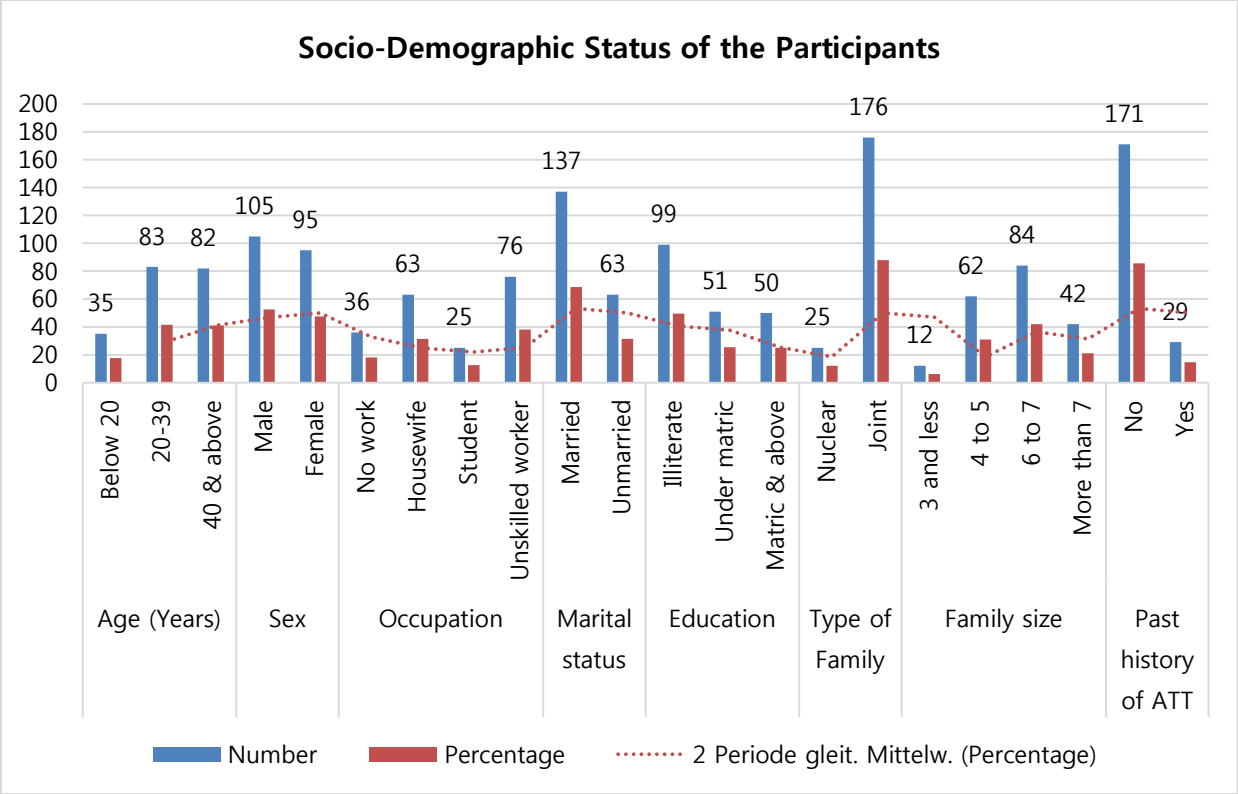


Table – II: Socio-educational characteristics of sampled population

Details		Default (100)		Successful (100)		P value
		Number	Percentage	Number	Percentage	
Family Size	3 and less	3	25	9	75	0.193
	4 to 5	28	45.2	34	54.8	
	6 to 7	46	54.8	38	45.2	
	More than 7	23	54.8	19	45.2	
Education	Illiterate	39	39.4	60	60.6	0.011
	Under matric	32	62.7	19	37.3	
	Matric & above	29	58	21	42	
Occupation	No Work	17	7.2	19	52.8	0.407
	House wife	35	55.6	28	44.4	
	Student	19	36	16	64	
	Unskilled Worker	39	51.3	37	48.7	
Previous history ATT	No	88	51.5	83	48.5	0.315
	Yes	12	41.4	17	58.6	

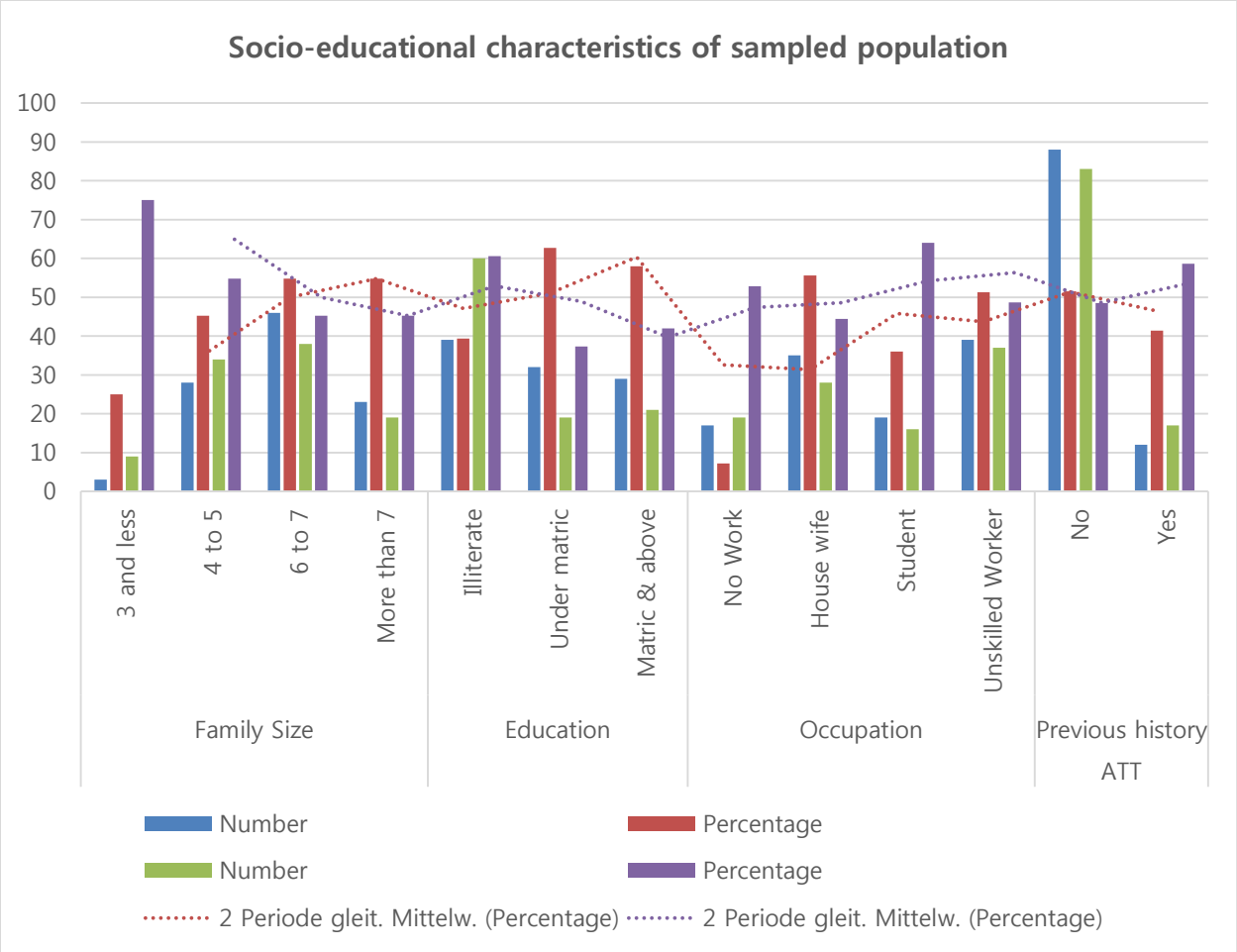
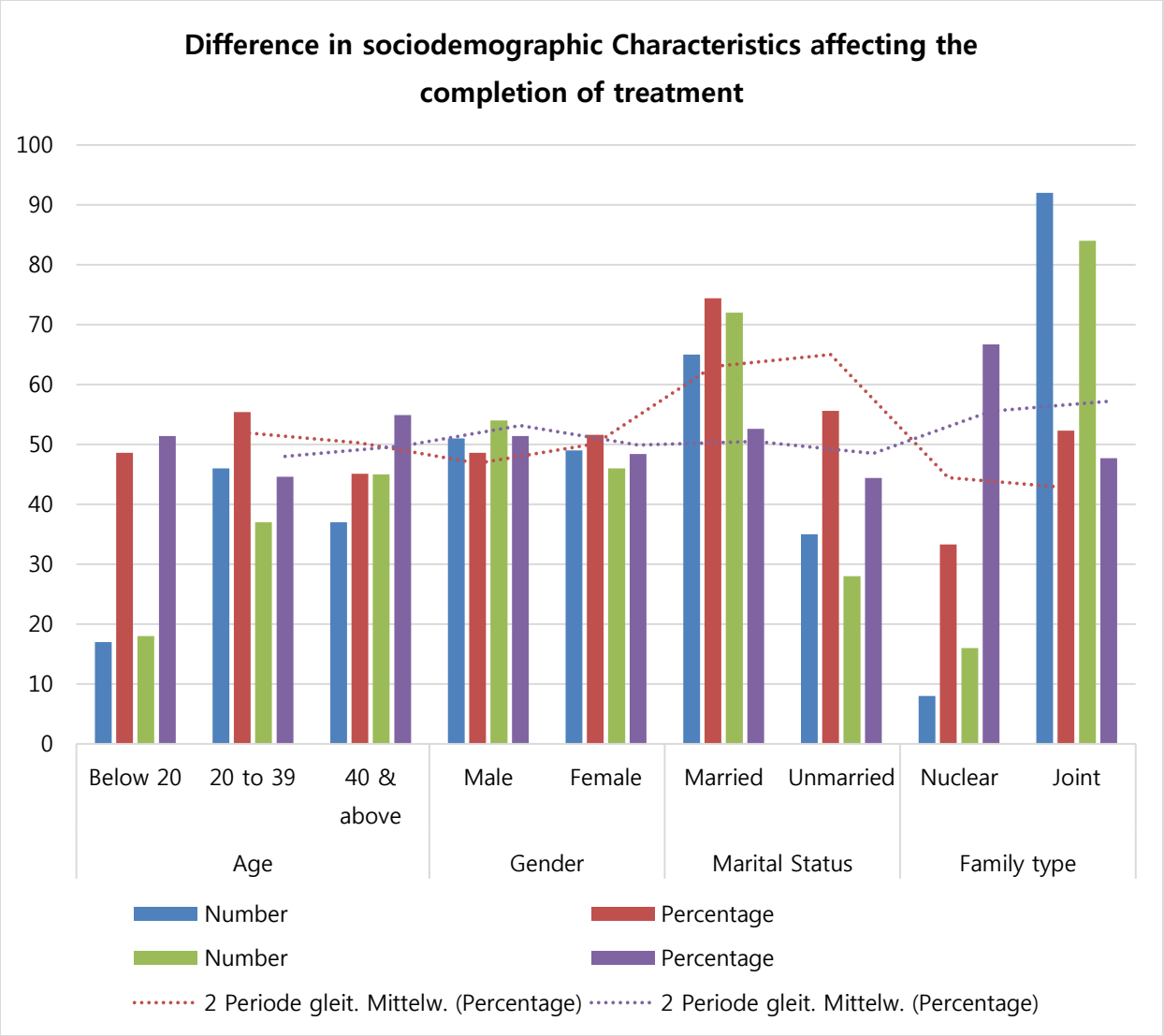


Table – III: Difference in sociodemographic Characteristics affecting the completion of treatment

Characteristics		Default (n=100)		Successful (n=100)		P Value
		Number	Percentage	Number	Percentage	
Age	Below 20	17	48.6	18	51.4	0.41
	20 to 39	46	55.4	37	44.6	
	40 & above	37	45.1	45	54.9	
Gender	Male	51	48.6	54	51.4	0.671
	Female	49	51.6	46	48.4	
Marital Status	Married	65	74.4	72	52.6	0.287
	Unmarried	35	55.6	28	44.4	
Family type	Nuclear	8	33.3	16	66.7	0.082
	Joint	92	52.3	84	47.7	



DISCUSSION:

Numerous studies have demonstrated that low socioeconomic group of TB patients having low income are more likely to be non-compliant for treatment. Education is also a major factor for noncompliance [1 – 5]. For the improvement of the health centers awareness and education is required at community level for all chronic illnesses specially TB in its management and treatment [6 – 23]. Central practices should be the target of the health education specially focusing on the non-adherence of the treatment. The age group in the range of 20 – 39 was highly affected as (55.4%). However, no significant involvement was observed in terms of sex, society role and sexual behavior. Higher rate was observed in the patients of extrapulmonary TB, after that another higher incidence was observed for negative pre-treatment sputum smear microscopy and pulmonary TB. These outcomes have been same as observed for both the said groups other research studies. However, treatment was more likely to be completed by the PTB smear positive cases due to the factor of symptomatic and severe disease. Default rate was repeatedly observed in the first two weeks, as the therapy was intensive as clinically represented. Higher rate of prevalence can also be attributed to the incidences of house deaths, occurring in the extensive phase of the disease. It may also be linked with the incidence of hope but later the occurrence of sudden death. According to Michael (2004), PTB and extrapulmonary TB become fatal at their last stage. TB cases also require clinical investigation of HIV in Gujranwala TB clinics. There was not association of the clinic distance from the patient's house; whereas, few of the research studies consider it a relevant factor. DOT method o

n the national level specifies the disease in the perspe ctive of location and patient's residence. In the availa bility of healthcare center near to the residence increa ses the utilization of the intensive therapy phase. Dist ant hospitals for the treatment is not an issue in this re search and in our selected population. It also indicate s that fast fading of the TB has become a stigma in th ese communities. Limitations of the research include its design as retrospectively only the available data ca n be analyzed, for detailed explorations there is a nee d of the TB compromised treatment assessment.

CONCLUSION:

Research was aimed at the identification and categori zation of the factors responsible for non-compliance a mong the patients of TB for DOT program. Different variable was classified to study each factor individual ly. The result obtained were that age and sex were not significant i.e. age and sex does not affect complianc e for DOT. Socioeconomic factors were significant a nd these factors affected compliance i.e. those who w ere socio-economically low were more likely to show non-compliance. Independent verification of the data accuracy was not possible as additional data was req uired for this purpose. Every patient's detail was not available in the research, which is also beyond the co ntrol of the research and our scope. Defaulters factor was also difficult to address. There were incomplete r ecords for the patients in TB clinic. Some patients we re in cooperative for interview. Illiterate patients wer e difficult to handle and interview. The TB clinic sho uld have been received an official letter to acknowled ge them to help the investigators in completing their r esearch and to obtain full cooperation from patients. Home visits through national program can be helpful for the close monitoring of the patients to decrease th e default cases and smear positive patient's observati ons. We need to place various strategies in place for t he identification of default patients and failure risks. For the reduction of the default rate strict observation and monitoring is required specially for default patie nts, which will ultimately reduce the awareness gap a nd reduce non-adherence of the treatment.

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