Determinants of treatment defaulting among tuberculosis patients in Khartoum State, Sudan

Summary

Tuberculosis (TB) is the major causes of illness and death worldwide for more than three decades. In 1993, the World Health Organization (WHO) declared TB infection to be a global public health problem . TB continues to cause high morbidity and mortality rates, and is classified among the top ten causes of global mortality, particularly in developing countries.

Since then, many efforts have been undertaken by experts in international organisations to control TB disease. The WHO launched the "Directly Observed Treatment; Short-course (DOTS)" strategy in 1994 as the essential, most cost-effective means of tuberculosis control. The success of this strategy later underpinned the development and implementation of the "Stop TB Strategy" (2006–2015). This was incorporated in the subsequent "End TB Strategy" by the year 2035 which launched by the WHO as a post-2015 global TB strategy.

TB continues to be a major public health problem in Sudan, particularly in Khartoum State. Sudan ranks the 3rd of the 10 highest burden countries in the Eastern Mediterranean region. It alone carries about 15% of TB burden in the region
In Khartoum State , the total number of TB cases detected in 2010 was 6670; an incidence rate of 119/100.000 population (population of the state was 5.558.647 in the year 2010). The annual risk for TB was 1.8 %, hence the programme was able to detect 2196 new smear positive cases (83.5% of the target) and achieve a cure rate of 48.4% from the detected cases. The treatment success rate increased from 66% in 2011 to reach 81.0% and 84.0% in 2017 and 2018, respectively (of all registered new smear positive cases). These figures come close to the target set (85%).

TB shows high morbidity and mortality, and has proven difficult to eliminate, despite the fact that it is both curable and preventable . Many professionals reiterate

that poor compliance associated with TB treatment remains a challenge for the national TB control programmes in developing countries and in Sudan, including Khartoum State . Treatment compliance is as crucial as the early detection of disease for achieving a high cure rate . Despite all of the efforts taken by the TB control programme, there is still a high TB treatment default rate (14%) in Khartoum State , as compared to the WHO benchmark (of less than 3%). Irregular, interrupted or incomplete TB treatment increases the risk of disease spread, treatment failure, relapse of disease, acquisition of drug-resistant TB, prolonged infectiousness, and death .

In this thesis we presented studies conducted to investigate the factors leading to defaulting TB treatment. Thus the relevant suggestions and recommendations can be made with the aim of reducing treatment default, and improving TB treatment adherence and treatment outcomes among tuberculosis patients in Khartoum State and Sudan.

The factors leading to treatment default among TB patients

In chapter 2 we reported the Patient characteristics associated with non-adherence to Tuberculosis treatment. This results were obtained by conducting a systematic review study which included the reveiw of 53 eligible studies. The elegible studies included different sudy designs and were conducted in both developed and developing countries The results of this systematic review show that family income, moving of patient or giving wrong address, tuberculosis relapse or MDR TB, intensive phase of treatment, history of default, long course treatment regimen, response to treatment, homeless, stigma, seeking traditional healers, staff receptiveness, DOTS, poor knowledge or lack of health education were consistently and statistically significantly related to tuberculosis treatment non-adherence.

In chapter 3, 4 and 5 we reported the determinants of treatment defaulting among adults TB patients (15 years and above) in Khartoum State, Sudan. The findings obtained by conducting a case control study where the patients defaulting from treatment were considered as 'cases' and those completing treatment as 'controls' between May 2010 to May 2011. The data collection for the case control study was carried out from 1th of May 2011 to 15th of July 2011. The aim of this study was to identify determinants of treatment defaulting among TB patients in Khartoum State, Sudan.

There were 2727 TB patients who attended TB treatment clinics during study period. Out of these 2399 patients (86%) had continued their treatment while 328 patients (14%) had interrupted it. Of these, 185 had resumed treatment before data collection and 143 had not and were eligible as cases. Of the 143, 27 could not be traced and 11 declined to participate. Thus, 105 cases and 210 controls were included and interviewed.

The results of this study conclude some factors influence defaulting of TB treatment. These factors included socio-demographic factors such as: residential locality (rural area), patients moving or changing address, and absence of family support and occupation (blue collar work); Disease- and treatment-related factors such as: not being on a DOTS programme, having side-effects from treatment, and having a history of TB (relapse, multidrug-resistant TB or treatment failure); Patient knowledge and behavioral factors such as: "had never heard about TB before had it", lack of knowledge on when to stop TB medication, less support by families, friends and colleagues, too many patients when visiting the TB center, and lack of counseling about TB and its treatment.

In chapter 6 we reported the barriers Leading to Treatment Default among Tuberculosis Patients in Khartoum State, Sudan: The findings were obtained by

conducting a qualitative research using the technique of Focus Group Discussion (FGD) during the period from 1st of May 2011 to 15th of July 2011. Six FGD were conducted (3 for defaulted patients and 3 for health personnel). Overall, 27 TB defaulted patients and 24 health care providers were randomly selected. The objective of this study is to provide health authorities and patients with insight into the perceived factors affecting TB treatment default.

The Participants included in this study reported several barriers leading to TB treatment default such as: lack of knowledge about TB, high cost of transportation, difficulty for making a daily visit to health facilities for DOT programme due to distance of the facilities from their residences, rural residency, social circumstances, TB-related stigma, lack of family support, patient movement or giving wrong address, seeking traditional healers and treatment-related factors such as side-effects of drugs, the attitude of health care providers, the long delay in obtaining medications, and weakness and challenges facing defaulter tracing teams. There were consistent findings from interviews among patients and health care providers. In chapter 7 we reported the use of Mobile health to improve adherence to tuberculosis treatment in Khartoum State, Sudan. The findings were obtained by conduticng a controlled intervention pilot study during the period from 1th of May 2017 to 31th of March 2018,in eight TB treatment units in Khartoum state. Short message services (SMS) reminder were sent to the intervention group. The aim of this study was to evaluate the potential use of cell phones for lowering treatment default. However, it's impact on treatment outcome in Sudan has not yet been evaluated before.

There was 148 TB patients enrolled in this study, seventy-four patients in each group. The patients in the intervention group had a lower default rate(6.8%),higher documented cure rate(78.4%),better knowledge compared to control group.SMS

reminder was useful and facilitated good interaction between patients and health personnel.

The findings presented in chapter 3,4,5,6 and 7 constitutes the first in-depth study conducted in Khartoum State and Sudan to explore the factors associated with TB default related to patients, their families and community. We identified more variables associated with TB treatment default than those identified in our systematic review (which included the results of 53 articles). Our research included three types of study design (observational, focus group discussion and intervention), in contrast to the single study designs of the research included in the systematic review. Moreover, our findings across the three studies were similar and consistent, and confirmed the findings of the previous studies conducted in developed and developing countries.

In summary, we believe that our studies have identified the important factors associated with TB default. With this knowledge, more focus can be placed on helping patients most at risk of treatment default adhere to their treatment plan. Our findings are applicable not only to the current situation regarding TB management and control in Sudan, but also to those in a similar situation in other developing countries.

In chapter 8 we presented a discussion of our research findings reported in the previous chapters, which focus on the predictors of TB treatment default. Also we discussed future implications of these findings on the TB patient care and health care providers. In addition, we identified the research needs and priority areas for enhancing adherence of TB treatment and strengthening activities, strategies and policies of the national TB control programme (NTP) in Khartoum State, Sudan and communities with similar settings.