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The Armenian SORT IT Course

Quality of care provided to tuberculosis patients in Armenia: How satisfied are the patients?

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Abstract

Introduction: Adherence to tuberculosis (TB) treatment as an important determinant for the successful cure of patients can be increased by focusing on patient satisfaction. The objective of this study was to evaluate patient satisfaction with TB services, different aspects of patient satisfaction, and demographic, health and treatment characteristics associated with satisfaction.

Methodology: Overall 505 randomly selected TB patients that received treatment during 2014-2015 in Armenia underwent a cross-sectional telephone survey. Patient satisfaction items were selected from the Patient Satisfaction Questionnaire (PSQ-18). The Consultation and Relational Empathy (CARE) and Patient Enablement Instrument (PEI) were also used. Treatment adherence was assessed using the Morisky Adherence Scale.

Results: The respondents comprised 386 (76.4%) men and 119 (23.6%) women with a mean age of 45.5 ± 0.7 years. Nearly 99% (n = 500) of them were treatment-adherent. However, 45 (8.9%) mentioned the side effects as a reason for not following the treatment, revealing the non-adherence level of approximately 9%. About 93% of the patients were generally satisfied with the TB services, about 46% were satisfied with consultation and relational empathy and about 95% were satisfied with patient enablement. Being unsatisfied with TB services was associated with treatment non-adherence, inpatient treatment, drug-resistant TB, higher education, being unmarried, having a family income of below 50,000AMD (~120 USD) on average, being unsatisfied with consultation and empathy and place of residence.

Conclusions: This study reports that TB patients are highly satisfied with TB care in Armenia. However, addressing specific characteristics associated with satisfaction may improve the TB program.

Key words: tuberculosis; TB; patient satisfaction; SORT IT; operational research; healthcare improvement.

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Introduction

Tuberculosis (TB) is a global public health issue. It is estimated that almost 10.4 million people were infected with TB and approximately 1.6 million died because of TB during 2016 [1]. Even if most TB cases are preventable, the TB mortality rate remains high [1,2].

Armenia is among the 18 high-priority countries fighting TB in the WHO European Region. Latest data show the main TB indices have declined, but the numbers are still above desired targets [1]. The 78.1% treatment success for new pulmonary TB patients is below the WHO target of 85%. Poor treatment outcomes are partly explained by the high prevalence of drug-resistant TB (DR-TB) forms. Despite successes in managing drug-susceptible TB and the fact that Armenia is no longer a high-burden multi-drug resistant (MDR) TB country, DR-TB still poses a major challenge to the effectiveness of the National Tuberculosis Programme (NTP). As of the 2015 year, the incidence rate was 41 per 100,000 population [1].

The World Health Organization (WHO) recommends the Directly Observed Treatment Short course (DOTS) for TB management as the most appropriate and cost-effective approach [3]. Considering that WHO guidelines recommend daily treatment for the TB patients lasting at least 6 months [3,4], treatment adherence is an important determinant for a successful outcome [5,6]. The non-adherence to TB treatment reduces the chance of successful treatment and increases the chance of having resistant TB [3,4]. Increasing adherence by increasing patient satisfaction can be a viable option, especially for TB patients who must follow a long-lasting and complex therapeutic scheme [7–9]. Satisfied patients are more likely to maintain a stable relationship with healthcare

providers and follow a specific therapeutic plan and regimen, use medical services, to be compliant with prescribed therapies and to continue visiting the same practitioner [7,10,11]. From patient satisfaction perspective, the factors that are related to adherence are satisfaction with the physician and the provided medical care [12,13], patient-doctor interpersonal relationships [14], patient's perceived compassion, the technical skills of the physician, and confidence in physician's ability to help the patient [15,16], technical quality, communication, financial aspects of treatment, access to treatment, time spent with the doctor, and the low opinion on the quality of services provided [12].

Since the quality of laboratory services is crucial in detecting and treating active TB cases, satisfaction of patients with laboratory services is also an important component in the formation of overall patient satisfaction with health services [17].

Despite the importance of understanding TB patient's satisfaction, there have been no studies conducted in Armenia to evaluate this, and in the PubMed-reviewed literature, we did not find any relevant studies from Armenia. Thus, we conducted this study to determine the level of satisfaction of TB patients with TB healthcare services as well as demographic and clinical characteristics associated with it.

Table 1. Data Collection Instruments and separate items used for the current study.

The Patient Satisfaction Questionnaire Short-form (PSQ-18, 7 subscales)
General Satisfaction
Technical Quality
Interpersonal Manner
Communication
Financial Aspects
Time Spent with Doctor Accessibility and Convenience
Accessibility and Convenience
Morisky Adherence Scale (MAS, 4 items)
Do you ever forget to take your medicine?
Are you careless at times about taking your medicine?
When you feel better, do you sometimes stop taking your medicine?
Sometimes if you feel worse when you take the medicine, do you stop taking it?
The Consultation and Relational Empathy (CARE, 10 questions)
Making you feel at ease
Letting you tell your "story"
Really listening
Being interested in you as a whole person
Fully understanding your concerns
Showing care and compassion
Being positive
Explaining things clearly
Helping you to take control
Making a plan of action with you
***Patient Enablement Instrument (PEI:* 6 questions)**
Able to cope with life
Able to understand your illness
Able to cope with your illness
Able to keep yourself healthy
Confident about your health
Able to help yourself
Satisfaction with Treatment Implementation
How would you rate the doctors' qualifications?
How would you rate the nurses' qualifications?
How would you rate the attitude of the medical staff (courtesy, manner, reference, etc.)?
How would you rate the waiting time for a doctor, queues?
How would you rate the conditions of the facility (cleanliness, space, temperature)?
Patients' satisfaction with laboratory services
How would you rate your satisfaction with laboratory services?
How do you rate your interaction with the laboratory staff?
Overall, how would you rate your interaction with the laboratory?
How would you assess the accessibility of consultations provided by the laboratory?
How would you rate the interaction with the laboratory doctor during the consultation?

Methodology

Study Design

A cross-sectional survey using validated questionnaires was conducted among the randomly selected TB patients that received TB treatment during 2014-2015 in Armenia *via* telephone interviews.

Study setting

Armenia is a landlocked country in Southeastern Europe and belongs to the European Region of the World Health Organization (WHO). The National TB Control Programme of Armenia (NTP) is based on the WHO Stop TB Strategy and aims to achieve the global targets for TB control [4,6]. TB diagnosis and care is provided through TB outpatient and inpatient services based on the DOTS strategy and TB healthcare services are provided for free of charge within the frames of the national TB control program. Patients with presumptive TB are screened in specialized TB inpatient hospitals/departments or in TB outpatient departments within primary healthcare facilities. Those diagnosed with TB are admitted to hospital if needed, especially during the initial phase of treatment, and then treated on an ambulatory basis during the continuation phase.

Study Population and Sampling

A representative sample of TB patients from all TB outpatient (n = 60) and inpatient (n = 5) facilities was chosen by random sampling and contacted by telephone for study eligibility and consent.

The following exclusion criteria have been applied: refused to participate in the study, completion of the treatment in 6 months or more, already registered death at the time of survey or age below 18 years.

According to the published literature, TB treatment non-adherence ranges between 10-20% [5,18,19]. Thus, in order to have 80% power and to detect 10% true difference in proportion of non-adhered TB patients between the two satisfaction groups (satisfied and unsatisfied), the *statcalc* utility in EpiInfo software (CDC, Atlanta, USA) was used and the required sample size was estimated to be 474. Assuming 95% of response rate and 95% of eligibility rate, the final sample size was estimated to be 525 [20,21].

Data Collection Instruments

Medical data related to the study participants were extracted from the national TB electronic database. The following validated questionnaires (summarized in Table 1) have been adapted, pre-tested and used for the telephone survey. Collected data were double-entered and cleaned using the EpiData software:

The Patient Satisfaction Questionnaire Short-form (PSQ-18): includes 18 items aggregated into the seven subscales, with each item scored on a five-point scale ranging from 1 to 5, with higher scores indicating greater satisfaction [22].

The Consultation and Relational Empathy (CARE): consists of 10 questions with five response options each (ranging from 1 to 5) and measures the patients' views on physician's empathy. The scale ranges from 10-50, with higher scores reflecting more empathy [23,24].

Patient Enablement Instrument (PEI): each of the included 6 questions is scored from 0 to 2, with a total score ranging from 0 to 12. The higher the score, the greater the sense of enablement by the physician [25].

Additionally, questions evaluating patients' satisfaction with laboratory services [26] and some other questions on satisfaction with treatment implementation that were used during a similar research conducted in Tajikistan were also adapted and included in current study [26].

Generally, patients were dichotomized as "satisfied" or "unsatisfied" with different aspects of patient satisfaction based on the average scores of the instruments mentioned above.

Morisky Adherence Scale (MAS): consists of 4 items with dichotomous responses (yes/no). Patients having a total mean MAS score of 0 or 1 (all answers are "no" or only one "yes" answer allowed) considered as adherent to treatment [27,28].

Statistical analysis

Descriptive analysis (mean ± standard deviation [SD] for continuous variables and frequencies/proportion for categorical variables) were conducted for the variables of interest. The differences between the two, "satisfied" and "unsatisfied" groups were evaluated using *"chi-square"* or *"Fisher's exact"* tests for categorical variables and *"two-sample t-test"* for continuous variables. Analyses were conducted using STATA 12 software and the level of significance was set at 5%.

Ethics: The study protocol was approved and Ethics approval was obtained from the Institutional Ethics Review Board of Center of Medical Genetics and Primary Health Care.

Results

Demographic and Clinical Data

To achieve the required sample size of 474, initially 525 patients were included in the survey. This represented about 1/3 of target population databased. Total of 505 patients were interviewed *via* telephone;

20 patients were not included due to the incompleteness of obtained data. Among the respondents, 300 (59.4%) had been receiving treatment during the time of interview, including 13 (4.3%) inpatient and 286 (95.7%) outpatient treatment. Almost a quarter of the sample (n = 131, 26.0%) had extrapulmonary TB, whereas 373 (74.0%) patients had pulmonary TB including 131 (35.1%) smear-positive and 242 (64.9%) smear-negative patients. Primary type of TB was diagnosed in 371 (73.5%) patients. About 21.0% (n = 106) had a drug-resistant type of the disease, while the majority (n = 399, 79.0%) had regular TB. Among respondents, 386 (76.4%) were male and 119 (23.6%) were female. Their mean age was 45.5 ± 0.7 years, and 343 of them (67.9%) were married. The average monthly income of about 76% of patients amounted to 100,000AMD (≈240 USD). The average number of family members was 4 ± 2 persons (Table 2). This demographic profile is representative of the national TB patient profile.

Satisfaction with TB services was assessed using PSQ-18 tool. Based on the average score of PSQ-18 the patients were stratified into "satisfied" or "unsatisfied" groups. The average score was 68, therefore patients whose score was above 68 were categorized as "satisfied". Overall 469 (92.9%) patients were considered generally "satisfied" with the TB treatment and only 36 (7.1%) patients were considered as "unsatisfied".

The absolute numbers and percentages of "satisfied" patients with specific aspects of satisfaction were as follows: "General Satisfaction" – 492 (97%) patients, "Technical Quality" – 484 (96%), "Interpersonal Manner" – 487 (97%), "Communication" – 494 (98%), "Financial Aspects" – 497 (98%), "Time Spent with Doctor" – 494 (98%) and

Table 2. Demographic, health and treatment characteristics related to being "Unsatisfied".

Variable	Total, N (%)	"Satisfied" N = 469 (92.9%)	"Unsatisfied" N = 36 (7.1%)	OR/mean difference	P-value
Extrapulmonary tuberculosis†	131 (26.0)	122 (26.1)	9 (25.0)	1.06	0.89*
Pulmonary tuberculosis	373 (74.0)	346 (73.9)	27 (75.0)		
Pulmonary smear-negative†	242 (64.9)	225 (65.0)	17 (63.0)	1.11	0.23*
Pulmonary smear-positive	131 (35.1)	121 (35.0)	10 (37.0)		
On treatment†	300 (59.4)	280 (59.7)	20 (55.6)	1.20	0.63*
Not on treatment	205 (40.6)	346 (40.3)	16 (44.4)		
Inpatient treatment†	13 (4.3)	9 (3.2)	4 (20.0)	0.13	0.01**
Outpatient treatment	286 (95.7)	270 (96.8)	16 (80.0)		
Regular†	399 (79.0)	375 (80.0)	24 (66.7)	1.86	0.06*
Drug-resistant	106 (21.0)	94 (20.0)	12 (33.3)		
Treatment duration, days	243 ±7.9	243 ±7.9	232±19.1	10.8±20.7	0.70***
Primary†	371 (73.5)	348(74.2)	23 (63.9)	1.6	1.18*
Secondary	134 (26.5)	121(25.8)	13 (36.1)		
Male†	386 (76.4)	360 (76.8)	26 (72.2)	1.3	0.54*
Female	119 (23.6)	109 (23.2)	10 (23.6)		
Age (mean ± SD), years	45.5 ± 0.7	45.54 ± 0.7	45.52 ± 2.9	45.5 ± 3.0	099***
Less than secondary education †	357 (70.7)	337 (71.9)	20 (55.6)	2.0	0.04*
Secondary specialized (11-13 years) and/or higher education	148 (29.3)	132 (28.1)	16 (44.4)		
Married†	343 (67.9)	324 (69.1)	19 (52.8)	2.0	0.04*
Unmarried (Single, Divorced, Widow)	162 (32.1)	145 (30.9)	17(47.2)		
Number of family members (mean ± SD)	4 ± 2	4 ± 0.1	4 ± 0.4	0	0.94
Average family income					
<50,000 AMD (~120USD) †	208 (41.2)	199 (48.3)	9 (29.0)	2.3	0.04*
≥50,000 AMD	297 (58.8)	213 (51.7)	22 (71.0)		
Treatment adherent †	500 (99.0)	466 (99.4)	34 (94.4)	9.1	0.04**
Treatment non-adherent	5 (1.0)	3 (0.6)	2 (5.6)		
Always followed medicinal prescription †	460 (91.1)	432 (92.1)	28 (77.8)	3.3	< 0.01*
Any reason for not following medicinal prescription	45 (8.9)	37 (7.9)	8 (22.2)		
Satisfied with consultation and empathy†	232(45.9)	224 (47.8)	8 (22.2)	0.3	< 0.01*
Unsatisfied with consultation and empathy	505(54.1)	245 (52.2)	28 (77.8)		
Enabled †	232 (45.9)	25 (5.3)	1 (2.8)	2.0	0.50
Not enabled	273 (54.1)	444 (94,7)	35 (97.2)		
Yerevan†	379 (75.0)	358(76.3)	21 (58.3)	2.3	0.02*
Regions (provinces of Armenia)	126 (25)	111 (23.7)	15 (41.7)		

† Reference group; * Chi square test; ** Fisher exact test; *** Student t-test; Abbreviations: OR – Odds Ratio. SD – Standard Deviation.

"Accessibility and Convenience" – 496 (98%) respondents.

Satisfaction with *consultation and relational empathy* was assessed using the CARE tool. Patients were categorized as "satisfied" or "unsatisfied" based on the average scores of CARE. In the study the average score was 35, hence patients whose score was above 35 was categorized as "satisfied" and vice versa. Among the respondents, 232 (45.9%) patients were satisfied with consultation and relational empathy.

Satisfaction with *patient enablement* was assessed using PEI tool. Patients were categorized as "satisfied" or "unsatisfied" based on the average scores of PEI. The average PEI score was 5.8, therefore patients whose score was above 5.8 was categorized as "satisfied". Overall 479 (94.9%) patients were considered as satisfied with patient enablement. Among respondents, 495 (98.4%) were satisfied with the physician's qualification. The same number of patients (n = 495, 98.4%) noted satisfaction with the nurses' qualifications and with the attitude of the medical staff. Among the satisfied, 489 patients (96.8%) were satisfied with the conditions of the medical facilities and 452 (89.5%) were generally satisfied with TB laboratory services.

The treatment adherence was assessed using MAS tool. Among respondents there were 500 (99.0%) patients having a total mean MAS score of 0 or 1 that were considered as adherent to treatment. The proportion of patients with a total mean MAS score of 2, 3 and 4, who were considered as non-adherent to the treatment, was only 1.0% (n = 5). However, among the whole cohort, there were 45 respondents (8.9%) indicating any reason for not following medicinal prescription.

Factors associated with being "unsatisfied"Analysis revealed that the following characteristics were related to being "unsatisfied" (Table 2):

Treatment adherence: Non-adherent patients were 9.1 times less satisfied than the adherent group (OR = 9.1, 95% CI [1.48-56.55], p = 0.04).

Outpatient treatment: Patients on inpatient treatment were 87% less satisfied than those on outpatient treatment (OR = 0.13, 95%CI [0.04-0.48], p = 0.01).

Drug-resistant TB type: Patients with drug-resistant TB were 1.86 times marginally significantly less satisfied than those with regular TB (OR = 1.86, 95% CI [0.96-4.13], p = 0.06).

Education: Patients with secondary or higher education were twice less satisfied (OR = 2.0, 95% CI [1.02-4.06], p = 0.04).

Marital status: Unmarried patients (single, divorced, widowed) were about two times less satisfied than married patients (OR = 2.0, 95% CI [0.25-0.99], p = 0.04).

Family income: Those with an average family income of below 50,000AMD (~120 USD) were 2.3 times less satisfied (OR = 2.3, 95% CI [1.03-5.08], p = 0.04).

Patients who reported *at least one reason for not following the medicinal prescription* were 3.3 times more likely to be unsatisfied (OR = 2.3, 95% CI [1.42-7.84], p < 0.01).

Patients *unsatisfied with consultation and empathy* were generally 70% less satisfied than those satisfied with consultation and empathy (OR = 0.3, 95% CI [0.14-0.70], p < 0.01).

Yerevan residence: Patients living in Yerevan (the capital of Armenia) were 2.3 times more unsatisfied than the residents of the regions (provinces of Armenia) (OR = 2.3, 95% CI [1.15-4.62], p = 0.02).

Discussion

This is the first study from Armenia that has assessed TB patients' satisfaction at national level.

One of the strengths of the study is that the study sample is national representative since about one third of the patients were selected randomly from the national TB patient's database. Another strength of the study is that standardized and validated data collection instruments were used allowing to collect comprehensive data. Also, adherence to STROBE guidelines was ensured for the reporting of observational studies. The main study limitations were data collection and recall bias which resulted in exclusion of 20 participants due to incompleteness of data. Also, another important limitation could be considered the fact that patients with negative outcome could have been unsatisfied and rejected the participation. This could result in having a sample with mainly high level of satisfaction. Another limitation could be using self-reported information on treatment adherence, a potential subject to reporting bias. Patients could overestimate their treatment adherence behavior, by indicating the desired options to questions on adherence.

Despite these limitations, there are a number of interesting policy and practice implications.

Almost 99% of patients were classified as being adherent to treatment according to the validated MAS

questionnaire, which is consistent with the fact that patients receive DOTS course. However, a controlling question to mention side effects as a possible reason for not following the medicinal prescription revealed that approximately 9% of the patients were not really adherent to treatment. This led the authors to the judgement that the patients could provide answers desirable to doctors or did not realize the importance of the questions for treatment adherence.

According to the survey results, a high satisfaction level with TB services was observed among patients (93%). Similar high satisfaction rates were also reported among cardiovascular patients in Armenia [25]. Such high rates of satisfaction, however, can be explained by several factors among the Armenian population such as sense of fear to be deprived of the services or possible conflicts with providers, close relationships in the community, health-care providers, lack of trust towards official bodies and their functions and low-quality perception and expectations from healthcare services [29].

Statistical analysis of the survey results revealed that being unsatisfied with TB services was associated with the following factors: treatment non-adherence, inpatient treatment, drug-resistant TB type, secondary or higher education, being unmarried, having a family income of below 50,000AMD (~120 USD) on average, being unsatisfied with consultation and empathy and place of residence. The predictors of TB patient satisfaction are generally consistent with literature data. Additionally, the demographic factors associated to TB patient satisfaction, are consistent with the results of a study on satisfaction on patients with percutaneous coronary intervention in Armenia [25].

Association of place of residence to patient satisfaction can be explained by the fact that patients from Yerevan, capital city, have greater demands and perception of quality medical care and at the same time a lower estimate of the quality of services provided, contrary to the patients from regions, who face socio-economic issues, inadequate attention from health authorities and accessibility problems, as well as lower quality perception and expectations from healthcare.

Patients in outpatient treatment were 87% more satisfied with the TB-services than those in inpatient treatment. This outcome is also consistent with the strategy that has been recommended by the WHO to replace the option of inpatient treatment with the outpatient treatment to the extent possible [30,31].

Conclusion

This study reports high level of patient satisfaction with TB care in Armenia. Despite the registered high levels of patient satisfaction, addressing specific characteristics associated to patient satisfaction may further improve the TB program and patient outcomes.

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Authors' Contributions

Study concept and design: Karapet Davtyan and Seda Aghabekyan; acquisition of data: Karapet Davtyan Seda Aghabekyan and Hayk Davtyan; analysis and interpretation of data: all authors.

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