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DETERMINANTS OF TUBERCULOSIS DIAGNOSIS AND THE ROLE OF COUNSELLING

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ABSTRACT

Objective: To study patient determinants that may affect completion of the diagnostic process in tuberculosis control, highlighting the role of counselling.

Design: Cross-sectional study.

Subjects: TB patients.

Setting: Rhodes Chest Clinic, Nairobi, City Council.

Results: Ninety five percent of the suspects delivered three sputum samples but only 27% consented to a HIV test; several determinants for none consenting were mentioned. On average US$2.27 was spent for one clinic visit and US$8.62 for following the entire diagnostic process. Cost factors included transport, loss of income and food.

Conclusion: Individual pre-test counselling seems important for obtaining three sputum specimens. It takes time and for settings with a large number of suspects, alternative methods may be required. To obtain consensus for a HIV test in a TB clinic is complicated. Costs spent on transport and loss in income are important determinants and may contribute to poor patient adherence to the diagnostic process.

INTRODUCTION

Counselling is an integral aspect in HIV/AIDS control and if performed well contributes to effective interventions to decrease HIV transmission and finally the burden of HIV/AIDS. In HIV/AIDS patients pre- and post counselling is important to optimize diagnosis and therapy; it enhances compliance and provides information on what can be expected during diagnosis and therapy. The patient has a chance to ask questions and may communicate his/her concerns.

In TB control pre-counselling is not practiced routinely. If done, post-counselling, so called health education, is performed only after the diagnosis is made to emphasise the importance of continuing and completing the treatment. Although sometimes group counselling is done, individual counselling before taking sputum for investigation re-counselling) is not routinely practiced mainly because of the large case load of suspects to screen. Routinely, TB suspects are asked to bring three sputum samples to the laboratory; one on the first day of attendance to the clinic, a second collected

during the early morning at home on the following day and a third specimen collected later at the clinic when patient brings his/her early morning specimen. One assumes with these instructions that the suspects will comply and submit these three specimens. Unfortunately, this is seldom the case, frequently only one or two specimens are delivered for examination and in some cases none. Studies have shown that a considerable number of TB suspects drop-out during the diagnostic process (1), which could be attributed to insufficient counselling.

In settings of high HIV prevalence, the clinical care of the individual TB patient is incomplete without a HIV test (2). Knowledge of the HIV status of such patients is an essential prerequisite to additional supportive care and prevention of secondary HIV transmission. Consequently WHO proposes combined TB and HIV strategies including counselling for both diseases (3).

Besides lack of proper counselling there are other determinants as to why symptomatic persons don't have three sputum specimens examined which contribute to delay or even missed TB diagnosis. Such determinants are time taken off work, distance from diagnostic clinic, finance, gender, education etc. (1,4-6).

As part of a larger study among TB suspects on the performance of diagnostic tests, we enrolled TB suspects and conducted in-depth interviews on a selected number of suspects, to get better insight into the underlying determinants that affect adherence to diagnostic process of TB.

MATERIALS AND METHODS

Between March 2000 and March 2001, TB suspects attending Rhodes Chest Clinic (RCC) in Nairobi were enrolled into a cross sectional cohort study. TB suspects were defined as patients with a cough for more than three weeks and/or complaints of haemoptysis. They underwent counselling by trained nurses with emphasis on the delivery of three good quality sputum specimens. TB suspects were also requested to give a blood sample for HIV testing on a voluntary basis as part of the larger study to measure the performance of diagnostic tools. Confidentiality for the HIV results was ensured and for those who consented, pre- and post-test counselling on HIV / AIDS was provided. Declining to have the HIV test taken, did not exclude

them from entering the study. For establishing the TB diagnosis, routine procedures were followed according to the guidelines of the National TB and Leprosy Progamme (7,8).

Every 10th suspect enrolling into the study was subjected to an in-depth interview. This interview occurred twice: initially on the first attendance day at the clinic and the second on the day the suspect came for collection of the smear results and the diagnosis. The questionnaire included information on level of education and profession, place of residence, time spent coming to the clinic, food en route, waiting time at the clinic before seeing the doctor, means of transport, whether the patient was accompanied, the costs incurred and the loss of income. Costs were determined as the average costs of the costs reported on the two interviews. For costs calculation the rate was taken at: 1 USD\$ = 74 Kenyan Shilling.

RESULTS

Of the 1,469 suspects thoroughly counselled, 1,398 (95%) delivered three sputum samples. Of the remaining 71 (4.9%) suspects who did not deliver three specimens, 20 (1.4%) could not produce a sputum and 51 (3.5%) did not return to the clinic the next day to deliver the second and third specimen.

The counselling per suspects took on average 0.5 hour. The counsellors reported that a lot of time was needed, more so for the women who had more social and financial problems than the men and who tended to talk at greater lengths on these issues. Women had more household chores and children to take care of before attending the clinic. Additionally, they had to seek permission from spouses/partners to come to the clinic. The counsellor also took time with the suspects to insure that they had understood what was being discussed. Less time was spent on men, who seemed to be more focused and asked fewer questions.

Table 1 shows the characteristics of the study population. The proportion of individuals who consented to voluntary HIV testing declined over time; overall only 239 (29.1%) of the men and 136 (23.9%) of the women were tested. Most suspects refused to give a blood sample for HIV testing, for which several arguments were given:

Table 1

Characteristics of TB suspects who submitted three sputum samples

	Total		Male		Female	
	No.	(%)	No.	(%)	No.	(%)
Total number of suspects enrolled	1,398		826	59	572	41
Median age (IQR)	29	25-35	30	25-38	27	24-32*
Tested for HIV status	375	927	239	29	136	24
HIV positive	177	47	81	34	76	56*

* = p<0.01

(i) Clinic was known as a chest clinic. The patient came for sputum investigations and not for HIV tests.

(ii) Suspects did not want people to know their HIV status.

(iii) Suspects wanted first to discuss the HIV testing with their spouse/partner; and this was common among women. Suspects did not trust health providers to treat the results confidentially. Fear of knowing HIV status.

(iv) Suspects did not see the need to be tested, because of unavailability of HIV treatment/ anti-retrovirals.

At the beginning of the study the HIV test kits were out of stock. Although patients were asked to give a sample knowing it would be tested later, a proportion didn't want to wait, which was another reason for low intake for HIV testing. From those who were tested the sero-prevalence was higher amongst women than that amongst men (55.9% versus 33.9%, p< 0.01). All suspects found to be HIV positive were referred to care support and established HIV counselling centres elsewhere in the city.

Table 2 shows the characteristics of the 124 suspects (77 men and 47 women) who were subjected to in-depth interviews, and shows the determinants that may affect patients' adherence to the diagnostic process. All suspects came from the low-income residential parts of Nairobi, the majority having a low education and a low-income job.

Transport, food en route and loss of income were determinants involving costs while undergoing the diagnostic process. Of the 124 TB suspects interviewed, 91% came to the clinic using local bus for which on average the suspect spent $0.60 per visit. Women were more frequently accompanied (62%) than men (36%). Fifteen (12%) of the suspects spent an average of $ 0.45 on food per visit.

Table 2

Patients' determinants involved in the diagnostic process (no. = 124)

	Total (n = 124)		Male (n = 77)		Female (n = 47)	
	No.	(%)	No.	(%)	No.	(%)
Type of transport:						
Bus No. (%)	113	91	68	88	45	96
Foot No. (%)	11	9	9	12	2	4
Transport costs:						
Average costs incurred per suspect to follow the entire diagnostic process (US$)	$ 0.6		$ 0.70		$ 0.50	
Accompanied No. (%)	57	46	28	36	29	62 §
Suspects spending costs on food en route No. (%)	15	12	11	14	4	8

Table 2 (*continued*)

	Total (n = 124) No. (%)	Male (n = 77) No. (%)	Female (n = 47) No. (%)
Average costs per suspect spent on food (US$)	$ 0.45	$ 0.35	$ 0.80
Average time spent from home reaching clinic	1 hr 25 min	1 hr 28 min	1 hr 19 min
Average waiting time to see the nurse/ doctor	1 hr 40 min	1 hr 20 min	1 hr 3 min
Suspects incurring loss of income (No. %)	30 24	22 29	8 17
Average income loss per visit of those who incurred loss of income (US$)	$ 4.44	$ 3.94	$ 5.92
Average delay between symptoms and start treatment (weeks)	10.4 weeks	9.9 weeks	11.2 weeks Ø
Visit other health facility before RCC No. (%)	87 70	50 65	37 79
Public health service No. (%)	20 16	13 17	7 15
Private health provider No. (%)	67 54	37 48	30 64
Total costs incurred for all suspects for one clinic visit (US$)	$ 282	$ 186	$ 96
Average cost incurred per suspect for one clinic visit (US$)	$ 2.27	$ 4.41	$ 2.03
Average number of clinic visits to follow entire diagnostic process (No.)	3.8	3.8	3.7
Average costs incurred per suspect to follow the entire diagnostic process (US$)	$ 8.62	$ 9.16	$ 7.51

§   =   p<0.05;

Ø   =   not significant

Twenty nine percent of men and seventeen percent of the women (p<0.05) reported loss of income, which was for women a little higher.

Men spent more time in reaching the clinic and it took them longer to get medical attention compared to women. 64% of the women visited the private health facilities before coming to the clinic for diagnosis as compared to 48% of the men. In total, all suspects spent US$ 282 for one clinic visit (US$ 2.07 per suspect). On average a suspect had to visit the clinic 3.8 times before a diagnosis could be made. The average cost per suspect for the entire diagnostic process was US$ 8.62; this was for man a little higher (US$ 9.16) than for woman (US$ 7.51).

DISCUSSION

For this study a lot of importance was given in counselling TB suspects in order to obtain the three sputum samples and a HIV test. Although counselling is time consuming, when one wants the message effectively communicated, it is worth the investment. In this setting each suspect was counselled on average for 30 minutes, which is not always possible in a routine setting with high numbers of suspects and a high HIV prevalence.

For example in Nairobi, with close to 20,000 TB cases per year, which are selected from around 150,000 suspects, it would take at least 75,000 hours

to counsel all these suspects. With an average of 6 hours counselling per day and five working days a week, a group of at least 100 full time counsellors would be required to accommodate this.

Since such workforce is not present, either the time of counselling should be shortened, or group counselling could be an effective approach. Counselling aids, which can be taken home for reading, may also be helpful. Even though the counselling took time, it was effective in obtaining three sputum samples, 95% of the suspects did so. This proportion is higher as compared to routine circumstances where counselling is not done. For example in the Coast Province of Kenya without the pre-counselling, an average of two sputum specimens was delivered (9).

The counselling was not effective for obtaining a blood sample for HIV as only 26% of the suspects consented. A range of different causes contributed to the low acceptance including stigma, fear of knowing one's infected status, lack of privacy. The patients were also unprepared for an HIV test and wanted to discuss this at home first. The absence of test kits also played a role. Indeed, it is important that there is a sufficient stock of test kits in the clinic for running effective counselling, as reported in Malawi, where because of shortages in test kits, suspects dropped out (10). Finally the fact that neither cotrimoxazole nor anti-retroviral therapy was available contributed to low acceptance of HIV testing. A recent development, which started after the completion of this study, has been the availability of anti-retroviral therapy. This complemented by a new policy on HIV testing, now established as an integral part of routine TB management has resulted in a much higher uptake. (2,3). The current acceptance rate among TB patients is around 80% according to CDC Nairobi, however it should be noted that in our study the individuals were TB suspects and not (yet) TB patients.

The time spent between leaving home and arrival at the clinic and time spent in the clinic itself before receiving medical attention is another factor influencing adherence to the diagnostic process.

Although both men and women spent almost the same time getting to the clinic (average 1 hour and 25 minutes), women were attended to more quickly (1 hour 3 minutes versus 1 hour 20 minutes).

Delays in diagnosis and start of effective treatment increase morbidity and mortality from TB as well as the transmission in the community (6). Delays in diagnosis have been reported in several countries, ranging from 6 to 12 weeks (11,12). We found an average delay of 10.4 weeks from the onset of symptoms and the diagnosis was made, with no significant difference between men and women (9.9 weeks versus 11.2 weeks).

Cost incurred by the patients to adhere to the diagnostic process is considerable. On average a patient paid US$2.27 for one clinic visit and US$8.62 to adhere to the entire diagnostic process. The total amount spent was in fact more, as 57% of the suspects were accompanied by a family member when attending the clinic and in routine conditions the costs may even be higher. In this study on average the clinic had to be visited 3.8 times to complete the diagnostic process, but in routine conditions the number of clinic visits is often more (8). Moreover, before a diagnosis is confirmed patients often receive a course of antibiotics, which they have to pay for themselves. In addition, 70% of the suspects (65% of men and 79% of women) visited another health provider before deciding to attend the TB chest clinic, these supplementary costs were not included in our study, but add to the financial burden of the patients.

The majority of suspects (91%) used some form of public transport to reach the clinic. Transport was the highest cost factor, contributing 50% of the total money spent, followed by loss of income (47%) and money spent on food (3%).

Thirty percent of suspects lost income in order to follow the diagnostic process. On average they incurred a loss of US$ 17. This is considerable when taking into account that 50% of the population live below the poverty line (13).

LIMITATIONS

This study was carried out when ARV were not available and HIV testing was not part of the normal management of tuberculosis, this has since changed (3). In this study we did not compare with a group that had not undergone counselling. A more detailed study on factors affecting patient compliance to diagnostic process should be carried out with a comparative group of patients who have not undergone counselling.

CONCLUSION

In TB programmes individual pre-test counselling is seldom practiced, but when done the chance that TB suspects deliver three specimens may be high as observed in this study. To obtain consensus for a HIV test is more complicated. Counselling takes time and for settings with large number of suspects alternative methods may be required, such as group counselling or the use of counselling aids. For a better understanding of the impact of counselling, however, it would be enlightening to conduct a more specific study. Costs incurred on transport to the clinic, food en route and loss of income are important economic determinants for the patients, influencing participation in the diagnostic process. The above mentioned determinants should be considered to prevent delay and establishing an effective diagnostic programme.

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