

Original Article

Tuberculosis treatment adherence in Ghana: Patients' perspectives of barriers and enablers to treatment

Yakubu Salifu (PhD Candidate, MPhil N, BSc N, Dip N, Dip Edu, RGN, QR, FGCNM) ¹

Cecilia Eliason (PhD Candidate, MPhil N, BSc N, RGN, FWACN, FGCNM) ²

George Mensah (MPH, MD, Public Health Specialist (TB Expert)) ³

Abstract

Tuberculosis (TB) treatment continues to be a daunting task in most low and middle-income countries due to cultural beliefs held by people and inadequate information about the importance of treatment adherence in the community. This study explored the patient-related factors influencing tuberculosis treatment adherence, with a focus on patient-related factors affecting such treatment adherence. Using a semi-structured interview guide, 10 participants (Five males, five females) were engaged in in-depth individual interviews. Miles and Huberman's (1994) content analysis approach was used to analyse data. Three main themes emerged from the synthesised data: Knowledge on TB and its treatment, challenges associated with TB treatment and motivating factors to adherence. Patients' belief about the cause of TB such as spiritual forces, poor knowledge about treatment duration and consequences of defaulting, and the side effect of drugs especially when taken with little or no food were found to be critical factors that negatively impacted treatment adherence. The desire to attain one's 'normal self', making up mind to complete treatment and recognition of symptom improvement following the commencement of treatment supported adherence to TB treatment. Continuous education on TB and counselling during treatment are vital interventions that need sustained integration in TB prevention and adherence programmes. Maintaining continuous multi-level support for clients living with TB is critical for TB prevention and control, and adherence to full treatment course.

Key words:

Barriers to treatment; enabling factors; TB treatment adherence; patients' perspectives

1. Faculty of Medicine and Health Sciences, England, UK

2. School of Nursing, University of Ghana.

3. Accra Metropolitan Health Director, Accra-Ghana.

1. **Corresponding address:**

Faculty of Medicine and Health Sciences, England, UK
salid32@yahoo.com

Introduction

Tuberculosis is a preventable and curable infectious disease which continues to plague countries with low socio-economic status (World Health Organisation [WHO], 2014). In countries where TB is predominant, socio-cultural factors and barriers in healthcare service delivery impede treatment adherence particularly in low and middle-income countries (Sabawoon, Sato, & Kobayashi, 2012; Sagbakken, Frich, & Bjune, 2008). At the centre of TB treatment is the client who must adhere to the 6-month or 8-month long uninterrupted daily drug regimen to treat the disease (National TB Control Programme Ghana [NTP], 2013). The treatment regimen for TB usually consists of a combination of potent antibiotics administered based on weight values of the client. Treatment options include oral antibiotics for six months (Category I and III patients) or oral antibiotics concurrently with injections for the first two months followed by six months oral antibiotics (Category II patients). However, most patients interrupt their treatment which often leads to complications and treatment failure.

Over the past decade, various studies have established that TB treatment in health care facilities is a major issue (Borgdorff, Floyd, & Broekmans, 2002; Thiam et al., 2007). The WHO introduced the 'Stop TB strategy' and mapped up five specific policies under the Directly Observed Treatment short course (DOTs) strategy (WHO, 2014). The key elements of this policy are: Political commitment with increased and sustained financing, case detection through quality-assured bacteriology, standardised treatment, with supervision and patient support, effective drug supply and management system, and monitoring and evaluation system, and impact measurement (WHO, 2014). In Ghana, the management of TB (diagnosis and drugs) is free of charge and this treatment is delivered through Direct Observation Therapy (DOTs) by the National TB Control Programme of Ghana. In this strategic treatment approach, clients living with TB must be monitored by health care professionals on a daily basis to comply with their drug regimen to achieve optimal treatment outcomes. However, shortage of health personnel and the lack of logistics have impeded the successful implementation of the DOTs approach to treatment. In view of these challenges, patients are usually given their drugs to take home and only return to the facilities to refill their stock weekly or twice monthly. A nominated person,

usually, their family member, acts as the treatment support to ensure compliance to the drug regimen. In Ghana, a high number of reported cases related to noncompliance to TB treatment procedures were reported in some selected districts (NTP, 2013), whilst Sekyere South District recorded treatment success of less than 85% of the WHO acceptable limit. Various studies have established that health service-related factors and sociocultural influences contribute to non-adherence attention in Ghana (Dodor, 2012; Salifu, Eliason & Mensah, 2016). Personal characteristics of patients living with TB, such as self-perception and presence of underlying diseases, attitude of healthcare workers, and patients' knowledge about TB may influence client's decision about adherence to treatment (Hirsch-Moverman, Daftary, Franks, & Colson, 2008; Munro et al., 2007). The success in cure of TB depends on the client receiving full treatment in a supportive environment and making a personal decision to adhere to the treatment plan (van den Boogaard et al., 2012). This may suggest that the uniqueness of patients should be given priority if treatment adherence is to be successful and that "one-size-fits-all" method of treatment of tuberculosis is not likely to succeed in every situation (Ministry of Health [MOH], 2010).

This also presupposes that patients who do not feel that they have some control over their treatment are more likely to be non-adherent (Nabi et al., 2008; Orr, 2011). Several studies have shown that non-adherence to TB treatment and high occurrence of drug resistance are associated with lifestyle of the client such as tobacco smoking and substance dependency; under-nutrition (Belilovsky et al., 2010; Lönnroth et al., 2010; Storla, Yimer, & Bjune, 2008). The client may respond to the anti-TB drugs quite differently and this reduces treatment adherence rates since the side effects of the anti-TB drugs are more pronounced if the medications are taken without meals (Isaakidis et al., 2013; Zuñiga, 2012).

Non-adherence has been documented in migrant TB patients, and clients with HIV/AIDS coinfections or other co-morbidities such as diabetes due to the aggregated effects of the drugs or the increased number of pills to be taken (Baker et al., 2011; Gebremariam, Bjune, & Frich, 2010; Zhou et al., 2012). In spite of the widespread nature of TB in low and middle-income countries (LMICs), some individ-

uals still have misinformation about the cause of TB (Ayisi et al., 2011; Rundi, 2010). Since patients' intention to seek and adhere to treatment is based on their knowledge and beliefs about TB, this in turn influences their inherent motivation to be cured (van den Boogaard et al., 2012). In relation to the above discussion, this study examined the context-specific barriers and enablers for TB treatment adherence from the patients' own perspectives. This article was developed as part of a project that explored factors which affect TB treatment. Aspects of the project which pertained to the socio-cultural factors that impact TB treatment has already been published (Salifu et al., 2016). This current article provides detailed information on other contextual factors that influence patients' adherence to TB treatment. The aim of this study was to explore patients' perspectives on factors that influence Tuberculosis treatment adherence.

Design and Methods

This study used a qualitative research approach to explore the experiences of clients living with TB. This exploratory research allowed a deeper understanding of patients' perspectives about the factors that influenced adherence behaviour (Creswell, 2013; Mayan, 2016). An interpretive descriptive approach was used to explore, describe, and report experiences of the patients (Thorne, 2016). This design allowed the information to be contextualised whilst at the same time generating new insights in the area of clinical relevance. This design enabled the researchers to address the study questions in order to meet the purpose of the study.

Study Setting

The study was conducted at Sekyere South District, one of the 27 Districts in the Ashanti Region of Ghana with an estimated population of 94,009 (2010 Population and Housing Census). Sekyere South district has numerous farming communities with few and isolated number of six health centres. The district has three hospitals (two community-level Hospital and one district hospital). Most health facilities are relatively far from the villages but are accessible by road.

Description of the Sample

Ten participants, made up of five females and five males voluntarily participated in the study.

The age range of the participants was between 20

and 73 years with an average age of 36 years.

The study participants who volunteered to be part of the study were recruited through the Institutional TB coordinators if they met the inclusion criteria of being at least 18 years of age, with Pulmonary TB, who had taken 2 or 3 months of the anti-TB drugs from five sub-district health facilities in Sekyere South.

Patients diagnosed of extra-pulmonary patients were excluded from the study because their clinical manifestation is different from Pulmonary TB.

Ethical considerations

This research received two-levelled ethics approval from the Institutional Review Board (IRB) of Noguchi Memorial Institute for Medical Research (NMIMR), University of Ghana and Ethics Review Committee (ERC) of the Ghana Health Service (GHS). All data about participants were anonymised and stored in a password-protected folder on a computer. Numbers were used as participant identifiers to ensure confidentiality and anonymity of all participants.

Data Collection and Analysis

Data were collected through individual interviews with the use of an interview guide to explore the factors that influence TB treatment adherence (Mayan, 2016). All ten participants took part in in-depth individual interviews. All interviews were recorded with an audio-tape and later transcribed. The interviews took place either in an office at the District Health

Administration or participant's home based on their preference. Each interview lasted between 60 and 90 minutes. Data collection and analysis occurred concurrently.

Data were analysed using content analysis proposed by Miles and Huberman (1994) to develop ideas which needed to be explored during subsequent interviews. The analysis process was interactive, consisting of data reduction, data display, and verification and drawing of conclusions. After each interview and transcription, the data was coded and a general impression about the data written. Whilst engaged in reading the verbal transcripts, patterns in the data were noted and grouped together (data reduction). Transcripts were read through several times to be familiar with the data before coding and data codes

were assembled into categories where similar codes were grouped together. The data was then re-coded and areas of disparities between the coding were resolved. Data display took place when the data were subsequently grouped based on similarities and categories that explained the same issues were merged together and mind mapped on a sheet of paper. Finally, possible explanations of the data within and between the groups were considered and conclusions arrived. The emerging findings were then reviewed by a TB expert and Public Health specialist of deep experiential knowledge who further appraised the evidence on the findings meeting the requirement which, according to Thorne (2016), is an essential part of the interpretive descriptive design.

A pictorial explanation of how data collection and analysis were done is shown in Figure 1 below.

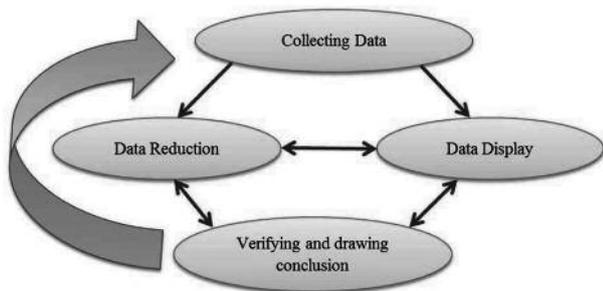


Figure 1: Data Collection and Analysis process - Miles & Huberman (1994)

The categories generated three main but interrelated themes; knowledge on TB and its treatment, treatment taking challenges, and intrinsic motivating factors for adherence.

Rigour

Rigour in qualitative research guarantees the robustness of the study and indicates the plausibility of the findings and the recommendations (Creswell, 2013; Miles & Huberman, 1994). In agreement with Lincoln & Guba, (1985), the worth of a qualitative research is determined by its credibility, dependability, confirmability, and transferability. Credibility of the study was ensured by conducting member checking with three participants to confirm that the developing themes reflected the issues they highlighted during the interview. Adequate procedural accounts of the conduct of the study were provided, and ethical principles followed.

Furthermore, a research journal was kept to track all the decisions made during the study and provide a transparent and clear audit trail. The procedures used for the data collection and analysis were documented clearly to facilitate the final review. This guaranteed the study's dependability. Appropriate quotes from the participants gave assurance of the study's confirmability. Furthermore, sufficient description about the study participants and the context were provided to determine to what extent the findings are applicable in their situation depicting transferability of findings.

Findings

This study generated three main themes and eight subthemes in all. The theme on knowledge on TB/Treatment had two sub-themes while that of the treatment taking challenges and the motivating factors for treatment adherence had three sub-themes each. These themes are presented below.

Knowledge on TB/ Treatment

Knowledge of participants on TB had implication on adherence. Adherence to anti-TB drugs was influenced by patients' knowledge on the cause of TB, treatment regime, and the consequences of defaulting.

The cause (s) of TB is one of the three sub-theme under the theme knowledge on TB/Treatment.

Seven out of the 10 participants attributed the cause of TB to spiritual forces and evil people. In addition, three participants attributed the cause to smoking, four participants blamed it on alcohol consumption, while one participant attributed the cause to eating pepper and using strong body perfumes. This data demonstrates knowledge gap in causes of TB. Participants' knowledge about the cause of TB influenced their decision to take the anti-TB drugs. Participant A01 attributed the cause of TB to 'exchange of a cough' during sex or a curse from others. She narrated her experience as follows:

When a man and a woman are having sex and the two 'cough on each other' it leads to TB. TB may be as a result of a curse from someone. I suspected my uncle who had a quarrel with me concerning my marriage. So when my condition was not improving, my father and I went to my hometown to really find the root cause of the TB and to perform some rituals.

However, other participants knew that TB was caused by germs and therefore, treatment at the health facility was the only way they could get well. Speaking about her knowledge on TB, Participant A02 had this to say:

Well, TB is caused by small germs. So I want to take the drugs continuously so that I can be cured. I don't think TB is a spiritual disease to be treated by a spiritualist so I do not intend to abandon my drugs and visit spiritualists, herbalist, and prayer camps.

The Treatment regime of drugs was captured as a sub-theme. Overall, participants had knowledge on the dosage of anti-TB drugs they were supposed to take but knowledge on the treatment duration varied. While six participants out of the 10 were knowledgeable about the duration of the treatment, the remaining four did not know how long the anti-TB drugs were to be taken, but all participants had accurate knowledge on the dosages. The quote below depicts

I take three tablets daily and I am supposed to take it for six months. So now that I have taken the drugs for 3 months, I have another 3 months more to complete the course
(A03)

Conversely, few participants did not know how long they were supposed to take the anti-TB drugs which was likely to lead to termination of treatment when the patient felt he or she was well.

Honestly, I do not know exactly how long I will be taking the anti-TB drugs. I believe when all my symptoms disappear, I will have to stop the drugs (A04).

The third and final sub-theme under this theme was the consequences of non-adherence. The knowledge about the consequences of defaulting also played a role in the patients' adherent behaviour. Six participants said non-adherence could cause serious health and social problems and so they were determined to complete their treatment. However, the remaining four participants did not have a clear understanding of the risks and effects of defaulting. Participants said they were adhering to their treatment to avoid the unwanted consequences that

might arise in case they stopped taking the drugs.

One participant recounted:

I know that if I do not take the drugs as instructed by the health workers, I will die.... ever since I started the drugs; I have noticed that there is hope. I know that the symptoms will get worse if I stop taking the drugs (A05).

One participant who is living with TB and HIV/AIDS co-infection saw the need to adhere to his drug regimen so that he could stay alive. He lamented as follows:

If I do not take the drugs as recommended, I will suffer the consequences. I had a bad experience when I stopped taking the drug during the previous treatment. So I will continue to take the drugs so that I will be cured..... Had it not been the drugs, by now I would not have been alive; I would have been dead already (A06).

Treatment taking challenges

Treatment taking challenges was the second theme that emerged after the analysis. Participants lamented on the challenges they experience while taking the anti-TB drugs. These challenges, as explained by the participants interfered with their treatment. Three sub-themes which emerged from this theme include the discomfort of taking the drug, condition not improving, the lack of food or fasting since the drug caused dizziness especially if taken without food. This theme has three sub-themes and it is presented below.

The discomfort of taking the drugs is the first sub-theme under the treatment taking challenges. Some challenges associated with taking the anti-TB drugs included weakness, feeling of choking when swallowing the drugs, side effect of drugs interfering with work, the big size and pungent odour of the drug. Again, drug load (volume of drug to be swallowed at a given time) was a major factor more especially if there were other concurrent chronic diseases such as diabetes or HIV/AIDS which also required long-term drug treatment. The following quotes from participants asserted the above information:

I am a labourer so I do tedious work like weeding, lifting of things, etc. I become weak and tired when I take my drugs and work at the

same time. This is a problem to me. So to reduce the weakness, this made me either reduce the dose of the TB and HIV drugs or skipped [sic] some of the TB treatment during my previous treatment (A06).

Another participant who had been taking the anti-TB drugs for the past three months also lamented about the uneasiness she felt while taking the drugs:

At times when I take the drugs, I feel like vomiting and I experience abdominal disturbances. The size of the drugs also makes swallowing it difficult leading to a feeling of choking sensation. Sometimes I feel I should just stop taking the drugs (A02).

'Condition not improving', was the second sub-theme under the main theme treatment taking challenges. Out of the ten participants, five complained of persistent symptoms of TB such as a cough, night sweats, and chest pains even several weeks after commencing the anti-TB treatment. Participant A01, who had ever completed a full treatment regime and now on retreatment shared her unpleasant experience:

I thought of stopping taking the drugs because a strong cough resurfaced after I had religiously followed all the instructions on the taking of the drugs. So I was like "what then is the use of the drugs when it cannot relieve the very problem why I am taking the drugs". I then lost hope with the taking of the drugs (A01).

The last sub-theme in this category was Lack of food/Fasting. Some participants explained that when the drug is taken on an empty stomach or with inadequate food, they feel uneasy. Those patients avoided taking the anti-TB drug when they did not have enough food to eat. Other participants experienced this because their pastors asked them to do fasting alongside prayers, as part of the measures to cure the TB. In all these cases, patients had unpleasant experiences of increased side effects of drugs such as weakness and dizziness. One participant's account was typical of the above sub-theme.

My pastor told me to do fasting alongside prayers. However, when I fast and take the drugs

I feel dizzy, and at times I skip the drugs during fasting for fear of becoming weaker (A07).

Again, another participant who had to take his anti-TB drugs during the Ramadan (annual month-long fasting performed by adult Moslems) interrupted his treatment because he becomes weak and dizzy. He was keen on participating in the fasting too knowing the benefit that accompanies the fasting (abundant blessing from Allah). This was what he had to share:

During our Ramadan, when I take the anti-TB drugs I usually feel dizzy during the day.

I didn't want to miss the Ramadan so I stopped the drugs and continued afterward (A08).

Although some participants were not fasting, they could not eat well enough because of affordability issues. The participants usually found it difficult to adhere to treatment because the anti-TB drugs caused dizziness and weakness. One participant narrated:

When I take the drugs without food then I feel dizzy. Without eating, taking the drugs becomes very difficult and it makes me also feel even weaker and I cannot work. Because of that, if I do not get enough food to eat, I do not take the drugs. And I am being honest here (A06).

Intrinsic motivating factors

Patients' motivating factor was the third theme and this had three sub-themes: making up the mind, becoming 'normal self', and improvement after initial treatment. In spite of challenges patients faced while on treatment, some were intrinsically motivated to get well. This factor was found to be supportive of treatment adherence. Four subthemes were identified under this theme. The three sub-themes are presented below.

The expression "I made up my mind" was key motivating factor for many participants and it therefore constituted a sub-theme. Making up the mind was helpful to most participants since it helped them to adhere to the drug regimen. Participants explained that making up their mind involved self-encouragement and self-determination in adhering to the treatment. Participant A05 narrated his story about what he does to ensure that he does not miss his drugs.

He reported:

I have determined not to miss a single day taking the drugs. So I have kept the drugs very close to my bedside toward the head. Immediately I wake up from the bed, the drug is the first thing that I see and because I have made up my mind to always take the drugs, I do not forget at all.

A participant emphasised that his personal determination to get cured helped him a lot because no family member was close by to supervise him to take the drugs. He remarked:

I am determined and made up my mind that no matter what, I must complete the drugs and be free from the TB... though it is tedious taking all those drugs, I have made up my mind to complete all the drugs once and for all (A09).

The second sub-theme under this theme was the desire to become 'normal self'. Some participants were still taking the drugs because of their determination to become their 'normal self' so they could perform their daily activities without relying on others. The reality was that patients with TB infection become dependent on others for food, money for transportation and needed expenses, and physical support from relatives. Therefore in order to be self-reliant, participants identified the need to adhere to their anti-TB drug regimen so that they could gain independence as early as possible. Participant A07 articulated her rationale for taking her drugs:

I am still taking the drugs so that I can become my 'normal self' and can walk without any difficulty; do my daily activities without any problem at all... my husband is usually very busy with his work and because of my condition he has to be with me most of the times. I want to become my normal self so that he can also do his work (A07).

The need to stay alive and become 'normal self' was also necessary because of what participants considered valuable to them such as their children and other activities they cherished. The following quote from a clearly articulated the need to become her normal self.

I decided to take the drugs because of one important thing. I do not have anybody from else-

where to care for me and my children, and my children are still too young in case I should die and leave them behind. So, I need to take the drugs to return to my normal self so that I can care for my children. If I die, my children may die of starvation and sorrow. [Participant having tears flowing from her eyes] (A10).

Improvement after initiating treatment was the third and final sub-theme under the third theme. In this study, participants witnessed improvement with their condition shortly after commencing the anti-TB treatment. Eight (8) participants verbalised that they had seen great improvement and they felt better now. Buttressing the point on improvement after taking the anti-TB drugs, participant A10 echoed:

The time that I was diagnosed with TB I looked like an old lady but shortly after taking the anti-TB drugs I saw an incredible improvement. Now I feel better; I, therefore, decided to take all the drugs (A10).

Participants associated the absence of TB-related symptoms with the improvement in the condition. This motivated the participants to continue taking their medication. For example, one participant recounted:

Soon after taking the drugs, I began to feel better than before. This inspired me because if 'the cough' had persisted after taking the drugs given to me initially, I would not have gone to the Hospital for the next doses of the drugs (A07).

Contrary to the views of others, participants A06 and A08, both on re-treatment following medication default during their previous treatment, specified that since the cardinal symptom of TB—coughing or chest pains—were absent, they considered themselves cured of the disease. Both patients had to restart the treatment altogether when the condition resurfaced some months later. Participant A08 narrated his story as below:

The main reason why I stopped the drugs was that I was quite ok; I didn't cough or have chest pain (A08).

On his part, participant A06, narrated:

I stopped taking the drugs on two occasions when I felt better. I did not see the need to continue taking the drugs when the symptoms subside (A06).

The findings of this study have been discussed under the three major themes.

DISCUSSION

Knowledge about TB and treatment

The experience of TB is socially constructed by persons living with TB and others who play significant roles in their lives. Some researchers have examined the role of the figurative connotation of some illness and its implications for treatment. For instance, cancer is seen as 'evil' and obesity as 'sinful' diseases (Conrad & Barker, 2010). Similarly, TB is described as 'ghost disease' (Salifu et al., 2016). It has been shown in these studies that these descriptions significantly affect persons living with such diseases. The decision to adhere to treatment is largely dependent on personal factors. Patient's knowledge and intention to adhere to treatment significantly relates to adherence behaviour and ability to deal with perceived difficulties with adherence (van den Boogaard et al., 2012). For participants to adhere to the anti-TB treatment, they needed to have the intention to do so and the required knowledge on the treatment regime.

Their intention was influenced by their beliefs and misconceptions which could be either helpful or unhelpful to the course of treatment (Abebe et al., 2010; Salifu et al., 2016; van den Boogaard et al., 2012). The knowledge of participants on the dosage of anti-TB drugs was high; however, knowledge on the cause of TB, mode of transmission, and duration of treatment was limited as evidenced by participant's verbalisation of TB causation by spiritual forces, curses and eating pepper.

As evident in the literature, most Africans tie biopsychosocial definition of diseases to chronic diseases such as tuberculosis (Dowrick, May, Richardson, & Bundred, 1996). As a result of this belief, most people living with TB regarded the disease as having a spiritual origin. As a result, the treatment of TB does not lie only in the physical but spiritual healing as well. This means that spirituality is deeply rooted in TB care for some patients. Therefore, the patients saw TB not only as a bio psychological condition but a spiritual one as well (Sulmasy, 2002). The findings of this study were similar to the work of Gerrish, Naisby, and Ismail (2013) who studied the knowledge of TB within the Somali community by engaging patients living with TB, community leaders and the community at large. The authors also discovered that specific knowledge on how TB is transmitted was poor among the TB patients, a view supported by (Finnie et al., 2011). The participants' knowledge about the cause of the

disease sometimes influenced their decision to take the anti-TB drugs and ultimately their adherence to the full course of treatment (Buregyeya et al., 2011). Since most participants attributed the cause of TB to spiritual forces and evil people, it interrupted treatment adherence. This finding corroborates other previous qualitative studies in Uganda, Nigeria and Ghana, which found that some beliefs such as perceived cause of TB (for example witchcraft) affect adherence to orthodox drugs used in treating TB (Buregyeya et al., 2011; Okeibunor, Onyeneho, Chukwu, & Post, 2007; Salifu et al., 2016). This implies that patients' intention to seek and adhere to treatment is based on knowledge and beliefs about TB (van den Boogaard et al., 2012).

The findings of this current study, relative to treatment non-adherence due to the lack of awareness about the significance of treatment and the consequences of defaulting, was consistent with the conclusions of a research by Kulkarni et al, 2013. This finding also corroborated another study in the United Kingdom by Gerrish et al 2013. It therefore appears obvious that increasing patients' knowledge and understanding of the full treatment regime might potentially empower patients and boost their confidence in treatment (Zhou et al., 2012). It is however unclear what the linkage is between knowledge and treatment of TB on one hand and non-adherence on the other hand since some patients knew the treatment regime but still defaulted along the course. The researchers considered the role of personal beliefs and the sensation of feeling well as possible explanatory factors.

It is noted that the biopsychosocial model of disease postulates that the environment, body, and mind, interacts to bring good health. However, health care providers are usually concerned with the biomedical aspect of health and this creates a gap in the treatment of patients with diseases such as TB which is psychosocially and spiritually constructed (Conrad & Barker, 2010; George & Engel, 1980; Sulmasy, 2002). Usually, care provided to patients does not fully incorporate these various aspects of health (Dowrick et al., 1996). Therefore health care professionals' efforts to increase adherence to TB drugs must address the individual's perceptions of health and the sociocultural factors that act as barriers to accessing health care. Again, health professionals offering treatment for TB should provide services that meet the physical, social, psychological as well as the spiritual needs of the patients living with TB to optimise their adherence to treatment in totality.

Treatment Taking Challenges

The difficulties which relate to taking the anti-TB drugs influence adherence negatively. Typically, discomfort and choking sensation associated with taking anti-TB drugs varied from one participant to the other and influenced adherence. Side effects of the drugs and adverse drug reactions interrupted treatment especially if the drugs were taken without meals. Munro et al. (2007) who developed a model on adherence in TB specified that the side effects which patients experienced were highly influential in their decision to continue taking the anti-TB drugs. Other studies confirm that discomfort is related to non-adherence (Castelnuovo, 2010; Neves, Canini, Reis, Santos, & Gir, 2012). The qualitative approach used in this current study afforded participants the opportunity to describe the lived experiences of the side effects of anti-TB drugs. The side effects described by this study's participants include nausea, vomiting, dizziness, a feeling of choking, and palpitation. These side effects were echoed in the findings of other studies (Isaakidis et al., 2013; Xu et al., 2009; Zuñiga, 2012) as factors that affect treatment adherence among patients living with TB. These anti-TB drug side effects worsen if taken on an empty stomach or when patients have not eaten.

It is of concern that the drug burden and elevated effect of the anti-TB drugs together with others such as anti-retroviral drugs lead to non-adherence among people living with TB and HIV/AIDS co-infections. These findings corroborate other studies which establish that the challenges associated with treating TB is even worsened if there are other underlying concurrent co-morbidities for example HIV/AIDS known to contribute to poor treatment adherence (Dodor, 2012; Gebremariam et al., 2010; Neves et al., 2012; Orr, 2011). Despite these challenges, some patients living with TB were self-motivated to take their anti-TB drugs.

Intrinsic motivating factors

The desire to get well and be cured of TB motivated patients to adhere to treatment. In this study, patients who 'made up their mind' to complete the treatment complied with the treatment plan in spite of challenges. Again, patients who realised the need to become their 'normal selves' were willing to adhere with the treatment instructions. Moreover, the improvement which patients experienced after commencing treatment contributed to treatment adherence. These findings established that curing TB was heavily dependent on the patient who was receiving the treat-

ment. Essentially, self-motivated patients are most likely to adhere to treatment. Other studies establish that individuals who generally feel reluctant to seek treatment for a disease will only do so if there are motivation and commitment (Soleymanian, Niknami, Hajizadeh, Shojaeizadeh, & Montazeri, 2014). Possibly, patients who have not made up their minds to adhere to full treatment plan might be lacking self-confidence especially when there are issues with their social relations.

Participants who realized that living with TB created inconveniences which they aimed to overcome by adhering to the treatment plan in order to become 'their normal selves' focused on compliance in order to gain independence as early as possible. In this struggle, participants found worth in both staying alive and living without TB. The self-worth and belief participants had in wanting to get cured motivated them to adhere to their anti-TB drugs. This self-worth and belief that TB is curable corroborated similar works done by Orr (2011) and Gerrish et al. (2013). Treatment adherence and non-adherence were dependent on the improvement patients saw few weeks after commencing the anti-TB drugs. This feeling of 'being well' influenced adherence, depending on the meaning the patients attached to it. Usually, patients on anti-TB drugs improve in their condition when cough and chest pain subsides, and weight gain is observed as appetite improves. This improvement in patients' condition encouraged the patients to adhere to treatment. Some participants explained that they would not have continued taking the drugs if their symptoms had persisted or if their conditions had 21

deteriorated weeks or months after initiating the anti-TB drugs. This evidence partially supported the findings of several studies (Ananthakrishnan, Jeyaraj, Palani, & Sathiyasekaran, 2012; Belilovsky et al., 2010) which establish that patients living with TB who were 'feeling better' were more likely to interrupt treatment because they felt they were cured of TB. Some participants in the current study who were on re-treatment had defaulted previously because they felt better, however when put on treatment again, these patients vowed to complete taking their drugs even if they started to feel better. The sense of feeling better euphoria was hence seen as a form of motivation among most previously defaulted patients. Feeling better is however subject to individual interpretation.

The challenges discussed above call for treatment regime that is comparatively shorter than the 6-month

or 8-month treatment duration currently in Ghana. These factors possibly explain patients preferred shorter duration of treatment as identified in Barcelona (Jimenez-Fuentes, de Souza-Galvao, Mila Auge, Solsona Peiro, & Altet-Gomez, 2013).

A major limitation of the study is the recruitment of participants who were currently taking their anti-TB drugs or who were on re-treatment. Patients who had completely defaulted on the treatment regimen could have provided essentially different viewpoints from the participants involved in this study. Consequently, the findings of this study might not be applicable to participants who have defaulted treatment. However, due to poor records and inaccurate house address of some patients, most patients who had defaulted could be hardly traced to be included in the study during the recruitment. In this study, family members played significant roles in treatment by providing socio-economic support for relations who were living with TB. However, key family members who supported their relatives' treatment at home were not included in the study. Interviewing both patients and their key family support persons could have illuminated the understanding about anti-TB treatment adherence. A study that seeks to concurrently examine the perspectives of patients living with TB and their caregivers might potentially provide a broader and deeper understanding of treatment adherence in the successful management of TB.

Conclusion

This study contributes to evidence generated on the experiences of patients living TB and offers deeper understanding of the contextual realities of living with TB. Elements which influenced non-adherence in this district-wide qualitative study within the Ghanaian context have been discussed. The emergent themes which enabled the researchers to provide rich narratives on patients' decisions to complete their treatment regime included patients' knowledge on TB treatment, challenges to treatment, and motivations that influence adherence to anti-TB treatment. This study emphasised the need for healthcare workers to integrate religious and personal beliefs into patient care since these affected factors compliance to treatment. Where family support was available and patients 'made-up' their minds, they were likely to complete treatment regardless of the social or cultural hurdles they might encounter. The lack of sup-

port and encouragement however negatively impact patients' treatment compliance especially when they start to feel better. This, therefore, requires community-based nursing care, mass education and practical supportive interventions that are culturally sensitive to address patients' non-adherence to anti-TB treatment.

Recommendations must target policy makers, key stakeholders, health care providers and professional regulatory bodies to improve treatment outcomes of patients living with TB.

Implications for Health Care

It is imperative that the nursing professional body in collaboration with key stakeholders reactivate the activities of the Public Health Nurses and the Community Health Nurses to provide sustainable support at the community level till treatment is completed. This specialised care will provide the needed support for complete treatment adherence.

In the Ghanaian context where patients living with TB are stigmatised and socially isolated (Dodor, 2012), it is important that the Ministry of Health intensifies integrative education efforts and socio-economic support for patients living with TB. The Ministry of Health must also engage community groups, religious bodies and other health-related agencies to educate, empower and support patients living with TB. Future research can be directed at exploring the relationship between patients living with TB and TB coordinators and the role of family members. Counselling services aimed at improving adherence for patients living with TB patients must ensure implementation of thorough pretreatment assessment to identify any potential barrier to full treatment regimen adherence.

Conflict of Interest: None declared

Acknowledgments

We thank Professor Shannon Scott and Thane Chambers of the Faculty of Nursing, University of Alberta, Canada, for their unique roles during the development of this work and the search for relevant articles.

We thank the staff and the enthusiastic participants who willingly opted to be part of this study.

References

- Abebe, G., Deribew, A., Apers, L., Woldemichael, K., Shiffa, J., Tesfaye, M., . . . Bezabih, M. (2010). Knowledge, health-seeking behavior and perceived stigma towards tuberculosis among tuberculosis suspects in a rural community in southwest Ethiopia. *PloS One*, 5(10), e13339.
- Ananthakrishnan, R., Jeyaraj, A., Palani, G., & Sathiyasekaran, B. (2012). Socioeconomic impact of TB on patients registered within RNTCP and their families in the year 2007 in Chennai, India. *Lung India: official organ of Indian Chest Society*, 29(3), 221.
- Ayisi, J. G., van't Hoog, A. H., Agaya, J. A., Mchembere, W., Nyamthimba, P. O., Muhenje, O., & Marston, B. J. (2011). Care seeking and attitudes towards treatment compliance by newly enrolled tuberculosis patients in the district treatment programme in rural western Kenya: a qualitative study. *BMC public health*, 11(1), 515.
- Baker, M. A., Harries, A. D., Jeon, C. Y., Hart, J. E., Kapur, A., Lönnroth, K., . . . Murray, M. B. (2011). The impact of diabetes on tuberculosis treatment outcomes: a systematic review. *BMC medicine*, 9(1), 81.
- Belilovsky, E. M., Borisov, S. E., Cook, E. F., Shaykevich, S., Jakubowiak, W. M., & Kourbatova, E. V. (2010). Treatment interruptions among patients with tuberculosis in Russian TB hospitals. *International Journal of Infectious Diseases*, 14(8), e698- e703.
- Borgdorff, M. W., Floyd, K., & Broekmans, J. F. (2002). Interventions to reduce tuberculosis mortality and transmission in low-and middle-income countries. *Bulletin of the World Health Organization*, 80(3), 217-227.
- Buregyeya, E., Kulane, A., Colebunders, R., Wajja, A., Kiguli, J., Mayanja, H., . . . Mitchell, E. (2011). Tuberculosis knowledge, attitudes and health-seeking behaviour in rural Uganda. *The International Journal of Tuberculosis and Lung Disease*, 15(7), 938-942.
- Castelnuovo, B. (2010). Review of compliance to anti tuberculosis treatment and risk factors for defaulting treatment in Sub Saharan Africa. *African health sciences*, 10(4).
- Conrad, P., & Barker, K. K. (2010). The social construction of illness: Key insights and policy implications. *Journal of health and social behavior*, 51(1_suppl), S67-S79.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Dodor, E. (2012). The feelings and experiences of patients with tuberculosis in the Sekondi-Takoradi Metropolitan district: implications for TB control efforts. *Ghana medical journal*, 46(4), 211.
- Dowrick, C., May, C., Richardson, M., & Bundred, P. (1996). The biopsychosocial model of general practice: Rhetoric or reality? *Br J Gen Pract*, 46(403), 105-107.
- Engel, G. L. (1980). The clinical application of the biopsychosocial model. *Am J Psychiatry*, 137(5), 535-544.
- Finnie, R. K., Mabunda, T., Khoza, L. B., van den Borne, B., Selwyn, B., & Mullen, P. D. (2011). Pilot study to develop a rapid assessment of tuberculosis care-seeking and adherence practices in rural Limpopo Province, South Africa. *International quarterly of community health education*, 31(1), 3-19.
- Gebremariam, M. K., Bjune, G. A., & Frich, J. C. (2010). Barriers and facilitators of adherence to TB treatment in patients on concomitant TB and HIV treatment: a qualitative study. *BMC public health*, 10(1), 651.
- George, E., & ENGEL, L. (1980). The clinical application of the biopsychosocial model. *American journal of Psychiatry*, 137, 535-544.
- Gerrish, K., Naisby, A., & Ismail, M. (2013). Knowledge of TB within the Somali community. *Nurs Times*, 109(20), 22-23.
- Hirsch-Moverman, Y., Daftary, A., Franks, J., & Colson, P. (2008). Adherence to treatment for latent tuberculosis infection: Systematic review of studies in the US and Canada. *The International Journal of Tuberculosis and Lung Disease*, 12(11), 1235-1254.
- Isaakidis, P., Rangan, S., Pradhan, A., Lodomirskaya, J., Reid, T., & Kielmann, K. (2013). 'I cry every day': Experiences of patients co-infected with HIV and multidrug-resistant tuberculosis. *Tropical Medicine & International Health*, 18(9), 1128-1133.
- Jimenez-Fuentes, M., de Souza-Galvao, M., Mila Auge, C., Solsona Peiro, J., & Altet-Gomez, M. (2013). Rifampicin plus isoniazid for the prevention of tuberculosis in an immigrant population. *The International Journal of Tuberculosis and Lung Disease*, 17(3), 326-332.
- Kulkarni, P., Akarte, S., Mankeshwar, R., Bhawalkar, J., Banerjee, A., & Kulkarni, A. (2013). Non-adherence of new pulmonary tuberculosis patients to anti-tuberculosis treatment. *Annals of Medical and Health Sciences Research*, 3(1), 67-74.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry* (Vol. 75): Sage.
- Lönnroth, K., Castro, K. G., Chakaya, J. M., Chauhan, L. S., Floyd, K., Glaziou, P., & Raviglione, M. C. (2010). Tuberculosis control and elimination 2010–50: Cure, care, and social development. *The Lancet*, 375(9728), 1814-1829.
- Mayan, M. J. (2016). *Essentials of qualitative inquiry*: Routledge.

- Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis: *An expanded sourcebook*: sage.
- Ministry of Health Ghana (2010): Immunization Programme Comprehensive Multi-Year Plan (2010-2014)
- Munro, S. A., Lewin, S. A., Smith, H. J., Engel, M. E., Fretheim, A., & Volmink, J. (2007). Patient adherence to tuberculosis treatment: a systematic review of qualitative research. *PLoS medicine*, 4(7), e238.
- Nabi, H., Vahtera, J., Singh-Manoux, A., Pentti, J., Oksanen, T., Gimeno, D., . . . Kivimaki, M. (2008). Do psychological attributes matter for adherence to anti-hypertensive medication? The Finnish Public Sector Cohort Study. *Journal of Hypertension*, 26(11), 2236.
- National TB Control Programme Ghana [NTP] (2013). Managing Tuberculosis in Ghana. A training course. Acts Commercial Ltd
- Neves, L. A. d. S., Canini, S. R. M., Reis, R. K., Santos, C. B. d., & Gir, E. (2012). Aids and tuberculosis: coinfection from the perspective of the quality of life of patients. *Revista da Escola de Enfermagem da USP*, 46(3), 704-710.
- Okeibunor, J. C., Onyeneho, N. G., Chukwu, J. N., & Post, E. (2007). Barriers to care seeking in directly observed therapy short-course (DOTS) clinics and tuberculosis control in southern Nigeria: a qualitative analysis. *International quarterly of community health education*, 27(1), 23-37.
- Orr, P. (2011). Adherence to tuberculosis care in Canadian Aboriginal populations Part 1: definition, measurement, responsibility, barriers. *International Journal of Circumpolar Health*, 70(2), 113-127.
- Rundi, C. (2010). Understanding tuberculosis: Perspectives and experiences of the people of Sabah, East Malaysia. *Journal of health, population, and nutrition*, 28(2), 114.
- Sabawoon, W., Sato, H., & Kobayashi, Y. (2012). Delay in the treatment of pulmonary tuberculosis: a report from Afghanistan. *Environmental health and preventive medicine*, 17(1), 53-61.
- Sagbakken, M., Frich, J. C., & Bjune, G. (2008). Barriers and enablers in the management of tuberculosis treatment in Addis Ababa, Ethiopia: a qualitative study. *BMC Public Health*, 8(1), 11.
- Salifu, Y. (2013). Factors influencing immunization practices: A study conducted at Asamang SDA Hospital, Ashanti-Ghana
- Salifu, Y., Eliason, C., & Mensah, G. (2016). 'Ghost' stories: Sociocultural factors influencing tuberculosis treatment adherence in Ghana. *Primary Health Care*, 26(10), 34-41.
- Soleymanian, A., Niknami, S., Hajizadeh, E., Shojaeizadeh, D., & Montazeri, A. (2014). Development and validation of a health belief model based instrument for measuring factors influencing exercise behaviors to prevent osteoporosis in pre-menopausal women (HOPE). *BMC musculoskeletal disorders*, 15(1), 61.
- Storla, D. G., Yimer, S., & Bjune, G. A. (2008). A systematic review of delay in the diagnosis and treatment of tuberculosis. *BMC Public Health*, 8(1), 15.
- Sulmasy, D. P. (2002). A biopsychosocial-spiritual model for the care of patients at the end of life. *The gerontologist*, 42(suppl_3), 24-33.
- Thiam, S., LeFevre, A. M., Hane, F., Ndiaye, A., Ba, F., Fielding, K. L., . . . Lienhardt, C. (2007). Effectiveness of a strategy to improve adherence to tuberculosis treatment in a resource-poor setting: a cluster randomized controlled trial. *Jama*, 297(4), 380-386.
- Thorne, S. (2016). Interpretive description: *Qualitative research for Applied Practice* (Vol. 2): Routledge.
- van den Boogaard, J., Msoka, E., Homfray, M., Kibiki, G. S., Heldens, J. J., Felling, A. J., & Aarnoutse, R. E. (2012). An exploration of patient perceptions of adherence to tuberculosis treatment in Tanzania. *Qualitative Health Research*, 22(6), 835-845.
- Xu, W., Lu, W., Zhou, Y., Zhu, L., Shen, H., & Wang, J. (2009). Adherence to anti-tuberculosis treatment among pulmonary tuberculosis patients: A qualitative and quantitative study. *BMC health services research*, 9(1), 169.
- WHO (2014). The end TB strategy global strategy and targets for tuberculosis prevention, care and control after 2015. <http://www.who.int/tb/dots/whatisdots/en/>
- Zhou, C., Chu, J., Liu, J., Tobe, R. G., Gen, H., Wang, X., . . . Xu, L. (2012). Adherence to tuberculosis treatment among migrant pulmonary tuberculosis patients in Shandong, China: A quantitative survey study. *PloS One*, 7(12), e52334.
- Zuñiga, J. A. (2012). A woman's lived experience with directly observed therapy for tuberculosis: A case study. *Health care for women international*, 33(1), 19-28.