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**Quality of Life among Multidrug-Resistant Tuberculosis Patients in Southwestern  
Uganda**

Byaruhanga Richard Sserioza, Edgar Mugema Mulogo, Vicent Batwala and Otwine Tweheyo  
Anne



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Byaruhanga Richard Sserioza  
Faculty of Health Sciences, Mbarara University of  
Science and Technology, Uganda



Edgar Mugema Mulogo  
Faculty of Health Sciences, Mbarara University of  
Science and Technology, Uganda



Vicent Batwala  
Faculty of Health Sciences, Mbarara University of  
Science and Technology, Uganda



Otwine Tweheyo Anne  
Faculty of Health Sciences, Bishop Stuart  
University, Uganda

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### Abstract

**Purpose:** The study assessed the quality of life among multidrug-resistant tuberculosis (MDR-TB) patients in Southwestern Uganda.

**Methodology:** A descriptive cross-sectional study was conducted among 71 adult MDR-TB patients attending Mbarara, Kabale, and Fort Portal Regional Referral Hospitals. Participants were selected using multistage sampling. Data were collected using a semi-structured questionnaire adapted from the WHOQOL-BREF and analysed using SPSS version 28, descriptive statistics, Chi-square tests, and logistic regression.

**Findings:** Most participants were male (76%), aged 31–50 years, and 44% had primary education. General quality of life was moderate (mean = 3.09), while functional outcomes (mean = 2.84) and overall life satisfaction (mean = 2.75) were low. Participants experienced pain, low energy, financial challenges, limited leisure, and reduced satisfaction with sleep, work, and social relationships.

**Unique Contribution to Theory, Practice and Policy:** The study recommends a patient-centred approach integrating TB and HIV services, directly observed therapy (DOT), psychosocial support, counselling, peer-support programmes, and nutritional care to improve the quality of life of MDR-TB patients.

**Keywords:** *Quality of Life, Multidrug-Resistant, Tuberculosis Patients*

**JEL Classification Codes:** I18, I31

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## INTRODUCTION

Globally, multidrug-resistant tuberculosis (MDR-TB) remains a major public health challenge, with more than 600,000 new MDR/RR-TB cases reported annually and approximately 240,000 related deaths (WHO, 2020). MDR-TB results from resistance to effective anti-TB medicines, making treatment longer, more toxic, costly, and less effective compared to drug-susceptible TB. The disease affects patients beyond clinical outcomes by reducing physical functioning, psychological wellbeing, social participation, and economic productivity. Children are also affected, with an estimated 2 million children living with MDR-TB globally and approximately 30,000 new paediatric MDR-TB cases reported annually (Padmashali, 2019). These challenges demonstrate the extensive individual, family, and societal consequences of MDR-TB.

In Africa, the burden of MDR-TB is intensified by high HIV co-infection rates, limited healthcare infrastructure, poverty, and barriers to accessing comprehensive TB services. Prolonged treatment duration, adverse effects of second-line medications, and financial costs contribute to poor adherence, reduced productivity, and impaired quality of life among affected patients. In Uganda, MDR-TB remains a significant health concern, with treatment costs estimated at approximately USD 1,200 per patient, creating substantial financial pressure on patients and their families (Omona, 2024). Although interventions such as community-based directly observed therapy (DOT) have improved treatment adherence and outcomes, current strategies mainly focus on clinical indicators, with limited attention given to patients' psychological wellbeing, social relationships, environmental conditions, and overall quality of life.

Despite the continued implementation of MDR-TB control programmes in Uganda, limited evidence exists regarding the quality of life of MDR-TB patients, particularly in Southwestern Uganda. Existing studies have largely focused on treatment outcomes, adherence, and clinical management, leaving gaps in understanding the broader experiences of patients during and after treatment. Information on how MDR-TB affects physical health, mental wellbeing, social functioning, and economic conditions is essential for designing effective patient-centred interventions. Therefore, this study was conducted to assess the quality of life among multidrug-resistant tuberculosis patients in Southwestern Uganda.

### Purpose of the Study

To assess the quality of life among multidrug-resistant tuberculosis patients in southwestern Uganda.

## METHODOLOGY

**Study Design:** A descriptive cross-sectional study was conducted among MDR-TB patients attending Mbarara, Kabale, and Fort Portal Regional Referral Hospitals. This design allowed the assessment of the impact of drug-resistant TB on patients' quality of life at a single point in time, capturing variations across multiple hospital settings.

**Study Site:** The study was conducted at three regional referral hospitals, each selected to ensure diverse geographic and demographic representation. Mbarara Regional Referral Hospital, located in the Ankole sub-region with a capacity of 32 patients, offered comprehensive TB services including GeneXpert testing and catered to patients of all ages. Kabale Regional Referral Hospital, covering multiple districts with a capacity of 25 patients, was equipped with modern diagnostic facilities, including GeneXpert, and managed complex TB cases from both rural and urban populations. Fort Portal Regional Referral Hospital, serving

five districts with a capacity of 30 patients, provided a full range of TB services including drug resistance testing, and emphasized community engagement and outreach programs to raise awareness and promote health-seeking behavior.

**Study Population:** The study population consisted of adult patients (18 years or older) diagnosed with MDR-TB at the three regional referral hospitals.

**Inclusion and Exclusion Criteria:** Patients aged 18 years or older with MDR-TB who provided informed consent were included in the study. Critically ill patients who were unable to participate in the study were excluded to ensure that participants could provide complete and accurate responses.

**Sample Size Calculation:** The sample size was calculated using Cochran's formula, taking into account the finite population of MDR-TB patients in the three hospitals, which totaled 87 patients. The initial sample size for an infinite population was 384.16. After applying the finite population correction formula, the final sample size was 71 participants. The distribution of the sample across the three hospitals was calculated based on the population size of each hospital, as shown in Table 1.

**Table 1: Population Size and Sample Size**

| Regional Referral Hospital             | Population Size | Sample Size |
|----------------------------------------|-----------------|-------------|
| Mbarara Regional Referral Hospital     | 32              | 26          |
| Kabale Regional Referral Hospital      | 25              | 20          |
| Fort Portal Regional Referral Hospital | 30              | 25          |
| <b>Total</b>                           | <b>87</b>       | <b>71</b>   |

**Sampling Procedure:** A multistage sampling technique was employed. In the first stage, the three hospitals were randomly selected. Proportion-to-size allocation was used to determine the number of participants required from each hospital. In the final stage, simple random sampling was applied to select participants in facilities where the number of eligible patients exceeded the required sample size. In hospitals where fewer patients were eligible than needed, all eligible patients were recruited to ensure the target sample was achieved.

**Data Collection Tools:** Data were collected using a semi-structured, interviewer-administered questionnaire, adapted from the WHO Quality of Life BREF (WHOQOL-BREF) instrument. The questionnaire also included sociodemographic questions. It was pretested among 20 MDR-TB patients in another regional referral hospital in Central Uganda, which had similar sociodemographic characteristics to the study sites.

**Reliability of WHOQOL-BREF Tool:** The reliability of the WHOQOL-BREF tool was assessed using Cronbach's alpha. The overall scale demonstrated high reliability with a Cronbach's alpha of 0.893, while the four individual domains ranged from 0.551 (social domain) to 0.893 (overall quality of life), indicating that the instrument was generally reliable for this study.

**Measurement of Variables:** The primary dependent variable was quality of life, measured using the 26-item WHOQOL-BREF questionnaire. Two questions assessed overall quality of life and general health satisfaction, while the remaining 24 questions assessed four domains: physical health, psychological health, social relationships, and environment. Independent variables included demographic, socio-economic, social support, clinical characteristics, and treatment-related factors. Responses were recorded on a Likert scale ranging from 1 ("very poor/very dissatisfied/not at all") to 5 ("very good/very satisfied/extremely").

The physical health domain was assessed through seven items focusing on activities of daily living, dependence on medical aids, energy and fatigue, mobility, pain and discomfort, sleep and rest, and work capacity. Psychological health was assessed with six items examining body image, negative and positive feelings, self-esteem, spirituality, and cognitive functioning. Social relationships were measured with three items evaluating personal relationships, social support, and sexual activity. The environment domain comprised eight items covering financial resources, safety, access and quality of health and social care, home environment, opportunities for learning, participation in recreational activities, physical environment, and transport.

**Data Analysis:** Completed questionnaires were checked, cleaned, and entered into SPSS version 28 for statistical analysis. Descriptive statistics such as means, standard deviations, and proportions were used to summarize the data, which were presented in tables and charts. The primary outcome variable, quality of life, was quantitative and expressed as mean  $\pm$  standard deviation. Associations between categorical independent variables and quality of life were evaluated using Chi-square tests. Factors associated with quality of life were further analyzed using backward elimination logistic regression. Statistical significance was determined at a 95% confidence interval with a p-value of  $< 0.05$ .

## RESULTS

**Table 2: Socio-demographic Characteristics of Respondents (n=96)**

| Variable       | Category         | Frequency (f) | Percent (%) |
|----------------|------------------|---------------|-------------|
| Gender         | Female           | 23            | 24.0        |
|                | Male             | 73            | 76.0        |
| Age Group      | Below 18 years   | 3             | 3.1         |
|                | 18–30 years      | 19            | 19.8        |
|                | 31–40 years      | 22            | 22.9        |
|                | 41–50 years      | 21            | 21.9        |
|                | 51–60 years      | 19            | 19.8        |
|                | Above 60 years   | 12            | 12.5        |
| Education      | None at all      | 30            | 31.3        |
|                | Primary School   | 42            | 43.8        |
|                | Secondary School | 19            | 19.8        |
|                | Tertiary         | 5             | 5.2         |
| Marital Status | Divorced         | 8             | 8.3         |
|                | Married          | 33            | 34.4        |
|                | Separated        | 31            | 32.3        |
|                | Single           | 23            | 24.0        |
|                | Widowed          | 1             | 1.0         |

The study population was predominantly male (76%) and largely within the productive age range of 31–50 years, suggesting that MDR-TB primarily affects economically active individuals. Most respondents had only a primary school education (44%), indicating that lower education levels may contribute to increased vulnerability to drug-resistant TB. Regarding marital status, the majority were married (34%) or separated (32%), highlighting potential implications for family stability, caregiving, and household wellbeing.

**Table 3: Quality of Life**

| Quality   | Percentage (%) |
|-----------|----------------|
| Very good | 6.3%           |
| Good      | 33.7%          |
| Neutral   | 36.8%          |
| Poor      | 19.0%          |
| Very poor | 4.2%           |

Most patients with MDR-TB perceived their quality of life as moderate, with 37% reporting neutral wellbeing, while a smaller proportion experienced very poor quality of life (4%). Some patients rated their quality of life as good, indicating effective coping and support, but the presence of poor and very poor ratings highlights the ongoing medical, psychological, and social challenges faced by this population, emphasizing the need for comprehensive care.

### Descriptive Statistics

**Table 4: Recent Experience of Events/Feelings**

| Statements                                                                    | 1<br>f(%)     | 2<br>f(%)     | 3<br>f(%)     | 4<br>f(%)     | 5<br>f(%)     | SD          | Mean<br>Score |
|-------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|-------------|---------------|
| Respondents feel that physical pain prevents me from doing what I need to do. | 12<br>(12.5%) | 19<br>(19.8%) | 43<br>(44.8%) | 21<br>(21.9%) | 1<br>(1.0%)   | 0.91        | 2.79          |
| Respondents need medical treatment to function in my daily life.              | 13<br>(13.5%) | 19<br>(19.8%) | 23<br>(24.0%) | 34<br>(35.4%) | 7<br>(7.3%)   | 1.13        | 3.03          |
| Respondents enjoy life.                                                       | 1<br>(1.0%)   | 1<br>(1.0%)   | 34<br>(35.4%) | 48<br>(50.0%) | 12<br>(12.5%) | 0.83        | 3.72          |
| Respondents feel that my life is meaningful.                                  | 8<br>(8.3%)   | 32<br>(33.3%) | 18<br>(18.8%) | 26<br>(27.1%) | 12<br>(12.5%) | 1.19        | 3.02          |
| Respondents are able to concentrate well.                                     | 7<br>(7.3%)   | 23<br>(24.0%) | 26<br>(27.1%) | 35<br>(36.5%) | 5<br>(5.2%)   | 1.06        | 3.08          |
| Respondents feel safe in my daily life.                                       | 12<br>(12.5%) | 20<br>(20.8%) | 41<br>(42.7%) | 22<br>(22.9%) | 1<br>(1.0%)   | 0.92        | 2.79          |
| Respondents' physical environment is healthy.                                 | 8<br>(8.3%)   | 19<br>(19.8%) | 23<br>(24.0%) | 38<br>(39.6%) | 8<br>(8.3%)   | 1.11        | 3.20          |
| <b>Overall</b>                                                                |               |               |               |               |               | <b>1.04</b> | <b>3.09</b>   |

1= Not at all, 2= A little, 3= A moderate amount, 4= Very much, 5= An extreme amount

The overall mean score was 3.09 (SD = 1.04), which is above 3, indicating a generally good quality of life outcome in this domain.

**Table 5: Recent Functional Experience**

|                                                                                   | 1<br>f(%)     | 2<br>f(%)     | 3<br>f(%)     | 4<br>f(%)     | 5<br>f(%)   | SD          | Mean<br>Score |
|-----------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|-------------|-------------|---------------|
| Respondents have enough energy for everyday life.                                 | 15<br>(15.6%) | 20<br>(20.8%) | 22<br>(22.9%) | 30<br>(31.3%) | 9(7.3%)     | 1.09        | 2.98          |
| Respondents are able to accept my bodily appearance.                              | 13<br>(13.5%) | 21<br>(21.9%) | 45<br>(46.9%) | 16<br>(16.7%) | 1<br>(1.0%) | 0.88        | 2.70          |
| Respondents have enough money to meet my needs.                                   | 8<br>(8.3%)   | 25<br>(26.0%) | 32<br>(33.3%) | 27<br>(28.1%) | 4<br>(4.2%) | 0.97        | 2.94          |
| The information respondents need in day-to-day life is readily available to them. | 4<br>(4.2%)   | 40<br>(41.7%) | 39<br>(40.6%) | 12<br>(12.5%) | 1<br>(1.0%) | 0.76        | 2.65          |
| Respondents have sufficient opportunities for leisure activities.                 | 5<br>(5.2%)   | 29<br>(30.2%) | 34<br>(35.4%) | 22<br>(22.9%) | 6<br>(6.3%) | 0.89        | 2.95          |
| <b>Overall</b>                                                                    |               |               |               |               |             | <b>0.92</b> | <b>2.84</b>   |

1= Not at all, 2= A little, 3= A moderate, 4= Mostly, 5= Completely

The overall mean score was 2.84 (SD = 0.92), which is below 3, indicating a bad functional quality of life outcome.

**Table 6: Recent Life Satisfaction**

| Variable                                              | 1             | 2             | 3             | 4             | 5           | SD          | Mean<br>Score |
|-------------------------------------------------------|---------------|---------------|---------------|---------------|-------------|-------------|---------------|
| Satisfaction with sleep                               | 15<br>(15.8%) | 25<br>(26.3%) | 20<br>(21.1%) | 28<br>(29.5%) | 8<br>(7.4%) | 1.19        | 2.89          |
| Satisfaction with ability to perform daily activities | 8<br>(8.3%)   | 34<br>(35.4%) | 18<br>(18.8%) | 29<br>(30.2%) | 7<br>(7.3%) | 1.13        | 2.93          |
| Satisfaction with capacity for work                   | 3<br>(3.1%)   | 31<br>(32.3%) | 40<br>(41.7%) | 21<br>(21.9%) | 1<br>(1.0%) | 0.89        | 2.85          |
| Satisfaction with self                                | 16<br>(16.7%) | 44<br>(45.8%) | 26<br>(27.1%) | 9<br>(9.4%)   | 1<br>(1.0%) | 0.94        | 2.32          |
| Satisfaction with personal relationships              | 6<br>(6.3%)   | 29<br>(30.2%) | 49<br>(51.0%) | 10<br>(10.4%) | 2<br>(2.1%) | 0.80        | 2.72          |
| Satisfaction with sex life                            | 5<br>(5.2%)   | 29<br>(30.2%) | 29<br>(30.2%) | 25<br>(26.0%) | 7<br>(7.3%) | 1.02        | 2.97          |
| Satisfaction with support from friends                | 13<br>(13.5%) | 31<br>(32.3%) | 31<br>(32.3%) | 20<br>(20.8%) | 1<br>(1.0%) | 0.99        | 2.64          |
| Satisfaction with living conditions                   | 9<br>(9.4%)   | 24<br>(25.0%) | 34<br>(35.4%) | 21<br>(21.9%) | 8<br>(8.3%) | 1.05        | 2.95          |
| Satisfaction with access to health services           | 14<br>(14.6%) | 33<br>(34.4%) | 24<br>(25.0%) | 21<br>(21.9%) | 4<br>(4.2%) | 1.06        | 2.67          |
| Satisfaction with transport                           | 10<br>(10.4%) | 37<br>(38.5%) | 33<br>(34.4%) | 13<br>(13.5%) | 3<br>(3.1%) | 0.93        | 2.60          |
| <b>Overall</b>                                        |               |               |               |               |             | <b>1.00</b> | <b>2.75</b>   |

1= Very dissatisfied, 2= Dissatisfied, 3= Neutral, 4= Satisfied, 5= Very satisfied

The overall mean score was 2.75 (SD = 1.00), which is below 3, indicating a bad overall life satisfaction outcome.

## Discussion

The study findings demonstrate that MDR-TB significantly affects the quality of life of patients attending Mbarara, Kabale, and Fort Portal Regional Referral Hospitals. The predominance of male respondents (76.0%) may reflect the higher burden of TB among men reported in many settings, which has been associated with occupational exposure, social roles that increase contact outside the home, and possible differences in healthcare-seeking behaviour. In some communities, men may delay seeking care due to work commitments, social expectations, or limited engagement with health services, resulting in late diagnosis and more severe disease presentation. However, further qualitative investigation would be necessary to determine the specific reasons for male predominance in Southwestern Uganda. The concentration of patients within the economically productive age groups suggests that MDR-TB affects individuals who are likely to have important family and economic responsibilities, potentially increasing the social and financial consequences of the disease. Similar findings have been reported in Eritrea and Cameroon, where adult MDR-TB patients experienced substantial reductions in health-related quality of life (Amer et al., 2023; Pokam et al., 2020).

The moderate quality of life score in the general experience domain (mean = 3.09) suggests that while some patients were able to maintain hope, meaning, and enjoyment of life, MDR-TB continued to create considerable challenges. This indicates that clinical improvement alone may not fully address the broader effects of MDR-TB on patients' wellbeing. Although patients may adapt to prolonged treatment and receive some level of support, persistent symptoms, treatment burden, and uncertainty about recovery can continue to influence their daily experiences. These findings are consistent with Sutar et al. (2024), who reported that MDR-TB patients commonly experience psychological distress, including depression, anxiety, stigma, and social isolation, which negatively affect overall wellbeing.

The poorer functional quality of life outcome (mean = 2.84) highlights the extent to which MDR-TB interferes with patients' ability to perform normal daily activities. The reduced functional status may be linked to prolonged illness, medication side effects, fatigue, reduced income-generating capacity, and dependence on others for support. Unlike general perceptions of wellbeing, which may improve through coping mechanisms and social support, functional limitations directly affect patients' independence and ability to participate in social and economic activities. Similar observations were reported by Araia et al. (2021), who found that drug-resistant TB affects physical functioning, employment opportunities, and financial stability. Pokam et al. (2020) also emphasized that economic difficulties and disease-related limitations significantly reduce quality of life among TB patients.

The low overall life satisfaction score (mean = 2.75) indicates that MDR-TB affects important areas of patients' lives beyond physical health. The greatest concerns related to self-perception, work capacity, social relationships, and access to essential services. This suggests that MDR-TB is not only a medical condition but also a social and psychological challenge that influences patients' identity, productivity, and relationships. Similar findings were reported by Yadav et al. (2022) and Wang et al. (2024), who found that MDR-TB patients experienced reduced psychological wellbeing due to stigma, financial constraints, treatment-related difficulties, and limited social support.

The findings further highlight the importance of integrating psychosocial and socioeconomic interventions into MDR-TB care. Although antimicrobial treatment remains essential for controlling the disease, addressing mental health needs, improving social support systems,

providing nutritional assistance, and reducing financial barriers may substantially improve patients' quality of life. Community-based approaches, including counselling, peer support, and family involvement, may help patients cope with the long treatment period and reduce the social consequences associated with MDR-TB.

### **Study Limitations**

This study had several limitations that should be considered when interpreting the findings. First, quality of life information was obtained through self-reported questionnaires, which may have been affected by recall bias or respondents' personal perceptions of their health status. Second, the cross-sectional design limited the ability to establish causal relationships between MDR-TB and quality of life outcomes, as data were collected at a single point in time. Third, the study was conducted among patients attending selected regional referral hospitals in Southwestern Uganda; therefore, the findings may not be fully generalizable to all MDR-TB patients in Uganda, particularly those receiving care in lower-level health facilities or community settings. Despite these limitations, the study provides important evidence on the experiences and quality of life challenges faced by MDR-TB patients and highlights areas requiring further intervention.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

MDR-TB substantially reduces the quality of life of patients attending Mbarara, Kabale, and Fort Portal Regional Referral Hospitals, affecting physical functioning, psychological wellbeing, social relationships, and daily activities. Although some patients reported moderate overall wellbeing, many continued to experience challenges related to pain, reduced energy, financial difficulties, emotional distress, and dissatisfaction with work, sleep, relationships, and access to services.

These findings demonstrate that MDR-TB management should extend beyond disease control and treatment completion targets to include interventions that improve patients' overall wellbeing. Public health policies and MDR-TB programmes should integrate routine quality of life assessments, psychosocial care, nutritional support, socioeconomic assistance, and community-based support systems into standard MDR-TB management. Strengthening patient-centred approaches will not only improve the lived experiences of MDR-TB patients but may also enhance treatment adherence, reduce social and economic consequences, and contribute to better long-term TB control outcomes in Uganda.

### **Recommendations**

Mbarara, Kabale, and Fort Portal Regional Referral Hospitals should strengthen integrated TB and HIV services by ensuring routine HIV management, counselling, nutritional assessment, and psychosocial support are provided alongside MDR-TB treatment. This will address the multiple physical and psychological challenges experienced by patients.

Health facilities managing MDR-TB patients should incorporate quality of life assessments into routine care to identify patients experiencing difficulties with physical functioning, mental health, social relationships, and financial challenges. Early identification will allow timely referral for appropriate support.

MDR-TB programmes should establish structured counselling services, peer-support groups, and family support interventions to address stigma, emotional distress, social isolation, and reduced self-confidence among patients.

Health authorities and implementing partners should develop mechanisms to reduce the financial burden of MDR-TB through social protection initiatives, livelihood support, and assistance with transport costs, particularly for patients experiencing reduced work capacity due to prolonged treatment.

Community awareness and workplace TB programmes should prioritize men aged 31–50 years, who represented the majority of patients in this study. These programmes should promote early healthcare-seeking behaviour, reduce stigma, and encourage treatment adherence.

Health facilities should continue strengthening directly observed therapy (DOT), adherence monitoring, and uninterrupted access to MDR-TB medicines to prevent treatment interruption and further development of drug resistance.

MDR-TB care providers should ensure regular nutritional assessment, management of treatment-related side effects, and interventions addressing pain, fatigue, and reduced functional ability to improve patients' daily functioning and wellbeing.

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