
Study of Factors Influencing The Work Output of Human Resource in Revised National Tuberculosis Control Programme (RNTCP)

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Key Words

Tuberculosis, RNTCP, DOTS, Work output

Abstract

Revised National Tuberculosis Control Programme (RNTCP) is intended to provide DOTS, the essential package of care for TB patients, across the whole of India. There is a rapidly growing realization that human resources for health are crucial to the delivery of the services focused on the human development goals and the reforms in services needed to achieve them. Clearly reforms in services depend upon having the right people in the right place at the right time to deliver accessible, effective and affordable services. This study is undertaken to assess the motivational level of workers under RNTCP and the factors influencing work output of employees in the programme. Human resource management implications from the study results, particularly in creating and maintaining favourable work settings are discussed.

Introduction

Tuberculosis (TB) is an infectious bacterial disease caused by *mycobacterium tuberculosis*. Irony of Tuberculosis is that its treatment is cheap and effective, yet it is among the top 10 causes of death in the world. The global endemic continues unabated. 95% of the Tuberculosis cases and 98% of the deaths due to tuberculosis occur in developing countries. In this situation Government of India has intensified antituberculous activities by implementing directly observed treatment shortcourse (DOTS) strategy under Revised National Tuberculosis Control Programme (RNTCP) ¹. Revised National Tuberculosis Control Programme is the national programme for control of Tuberculosis implemented in the country since 1993. This is the most recognized health intervention through out the world.

For any programme to be successful and also to maintain that success there should be committed workers. They need periodical training, performance appraisal and motivation. This is reflected in the form of job satisfaction

in the organization. Since the pioneering work of Herzberg, Mausner and Snyderman², who conceptualized the notion of job enrichment, job design has become a most pervasive and dominant strategy for stimulating the level of employee affective responses. Herzberg and his colleagues³, who coined the notion of a two factor theory, advanced the conception that the context of the task was linked to job dissatisfaction. As the entire country gets fully covered we are entering the implementation and maintenance phase of RNTCP. Moving from a predominantly preparatory mode to a national level implementation mode allows to concentrate fully on various issues related to implementation and to think nationally on such issues. Therefore, it is a good time to settle the approach, prioritize the efforts and resolve some of the programme issues.

Objectives

- 1 - To study various factors influencing work output of employees in RNTCP
- 2 - To formulate recommendations to improve Human Resource Management in RNTCP

Research Methodology

This is an exploratory cum descriptive study. The research methodology used is qualitative research. This study is done among the workers of RNTCP under District TB Centre in Calicut. Sample sizes of about 75 workers from all categories (strata) were included. Since there is considerable heterogeneity among the subjects under study, samples were taken from different strata such as medical officers, Technical staff and field staff. Certain number of sampling units from each stratum is ensured so that there is representation from all relevant segments. Sample size is calculated using EPIINFO Version 3.3 considering a prevalence of 20% with +/- 5% error margin, as per formula:

Sample size = $4(PQ)/D^2$ where P is the prevalence, Q = 1-P and D = error margin.

All the workers underwent interview at their work place after getting prior appointments. Interview was based on a structured questionnaire prepared by the investigator. The questionnaire is designed to capture socio-demographic and affective responses. Details of the respondent's background are sought in terms of age, formal education, job tenure and work status. Respondents are requested to provide this information by checking

appropriate boxes. Both intrinsic and extrinsic dimensions of job satisfaction are assessed. The affective responses were to 15 items that were designed to assess the experience level for structural, contextual, work colleagues, and service dimensions of the respondent's task setting. These responses were grouped in to 3 constructs, that is 1) job satisfaction level, 2) job stress and 3) work output. An arithmetic mean was obtained for each of the 3 constructs when respondents rated each item on a five point Likert scale. The scale range was from 1 (very dissatisfied) to 5 (very satisfied).

Questionnaire was first pre tested. This consists of selecting and interviewing a small segment in the same manner to be followed in full scale operation and then analyze the result in the light of objective of the study. Pre-testing was done to determine the question sequence which is likely to produce good rapport with most of the people. Before administration of the survey instrument, approval is obtained from the programme management at the District level. The project is endorsed with a proviso that respondent's (1) anonymity was preserved and (2) participation was voluntary. These two factors were conveyed to 200 potential and feasible respondents and they were personally interviewed with the help of the questionnaire. Those who are not willing to participate and those who do not answer all questions were excluded. The study period is three months from 1st September 2006 to 30th November 2006.

Statistical Analysis

The study data were evaluated by, correlation analyses. Description and analysis of associative data involves studying the relationship and degree of association among variables and therefore multivariate analysis is used here. Multiple linear regression and Analysis of Variance (ANOVA) procedures were employed to evaluate relativities. Since variables were many stepwise regression was done on computer. The problem of multi-co linearity was also considered and measures taken to limit it within a reasonable level. For statistical analysis software SPSS Version 10 was used. Linear regression analysis was also employed when correlation between two variables were looked in to.

Observations

The study data were provided by 75 employees involved in implementing RNTCP in the district. Mean age of the study population was 37.16 years (Range-25-54), majority falling in the age range between 25-35 years.

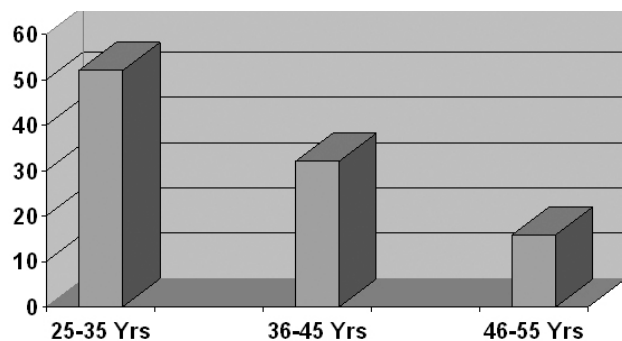


Diagram-1: Showing the age trend of participants

68 per cent of the respondents (n = 51) were males and 32 per cent (n = 24) were females. Male to female ratio is 2.12:1

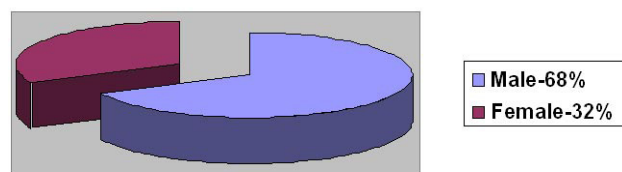


Diagram-2: Showing sex distribution

Study subjects include 3 strata. They are Medical Officers constituting 21.33% (n =16), Technical staff constituting 24% (n=18) and field staff forming 54.67% (n = 41)

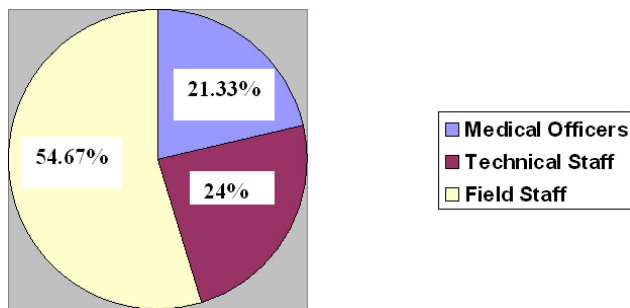


Diagram- 3: Showing the different strata of employees

Almost 50% of the participants were graduates (n =38) while 20% had technical training. Few of the respondents (16%) had postgraduate education and the rest had only school education.

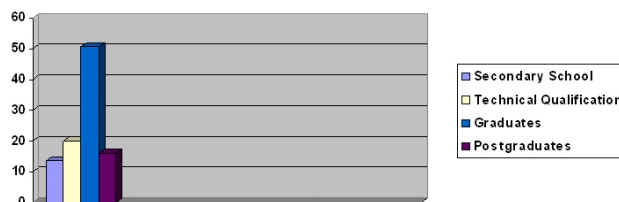


Diagram – 4: Showing the educational Qualification of Participants

Among the respondents 92% were permanent employees while only 8% were temporary employees. Nearly half (54.66 %) of the study respondents were employed continuously for over five years, about one third (37.33%) were working for a period between 1-5 years, while a small number of the service staff (8 %) were employed for less than one year(Table-1). To get a better correlation employees were grouped in to two based on length of service, that is those who are having less than 5 years service (n = 34) and those who are having more than 5 years in service (n = 41)

Job status		Length of Service	
Permanent	92%	< 5 Years	45.33%
Temporary	8%	> 5 years	54.67%

Table 2 reports the mean scores and correlations for the three constructs as determined by their reliability estimates. The means indicate that reasonably high levels were perceived for the constructs. They reveal a reasonable level of multi-co linearity for all variables. Nevertheless, on balance, the information of Table 2 demonstrates reasonable construct validity. Reliability estimates are acceptable and expectedly, they were related to the number of questionnaire items.

Table 2 also shows the correlation between the 3 strata of employees as regards the three constructs. Job satisfaction level is almost similar for Field staff, Technical staff and Medical officers with a mean of 22.17 and standard deviation of 2.47. This is not statistically significant ($p = 0.234$). Job stress is maximum among Technical Staff (Mean = 16.56, SD = 4.05) When compared to Field staff and Medical officers this is statistically significant

($p = 0.03$). Looking at the work output by different strata of employees, it is maximum for Field staff (Mean = 7.51) and lowest for Medical officers (Mean = 6.63). This is found to be statistically significant ($p = 0.015$). Interesting observation is that Technical Staff who have maximum stress at work place performs reasonably well and their work output level is between Field Staff and Medical Officers.

Table 2

Category		Job satisfaction	Stress	work output
Field staff	Mean	22.15	19.34	7.51
	N	41	41	41
	Std. Deviation	2.35	3.86	0.98
Doctor	Mean	21.44	17.56	6.63
	N	16	16	16
	Std. Deviation	2.85	3.46	1.2
Technical	Mean	22.89	16.56	7.17
	N	18	18	18
	Std. Deviation	2.32	4.05	0.92
All	Mean	22.17	18.29	7.24
	N	75	75	75
	Std. Deviation	2.47	3.96	1.06
ANOVA	p	0.234	0.03	0.015

As per table- 3, there is no perceptible difference between females and males as regards the three constructs, that is job satisfaction ($p = 0.631$), job stress ($p = 0.237$) and work output ($p = 0.956$).

Table - 3

SEX		Job satisfaction	Stress	work output
Female	Mean	22.37	17.5	7.25
	N	24	24	24
	Std. Deviation	2.57	4.04	1.07
Male	Mean	22.08	18.67	7.24
	N	51	51	51
	Std. Deviation	2.45	3.91	1.07
Total	Mean	22.17	18.29	7.24
	N	75	75	75
	Std. Deviation	2.47	3.96	1.06
ANOVA	p	0.631	0.237	0.956

When job satisfaction is evaluated among different age groups, those who are more than 35 years of age has better job satisfaction (Mean =22.79, SD = 2.57) than those who are less than 35 years of age (Mean = 21.54, SD =2.23). This is statistically significant (p = 0.028). At the same time job stress and work output are not significantly different among the two age groups (p = 0.856 and 0.85 respectively).

Job satisfaction is highest among those who have technical qualification (mean = 23.53) and lowest among those who have professional qualification (Mean = 21.27).

But this not statistically significant (p = 1). Among the employees with different educational qualification (Table -4) Job stress is high among Graduates and least among those who have technical qualification. Again this is not found to be statistically significant (p=0.232). When work output is compared between these four groups better performance was observed in groups with technical education (mean = 7.93 and SD = 1.28). Work output by employees having professional qualification was least with a mean of 6.4 and SD of 0.83. This difference is found to be statistically significant (p = 0.001).

Table - 4

Qualifications		Job satisfaction	Stress	work output
Graduate	Mean	22.26	17.55	7.26
	N	31	31	31
	Std. Deviation	2.08	4.37	0.86
Professional	Mean	21.27	17.67	6.4
	N	15	15	15
	Std. Deviation	2.87	3.56	0.83
Postgraduate	Mean	21.75	17	7.75
	N	4	4	4
	Std. Deviation	1.5	3.83	0.96
SSLC	Mean	21.4	19.5	7.2
	N	10	10	10
	Std. Deviation	2.67	2.32	0.92
Technical	Mean	23.53	20	7.93
	N	15	15	15
	Std. Deviation	2.53	4.07	1.28
Total	Mean	22.17	18.29	7.24
	N	75	75	75
	Std. Deviation	2.47	3.96	1.06
ANOVA	p	1	0.232	0.001

When the three measured constructs were compared among permanent and temporary employees (Table- 5), it is found that job satisfaction is perceived in a better way by temporary employees (mean = 24.17 and SD = 3.31) than permanent employees (Mean = 22 and SD=2.34). This is found to be statistically significant with

a p value of 0.039. There is not much difference as far as job stress is concerned between these two groups (p = 0.895). But work output is far better among temporary employees (Mean = 8.67) when compared to permanent employees (mean = 7.12). This observation is found to be statistically significant with a p value of < 0.0001.

Table - 5

Employment		Job satisfaction	Stress	work output
Permanent	Mean	22	18.28	7.12
	N	69	69	69
	Std. Deviation	2.34	4.05	0.93
Temporary	Mean	24.17	18.5	8.67
	N	6	6	6
	Std. Deviation	3.31	3.08	1.51
Total	Mean	22.17	18.29	7.24
	N	75	75	75
	Std. Deviation	2.47	3.96	1.06
ANOVA	p	0.039	0.895	<.0001

When job satisfaction was correlated with work out put among the study population, it is not linearly correlated where F test was less than F-table (Table -6).

Table - 6

Variable	Coefficient	Std Error	F-test	P-Value
Job Satisfaction	0.137	0.087	2.5062	0.117784
CONSTANT	7.272	1.929	14.2195	0.000331
Correlation Coefficient: r²=				0.03
Source	df	Sum of Squares	Mean Square	F-statistic
Regression	1	8.495	8.495	2.506
Residuals	73	247.451	3.390	
Total	74	255.947		

Table- 6: Correlation between Job satisfaction and work out put.

When linear regression analysis was employed to study the correlation between job stress and work out put, F test was less than F table. This suggest that there is no correlation between these two variable (Table -7)

Table- 7: Correlation between Job stress and work out put.

Variable	Coefficient	Std Error	F-test	P-Value
Job Stress	0.039	0.055	0.514	0.4755
CONSTANT	10.988	0.974	127.35	0.000000
Correlation Coefficient: $r^2=$				0.01
Source	df	Sum of Squares	Mean Square	F-statistic
Regression	1	1.791	1.791	0.514
Residuals	73	254.156	3.482	
Total	74	255.947		

Among the respondents 34.67% rated the training given to them as average while 12% rated it as inadequate. This is an important observation since much resource is spent on training and retraining of staff in RNTCP. Similar observation is seen regarding work schedule where 8% rated it as inconvenient, 54.67% thought that schedule is just manageable. This is more so with field staff. Majority of the respondents are happy with their level of communication with patients and colleagues. Periodic review meetings and feed back from superiors are perceived as useful by most of the respondents.

When individual parameters for job stress were analyzed, 21.35% of respondents thought that they are not comfortable with the daily travel and 28% are just doing as there is no alternative.52% of them thought that travel facilities or allowance provided to them are grossly inadequate while 21.35% thought that it is average. The target allotted the staff was perceived as unattainable by 38.17% of respondents. Reward and compensation system in the organization is thought to be inadequate by 52% of respondents. Many of them (57.33%) feel that the criteria for promotion in the organization are unjustifiable. 38% of the respondents felt that the negative feed back in the organization have a negative influence on their motivational level.

17.33% of the respondents thought that the resources available are grossly inadequate for the

implementation of the programme, where as 42.67% thought that it is marginal. Only 40% opined that the resources are adequate.

Discussion

This study is undertaken to assess the level of job satisfaction, job stress and work output among employees of RNTCP in the district.75 subjects participated in this study and were drawn from three different strata. These include Medical officers (21.33%), Technical staff (24%) and field staff (54.67%). All the strata showed high level of job satisfaction. This is in contrast to the report that only half of all Americans today say they are satisfied with their jobs⁴. Among the 50 percent who say they are content, only 14 percent say they are “very satisfied.”

Technical staff showed maximum level of stress at work place ($p=0.03$). Work out put was lowest among Medical officers ($p = 0.015$). There is no correlation between job satisfaction and work out put. There is no strong acceptance among researchers, consultants, etc., that increased job satisfaction produces improve job performance⁵. In fact, improved job satisfaction can sometimes decrease job performance. Interesting observation is that those who have job stress perform reasonably well.

Study subjects included 51 males and 24 females. The study concluded that there is no difference between

both sexes as far as the three parameters are considered. At the same time Steven Simeons et al reported that females aged less than 40 years or 55 years and over reported higher levels of job satisfaction than their male counterparts⁶.

Mean age of the study population was 37.15 years, maximum number falling in the age range of 25-35 years. When the employees were grouped in to age bands below and above 35 years and correlated with the study parameters, it is found that those above 35 years of age have marginally better job satisfaction ($p = 0.028$). At the same time job stress and work out put were comparable in both the groups. As per a recent survey among Americans the largest decline in overall job satisfaction, from 60.9% to 49.2%, occurred among workers of 35-44 years. The second largest decline took place among workers aged 45-54, with the satisfaction level dropping from 57.3% to 47.7%. Job stress was not influenced by age⁶.

Educational qualifications of these employees include school education-SSLC- in 13.33%, Technical education among 20%, graduation in 50.67% and post graduation in 16%. Among these groups those who have technical education shows better job satisfaction, less job stress and higher work out put. Even though job satisfaction and job stress do not carry any statistical significance between these groups, difference in work out put is statistically significant ($p = 0.001$). This is an important observation in the sense that those who are trained for a specific job are always motivated and work better.

Among the study population, 92% were employed permanently and the rest were contractual staff (8%). Contractual staff have better perception of job satisfaction over there permanent counterparts ($p = 0.039$) and there performance level as shown by work out put also is high ($p = 0.0001$). As far as job stress is concerned there is not much difference between these two groups. It is to be noted here that there is a positive correlation between job satisfaction and work out put. It is observed that temporary staff always perform well as they have no job security and want to retain job by showing that they can work better.

When the variable, job satisfaction was correlated with work out put in the whole study subjects, it did not show any positive correlation. This signifies the

fact that job satisfaction is not a determinant of work out put (Correlation coefficient = 0.03). When correlation was studied between variables, job stress and work out put, similar result was obtained suggesting no positive correlation between these two (Correlation coefficient = 0.01). Nearly half of the subjects (46.67%) rated the training given to them as average or inadequate. This is consistent with findings of the U S study that educational and job training programs did not fare well and only 30% of workers claimed to be satisfied with these types of company programs⁴. About 62.67% were not happy with the work schedule given to them. This is consistent with the study that Doctors who worked 50 hours per week or more were more likely to experience stress than doctors who worked less than 50 hours per week⁶.

About half of the employees were not happy with the distance they have to travel daily and 52% opined that they were not provided travel facility or allowance to compensate the expense. Another important observation is that the reward system in the organization is not motivational. Similarly the negative remarks or punishment by superiors were also not considered motivational by a large number of respondents. Earlier studies also show that individuals at all levels of the organization want to be recognized for their achievements on the job. Rewarding loyalty and performance with advancement is always motivational³.

Limitations:

Inherent limitations of statistical methods in assessing human behaviour are applicable to this study. The inferences are situational and may not be true on a long term basis. The results are self-reported and, therefore, may not correspond to what the subjects actually experience. Response bias may also be a concern. More over this study is limited to one district only and may not be applicable to the whole country as there are so many variations between different parts of the country. Another factor is the limited time frame available for the study.

Conclusions

- Work out put is found to be more with field staff and technical staff. Work out put is considerably low among those having professional qualification, more years of service and permanent employees.

- Job satisfaction and Job stress were not directly influencing the work out put, even though there is difference among various demographic units. Those employees having professional qualification and those who are permanently employed show low levels of job satisfaction and their work out put also is on the lower side. At the same time technical staff had significant job stress, still their work out put is satisfactory.
- Non availability of adequate resources is implicated for the reduced work out put.

Recommendations

1- **Performance appraisal:** Performance appraisal is not practiced in its true sense in the organization. This should be done systematically and periodically emphasizing the following aspects.

- Awareness must be formed among them about the system followed for appraisal.
- Reward system should be instituted for those who perform better.
- Under performers should be aware of the fact that there may be consequences

2- Motivation:

- People with high intrinsic motivation can be recruited, with the help of modern scientific aptitude tests.
- External motivational factors like good pay, recognition for performance, physical amenities near the work place should be included.

3- Communication:

- Better communication facilities should be established to create better bond between the employees and the programme managers

4- Training:

- Though the programme management gives a lot of emphasis on technical training, it severely lacks in personality or behavioral training. It must be kept in mind that overall development of a person is incomplete without personal development.

5- Culture:

- A performance driven culture and accountability for the successful completion of an assigned task is necessary for an organization to achieve its goals.
- Design and support a culture that encourages outstanding individual and team contributions
- Encourage a culture that holds employees, not just managers, responsible for success.

6- Resources:

- Even though adequate resources are available through external funding, utilization is not uniform and many areas face scarcity. There should be proper identification of priorities, easy distribution and delegation of financial power to the functional units.

7- Supervision:

- Supervisors should use positive feedback whenever possible and should establish a set means of employee evaluation and feedback so that no one feels singled out.

8- Responsibility.

- Give employees enough freedom and power to carry out their tasks so that they feel they “own” the result.

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