

EVALUATION OF DOTS PROGRAMME IN NAJAF GOVERNORATE⁺

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Abstract

The study was carried out to evaluate performance of DOTS programme (directly observed short course treatment) in Najaf governorate, that was established by the WHO. Two cohorts of patients attending Najaf TB center were followed retrospectively. The 1st cohort included 180 patients registered from 1/4/2000 – 31/3/2001, while the second cohort included 232 patients registered from 1/4/2001 – 31/3/2002. The collected data were analysed for case detection, treatment outcomes, retreatment outcomes, treatment success and retreatment success.

The following rates are extracted from the 1st and 2nd cohorts:

- Case detection rate: 34.7% and 47.9% respectively.
- Treatment outcome for new patients (cured=68.8%, completed treatment=8.2%, defaulter=18%, treatment failure=3.3%, died=0.0% and transfer out=1.6%) and (cured=66.3%, completed treatment=9.9%, defaulter=10.9%, treatment failure=3%, died=5% and transfer out=5%) respectively.
- Treatment outcome for retreatment patients (cured=50%, completed treatment=0.0%, defaulter=50%, treatment failure=0.0%, died=0.0% and transferout=0.0%) and (cured=76.2%, completed treatment=4.8%, defaulter=14.3%, treatment failure=0.0%, died=4.8% and transferout=0.0%) respectively.
- Treatment success rate: 77% and 76.2% respectively.
- Retreatment success rate: 70% and 81% respectively.

These findings are lower than the WHO targets with regard to case detection rate, treatment success rate and retreatment success rate (70%, 85% and 85% respectively). Application of (Z-test) revealed significant statistical differences which indicate a clear defect in programme performance.

المستخلص

أجريت هذه الدراسة لتقييم الأداء في برنامج المعالجة قصيرة الأمد تحت الإشراف المباشر المعد من قبل منظمة الصحة العالمية (DOTS Programme) والمطبق في محافظة النجف. ادخلت في الدراسة مجموعتان من مرضى التدرن الرئوي المراجعين لمركز مكافحة التدرن في محافظة النجف. المجموعة الأولى تضمنت ١٨٠ مريضاً مسجلين في الفترة من ٢٠٠٠/٤/١ - ٢٠٠١/٣/٣١، بينما

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تضمنت المجموعة الثانية ٢٣٢ مريضاً مسجلين في الفترة من ٢٠٠١/٤/١ - ٢٠٠٢/٣/٣١. تم استخدام المعلومات في استخراج مؤشرات الأداء وهي معدل كشف الحالات، معدلات نتائج المعالجة للحالات الجديدة وحالات اعادة المعالجة، معدل نجاح المعالجة ومعدل نجاح اعادة المعالجة. أظهرت الدراسة أن مؤشرات الأداء في المجموعة الأولى والثانية كالآتي:

§ معدل كشف الحالات ٣٤,٧% و ٤٧,٩% على التوالي.

§ معدلات نتائج المعالجة للحالات الجديدة (شفاء=٦٨,٨%، اتمام المعالجة=٨,٢%، الانقطاع=١٨%، فشل المعالجة=٣,٣%، الوفاة=٠,٠% والنقل=١,٦%) و(شفاء=٦٦,٣%، اتمام المعالجة=٩,٩%، الانقطاع=١٠,٩%، فشل المعالجة=٣%، الوفاة=٥% والنقل=٥%) على التوالي.

§ معدلات نتائج المعالجة لحالات اعادة المعالجة (شفاء=٥٠%، اتمام المعالجة=٠,٠%، الانقطاع=٥٠%، فشل المعالجة=٠,٠%، الوفاة=٠,٠% والنقل=٠,٠%) و(شفاء=٧٦,٢%، اتمام المعالجة=٤,٨%، الانقطاع=١٤,٣%، فشل المعالجة=٠,٠%، الوفاة=٤,٨% والنقل=٠,٠%) على التوالي.

§ معدل نجاح المعالجة ٧٧% و ٧٦,٢% على التوالي.

§ معدل نجاح اعادة المعالجة ٧٠% و ٨١% على التوالي.

قورنت المعدلات المستخلصة مع الأهداف المحددة من قبل منظمة الصحة العالمية وأخضعت للفحص الاحصائي (z-test) وتبين وجود فروق احصائية معنوية مما يشير الى وجود خلل واضح في اداء البرنامج.

Introduction

The incidence of TB in Iraq has increased from 90.8/100.000 in 1980 to 125.6/100.000 [1].

In 2002 (11898) cases of TB were recorded in Ministry of Health Facilities working under DOTS of which 3895 smear positive cases [2].

Directly observed therapy in short course treatment (DOTS) stated by the WHO as the name for a comprehensive strategy by which health workers counsel and observe their patients swallowing each a dose of powerful combination of medicines and health services monitored the patients progress until each was cured [3].

Programme performance can be measured through various indicators on case finding and treatment result [4]. The global targets of DOTS is to treat successfully (85%) of all new smear positive patients and to detect (70%) of TB cases [5].

Aims of the Study

The Study aims at evaluating DOTS programme performance through estimating:

- 1- Case Detection Rate.
- 2- Treatment Outcome Rates.
- 3- Treatment Success Rates.

Materials and Methods

The study investigated two sets of data concerning patients attending the TB center in Najaf Governorate.

1st cohort comprised 180 patients registered from 1/4/2000 – 31/3/2001.

2nd cohort comprised 232 patients registered from 1/4/2001 – 31/3/2002.

Case definition: cases were defined according to the WHO criteria [6,1].as:

- a. New smear positive patients.
- b. Retreatment smear positive patients.
 1. Treatment failure.
 2. Relapse.
 3. Defaulter.

Case detection depends on:

1. Symptomatology (specific and non specific criteria).
2. Investigations -sputum smear microscopy
-chest x-ray.
-sputum culture.

Results

Table (3-1): Distribution of pulmonary TB patients registered for DOTS programme according to Age and Gender. 1st cohort from 1/4/2000 – 31/3/2001

Age Group	Gender				Total
	Male		Female		
0-14	(0.6%)*	1	(3.3%)	6	7 (3.9%)
15-24	(16.1%)	29	(5.6%)	10	39 (21.7%)
25-34	(18.3%)	33	(8.3%)	15	48 (26.7%)
35-44	(6.7%)	12	(4.4%)	8	20 (11.1%)
45-54	(5%)	9	(6.1%)	11	20 (11.1%)
55-64	(3.3%)	6	(6.1%)	11	17 (9.4%)
≥ 65	(8.3%)	15	(7.8%)	14	29 (16.1%)
Total	(58.3%)	105	(41.7%)	75	180 (100%)

* No. and %.

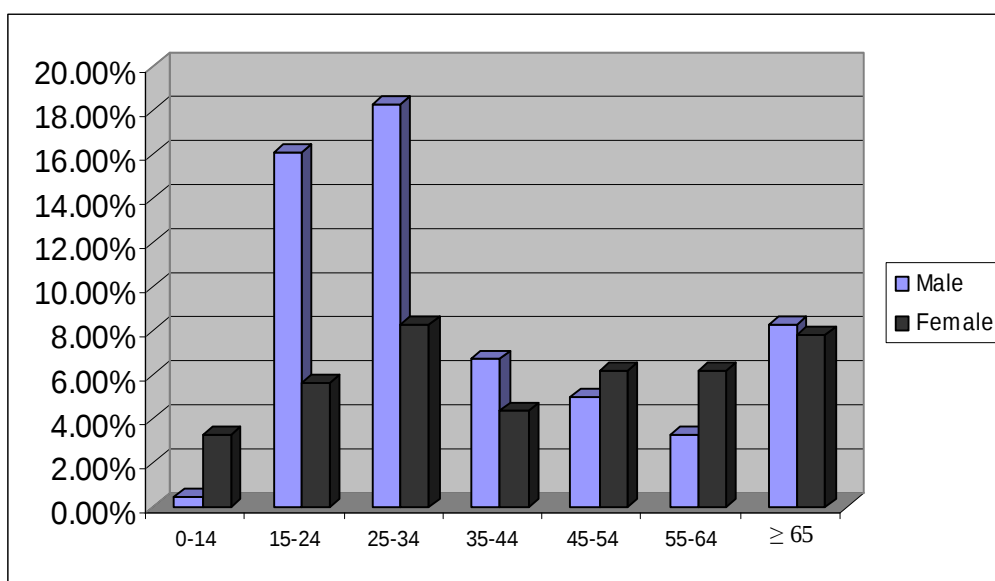


Fig (3-1):Distribution of pulmonary TB patients registered for DOTS programme according to Age and Gender.1st cohort from 1/4/2000 – 31/3/2001

Table (3-2): Distribution of pulmonary TB patients registered for DOTS programme according to Age and Gender.2nd cohort from 1/4/2001 to 31/3/2002

Age Group	Gender		Total
	Male	Female	
0-14	(2.6%)* 6	(3%) 7	(5.6%) 13
15-24	(15.5%) 36	(7.8%) 18	(23.3%) 54
25-34	(16.4%) 38	(4.7%) 11	(21.1%) 49
35-44	(7.8%) 18	(4.7%) 11	(12.5%) 29
45-54	(6%) 14	(3.9%) 9	(9.9%) 23
55-64	(6%) 14	(8.6%) 20	(14.7%) 34
≥ 65	(8.2%) 19	(4.7%) 11	(12.9%) 30
Total	(62.5%) 145	(37.5%) 87	(100%) 232

No. and %.

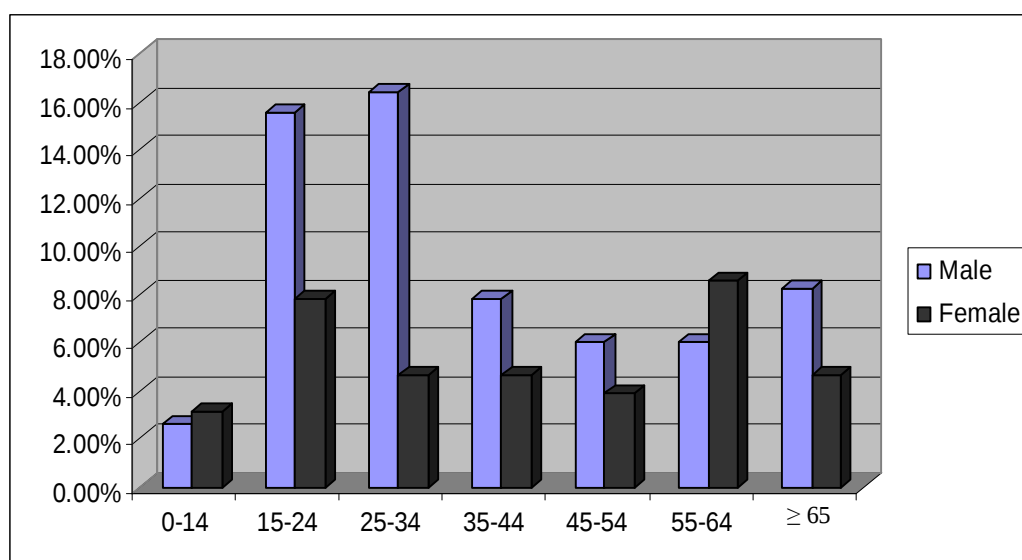


Fig. (3-2) : Distribution of pulmonary TB patients registered for DOTS programme according to Age and Gender.2nd cohort from 1/4/2001 to 31/3/2002

Table (3-3): Case Detection of new smear positive cases, comparison is between 1st and 2nd cohort

Follow Up Period	Total Number of New Pulmonary TB Cases	Number of New Smear Positive Cases	Case Detection Rate
1/4/2000–31/3/2001 (1 st cohort)	176	61	34.7%
1/4/2001–	211	101	47.9%

31/3/2002 (2 nd cohort)			
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Table (3-4) : Treatment outcomes of new smear positive patients
comparison between 1st and 2nd cohort

Treatment Outcomes	1 st cohort 1/4/2000 – 31/3/2001		2 nd cohort 1/4/2001 – 31/3/2002	
	No.	(%)	No.	(%)
1.Cured	42	(68.8)	67	(66.3)
2.Completed Treatment	5	(8.2)	10	(9.9)
3.Defaulter	11	(18)	11	(10.9)
4.Treatment Failure	2	(3.3)	3	(3)
5.Died	0.0	(0.0)	5	(5)
6.Transfer Out	1	(1.6)	5	(5)

Table (3-5): Treatment outcomes of retreatment smear positive patients,
comparison between 1st and 2nd cohort

Treatment Outcomes	1 st cohort 1/4/2000 – 31/3/2001		2 nd cohort 1/4/2001 – 31/3/2002	
	No.	(%)	No.	(%)
1.Cured	2	(50)	16	(76.2)
2.Completed Treatment	0.0	(0.0)	1	(4.8)
3.Defaulter	2	(50)	3	(14.3)
4.Treatment Failure	0.0	(0.0)	0.0	(0.0)
5.Died	0.0	(0.0)	1	(4.8)
6.Transfer Out	0.0	(0.0)	0.0	(0.0)

Table (3-6) : Treatment success of new smear positive patients,
comparison is between 1st and 2nd cohort.

Follow Up Period	Total Number of New Smear Positive Patients	Treatment Success	
		No.	(%)
1/4/2000 – 31/3/2001 (1 st cohort)	61	47	(77)
1/4/2001 – 31/3/2002 (2 nd cohort)	101	77	(76.2)

Table (3-7) : Treatment success of retreatment smear positive patient
comparison is between 1st and 2nd cohort.

Follow Up Period	Total Number of Retreatment Smear Positive Patients	Treatment Success	
		No.	(%)
1/4/2000 – 31/3/2001	4	2	(50)

(1 st cohort)			
1/4/2001 – 31/3/2002 (2 nd cohort)	21	17	(81)

Table (3-8): Comparison of performance indicators with the WHO targets.

Performance Indicators	1st cohort	2nd cohort	WHO Global Target
Case Detection Rate	34.7%	47.9%	70%
Treatment Success Rate	77%	76.2%	85%
Retreatment Success Rate	50%	81%	85%

Table (3-9): Summary statistics comparing performance indicators with the WHO targets.

Performance Indicators	1st cohort × 2nd cohort	1st cohort × WHO target	2nd cohort × WHO Target
Case Detection Rate	HS*	HS	HS
Treatment Success Rate	(NS)	S	S

* Based on Z-test , HS= $p > 0.001$, S= $p > 0.05$, NS= $p < 0.05$

Discussion

Distribution of Registered Cases

Table (3-1 and 3-2):The increased percentage of patients within the age group(15-24) and (25-34) might because :

1. for male patients such period represents the most active phase of life (students, workers, farmers...etc) rendering them at increased risk of exposure to open cases.
2. for female patients this is the most productive age during which shortly spaced successive pregnancy and lactation might lower resistance making them susceptible to infection.
3. with regard to male preponderance this might be due to under reporting of female patients due to fear from divorce and abandonment[7].This finding was documented in Nineveh governorate by[8],and there is a similar preponderance in all Iraqi governorates reported by [9].

Case Detection

Table (3-3): This table showed that case detection rate within the 2nd cohort exceeds that within the 1st cohort by (13.2%), signifying a better performance, Nevertheless both rates are well below the WHO target (70%) and other EMRO

countries like: Kuwait, Lebanon, Morocco and Djibouti (81.4%, 55.7%, 93.9% and 90%) respectively[1] .

The minor improvement in case detection within the 2nd cohort might be due to improved experience of laboratory personnel and medical staff, and improved supervisory skills as regards DOTS.

Treatment Outcomes

Table (3-4):showed minor differences between the two cohorts with regard to the following indicators (cured, completed treatment and treatment failure). The achieved cure rates within the 1st and 2nd cohort (68.8% and 66.3% respectively) are evidently lower than those of many EMRO countries like Jordan and Syria and many global countries like china, Cambodia and Bangladesh, (90.1%, 89.2%, 94%, 89% and 85.3%) respectively [10,11].

The reasons for poor adherence are multifaceted and complex, but include characteristics of the individual patient and socioeconomic factors such as:

- a. The availability of drugs.
- b. Communication between the patient and health care providers.
- c. Side effects of treatment.
- d. The poor quality of the TB control infrastructure
- e. Non awareness of patient about his condition, prognosis if there is completeness of treatment is another factor which can be stressed upon[12].

The reason for achieving lower cure rate might be related to the presence of defect in supervision and follow-up of patients by health staff.

The increased defaulter rate within the two cohorts might be due to any of the following:

1. Lack of direct treatment observations.
2. Low economic status of many patients.
3. Shortage of some drugs which are present in the regimen.

As to the remaining indicators namely "died" may be due to ineffective follow up of cases and "transferout". Such indicators are difficult to explain because personal factors might play an important role in increasing or decreasing its percentage. In Syria, Jordan and Iran; the died and transferout were: (2.5%, 2.5%); (5.6%); and (7.1% & 1%). respectively. Table (3-5):The figures presented within this table should be interpreted with caution because of the small number of patients included.

Treatment Success

Table (3-6 and 3-7):Generally the treatment success rates of new and retreated smear positive patients within the two cohorts are less than the WHO target (85%).

Contrasting local rates, EMRO countries like Lebanon, Arab Emirates and Bahrain and many global countries like China, Vietnam and Nepal achieved higher success rate (96%, 96%, 95%, 96%, 85% and 85%) respectively [13].

Low success rate reflects poor programme performance the cause of which might be any of the following:

1. Defective "direct observation" of treatment.
2. Defects in regular drug supply.
(Sanctions, administrative affairs..etc.).
3. The use of non standardized courses of chemotherapy due to a variety of causes.
4. Drug resistance.
5. Lack of training of health personnel who are responsible for application of programme.

Statistical Analysis of DOTS Programme Indicators

Table (3-8 and 3-9):

a. Case Detection Rate:

1. Better performance was achieved within the 2nd cohort evidenced by a highly significant statistical difference ($P > 0.001$).
2. Compared with the WHO targets performance within the two cohorts performance was poor as evidenced by a highly significant statistical difference ($P > 0.001$).

b. Treatment Success Rate:

1. Comparing performance within the two cohorts reveals no significant statistical difference ($P < 0.05$).
2. Compared with the WHO targets performance within the two cohorts is defective as evidenced by a significant statistical difference ($P > 0.05$).

c. Retreatment Success Rate: The sample size is too small to give a valid statistical analysis.

Conclusions and Recommendations

Conclusions

The conclusion can be derived from this study:

- All the estimated rates are lower than the WHO targets indicating a clear defect in DOTS programme performance.

Recommendations

- 1- To improve case detection it is recommended that effective measures should be taken to improve staff efficiency, introduce recent diagnostic procedure and ascertain availability of laboratory materials and supplies with increased awareness of population of DOTS and its effectiveness.
- 2- To improve treatment success it is recommended that:
 - a. "direct observation" is effectively applied.
 - b. difficulties and obstacles that prevent regular drug supply to the patient.
 - c. should be overcome the standardized anti-TB therapeutic regimens recommended by the WHO for each group, should be used.
 - d. proper survey for drug resistance and taking actions accordingly should be made.
 - e. health personnel who are responsible for application of programme should

- be trained.
 - f. decentralization (through microplanning, supervision, documentation and information system and referral system) should be improved in the application of health programmes in general and DOTS in specific.
 - g. job satisfaction and its reaction with patient satisfaction, should be enhanced.
- 3- a. To conduct of more extensive analytical studies in this critical field of preventive medicine with the ultimate aim of obtaining a more valid inference on the way of overcoming problems and improving programme achievements.
b Execution of regular surveys for studying the current situation of DOTS in comparison with other countries and with WHO criteria.
 - 4- Community based health education programmes clarifying and emphasizing the role of DOTS strategy in the prevention of tuberculosis, should be carried out , together with conducting regular central and local conferences about achievement in DOTS.

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