Mortality Among Patients Admitted in a Psychiatric Facility: A Single-Centre Review

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Background: There is higher global mortality among persons living with mental illness than the general population, attributed to the risky behaviours associated with mental illness, medical comorbidities, or side effects of psychiatric medications that result in premature death among psychiatric inpatients.

Objective: This audit aimed to describe the characteristics of patients with mental illness who died during admission at a tertiary psychiatric ward in Uganda.

Methods: This was a retrospective chart review of patients who died while admitted to a psychiatry ward between January 1995 to July 2020.

Results: We reviewed 30 charts, of which 18 (60%) patients were women. The majority of patients died during 2002 (13.3%). Many were diagnosed with a brief psychotic disorder, 7 (23.3%), followed by bipolar disorder 6 (20.0%). HIV and epilepsy were the most common comorbidities. The majority of the death causes of death were unknown, 20 (66.7), but heart attack (n=2) was the most identified cause.

Conclusion: The majority of the causes of mortality were unknown. The most common cause of mortality was heart attack, a common effect of metabolic disease and chronic antipsychotic use. Mortality audits are warranted to identify possible causes and to develop strategic interventions for mortality prevention.

Keywords: mortality, audit, psychiatric inpatients, suicide, antipsychotic medications, medical comorbidities, HIV/AIDS, hospitalization, mental health, epilepsy, continued care

Introduction

Mortality among patients with mental illness is higher than that among the general population, although the causes of mortality are not usually related to mental illness. The mortality rate is 2.2 times higher among patients with psychotic disorders in the community receiving outpatient care than the general population. Mortality among patients with mental illness is higher than that among outpatients, mainly due to the fact that in patients tend to have advanced psychiatric conditions and more poor medical comorbidities than outpatients.

Overall, people with a history of psychiatric hospitalization have a high risk of premature death, attributed to the severity of the disorder and length of exposure to psychiatric medicines. Prolonged exposure to psychiatric medications and their adverse effects lead to poor health and predispose patients to comorbidities such as diabetes, cardiovascular diseases (CVD), and hypertension, which contribute to high mortality among people with mental illness. Moreover, these patients commonly engage in high-risk behaviours such as tobacco smoking, alcohol and illicit drug use, physical inactivity, and improper diet; which increases their risk of medical
| Record | Year of Death | Years with Mental Illness | Age at Time of Death | Sex | Diagnosis | Differential Diagnosis | Number of Days on Ward | Number of Reviews per Day | EPS Presence | Consultation Liaison |
|--------|---------------|---------------------------|----------------------|-----|-----------|------------------------|------------------------|---------------------------|--------------|---------------------|
| 1      | 2020          | 0                         | 82                   | F   | BPD       | Delirium               | 2                      | 3.00                      | Yes          | No                  |
| 2      | 2019          | 0                         | 34                   | M   | BPD       | BPD, Arthritis, Disseminated TB | 3                      | 3.30                      | No           | Yes                 |
| 3      | 2019          | 0                         | 42                   | M   | HIV induced mental illness | –                     | 2                      | 1.50                      | No           | No                  |
| 4      | 2018          | 3                         | 50                   | F   | Headache  | SUD                    | 1                      | 6.00                      | No           | No                  |
| 5      | 2016          | 7                         | 54                   | F   | Depression | –                     | 2                      | 1.00                      | No           | No                  |
| 6      | 2016          | 23                        | 46                   | F   | BAD       | –                      | 2                      | 1.50                      | Yes          | No                  |
| 7      | 2015          | 0                         | 15                   | M   | BPD       | –                      | 3                      | 1.30                      | No           | No                  |
| 8      | 2014          | 0                         | 24                   | F   | Delirium  | –                      | 2                      | 1.00                      | No           | No                  |
| 9      | 2014          | 3                         | 38                   | F   | BAD       | Schizophrenia          | 3                      | 0.60                      | No           | No                  |
| 10     | 2014          | 20                        | 52                   | F   | Schizophrenia | –                     | 4                      | 0.75                      | No           | No                  |
| 11     | 2013          | 0                         | 50                   | M   | Schizophrenia | SUD                    | 6                      | 0.00                      | No           | No                  |
| 12     | 2012          | 0                         | 30                   | M   | Epilepsy  | –                      | 120                    | 0.20                      | No           | No                  |
| 13     | 2012          | 20                        | 62                   | M   | BAD       | –                      | 2                      | 1.00                      | Yes          | No                  |
| 14     | 2011          | 0                         | 47                   | M   | Severe diarrhea | PML, Toxoplasmosis, Cryptosporidiosis | 5                      | 1.00                      | No           | Yes                 |
| 15     | 2010          | 10                        | 70                   | F   | BAD       | EPS                    | 3                      | 0.60                      | Yes          | No                  |
| 16     | 2010          | 19                        | 61                   | F   | Schizophrenia | BAD                    | 19                     | 0.40                      | No           | No                  |
| 17     | 2009          | 0                         | 80                   | M   | Pneumonia | Delirium, BAD, Dementia | 7                      | 1.10                      | Yes          | Yes                 |
| Record | Investigations | History of Mental Illness | Family History of Mental Illness | History of Substance Abuse | Comorbidities | History of Attempted Suicide | History of Physical Trauma | Time of Death | Possible Cause of Death | Medications Used |
|--------|----------------|---------------------------|---------------------------------|-----------------------------|---------------|-----------------------------|---------------------------|--------------|------------------------|------------------|
| 1      | –              | No                        | Yes                             | No                          | –             | No                          | No                       | N            | –                      | Chlorpromazine, Haloperidol, Diazepam |
| 2      | Normal         | Yes                       | No                              | No                          | TB, Epilepsy  | No                          | Yes                      | N            | TB                    | Haloperidol, Carbamazepine |
| 3      | –              | No                        | No                              | Yes                         | HIV           | No                          | No                       | N            | –                      | Haloperidol, Carbamazepine |
| 4      | –              | No                        | No                              | Yes                         | –             | No                          | No                       | E            | –                      | Haloperidol, Diazepam, Amitriptyline |
| 5      | –              | Yes                       | Yes                             | No                          | –             | Yes                         | No                       | E            | –                      | Chlorpromazine, Diazepam |
| 6      | Normal         | Yes                       | No                              | No                          | –             | No                          | Yes                      | D            | TBI                   | Chlorpromazine, Diazepam |
| 7      | –              | No                        | No                              | No                          | –             | No                          | No                       | N            | –                      | Chlorpromazine, Diazepam |
| 8      | –              | No                        | No                              | No                          | Cerebral, Malaria | No             | No                       | N            | Cerebral Malaria       | Chlorpromazine, Haloperidol, Diazepam |
| 9      | –              | Yes                       | No                              | No                          | –             | No                          | No                       | D            | *Heart attack          | Haloperidol, Carbamazepine, Amitriptyline |
| 10     | –              | Yes                       | No                              | No                          | –             | No                          | No                       | N            | –                      | Haloperidol, Risperidone |
| 11     | Normal         | No                        | No                              | Yes                         | –             | No                          | No                       | N            | –                      | Haloperidol, Carbamazepine, Diazepam |
| 12     | –              | No                        | No                              | Epilepsy                    | Yes           | N                           | –                        | Haloperidol, Phenobarbital |
| 13     | Normal         | Yes                       | No                              | No                          | –             | No                          | No                       | N            | *Heart attack          | Chlorpromazine, Haloperidol, Carbamazepine, Diazepam, Amitriptyline |
| 14     | –              | No                        | No                              | No                          | HIV           | No                          | No                       | D            | Severe diarrhea        | Haloperidol, Diazepam, Ceftriaxoneotics |
| 15     | –              | Yes                       | Yes                             | No                          | –             | No                          | No                       | E            | –                      | Carbamazepine, Diazepam |
| 16     | –              | Yes                       | No                              | No                          | –             | No                          | No                       | E            | –                      | Haloperidol, Diazepam |
| 17     | –              | Yes                       | Yes                             | –                           | No            | No                          | D                        | Aspiration pneumonia | Chlorpromazine, Diazepam |

(Continued)
### Table 1 (Continued).

| Record | Year of Death | Years with Mental Illness | Age at Time of Death | Sex | Diagnosis | Differential Diagnosis | Number of Days on Ward | Number of Reviews per Day | EPS Presence | Consultation Liaison |
|--------|---------------|---------------------------|----------------------|-----|-----------|------------------------|------------------------|--------------------------|-------------|-------------------|
| 18     | 2009          | 0                         | 30                   | F   | Diabetes  | Epilepsy, Diabetes, Poisoning, SUD | 3                     | 1.00                     | No          | Yes               |
| 19     | 2008          | 0                         | 50                   | F   | Schizophrenia | BAD                  | 7                     | 1.00                     | No          | No                |
| 20     | 2007          | 0                         | 50                   | F   | Delirium  | BPD                   | 4                     | 0.30                     | No          | No                |
| 21     | 2006          | 30                        | 86                   | M   | BAD       | Malignancy, Infection, Hypoglycemia | 1                     | 1.00                     | No          | Yes               |
| 22     | 2005          | 0                         | 35                   | F   | BPD       | Delirium              | 2                     | 2.50                     | Yes         | Yes               |
| 23     | 2005          | 0                         | 70                   | M   | Depression | –                    | 6                     | 0.70                     | No          | No                |
| 24     | 2004          | 20                        | 63                   | F   | BPD       | –                     | 4                     | 1.50                     | Yes         | No                |
| 25     | 2002          | 0                         | 50                   | F   | BAD       | Delirium, schizophrenia | 33                    | 0.30                     | No          | No                |
| 26     | 2002          | 0                         | 32                   | M   | Pneumonia | BPD, Pneumonia, Depression | 27                    | 0.70                     | Yes         | Yes               |
| 27     | 2002          | 0                         | 35                   | M   | HIV induced mental illness | HIV induced mental illness, Toxoplasmosis, Cryptosporidiosis, Dementia | 2                     | 2.50                     | No          | Yes               |
| 28     | 2002          | 0                         | 50                   | F   | BPD       | BPD                   | 7                     | 1.00                     | Yes         | Yes               |
| 29     | 2000          | 0                         | 25                   | F   | Delirium  | BPD                   | 2                     | 1.00                     | No          | No                |
| 30     | 2000          | 1                         | 32                   | F   | HIV induced mental illness | BPD, TB, Diabetes, Vaginal candidiasis | 6                     | 1.70                     | No          | Yes               |

Note: *Postmortem findings.

Abbreviations: F, female; M, male; BPD, brief psychotic disorder; BAD, bipolar affective disorder; TB, tuberculosis; SUD, substance use disorder; EPS, extrapyramidal side effects; N, night; E, evening; D, day; TBI, traumatic brain injury.

Comorbidities, including CVD, diabetes, and infections, are associated with higher levels of mortality. However, lifestyle changes are challenging among patients, given the symptoms of mental illness and the side effects of medicines such as day time sedation and general weakness that limit their ability to make realistic plans and goals and follow them.

Despite numerous studies showing that patients with mental illness are at a higher risk of mortality compared to the general population, information on inpatient mortality among patients admitted to psychiatry hospitals in Uganda. We conducted a retrospective chart review of patients who died while admitted to the psychiatry ward at a tertiary hospital in southwestern Uganda to identify the common characteristics of these patients.
| Record | Investigations | History of Mental Illness | Family History of Mental Illness | History of Substance Abuse | Comorbidities | History of Attempted Suicide | History of physical Trauma | Time of Death | Possible Cause of Death | Medications Used |
|--------|----------------|--------------------------|---------------------------------|----------------------------|---------------|----------------------------|---------------------------|--------------|------------------------|------------------|
| 18     | Abnormal       | No                       | No                              | No                         | Diabetes      | No                         | No                        | N            | Hypoglycemia           | Phenytoin, IV fluids |
| 19     | –              | Yes                      | Yes                             | No                         | –             | No                         | No                        | N            | –                      | Chlorpromazine, Diazepam |
| 20     | –              | No                       | No                              | –             | No                         | No                        | D            | –                      | Haloperidol, Diazepam |
| 21     | Abnormal       | Yes                      | Yes                             | No                         | –             | Yes                        | No                        | D            | Thromboembolism        | Haloperidol       |
| 22     | Normal         | No                       | No                              | Yes                        | –             | No                         | No                        | N            | –                      | Chlorpromazine, Haloperidol, Diazepam |
| 23     | –              | Yes                      | No                              | No                         | –             | No                         | No                        | D            | –                      | Amitriptyline     |
| 24     | –              | Yes                      | No                              | No                         | –             | No                         | No                        | N            | –                      | Haloperidol, Thiodazine, Diazepam |
| 25     | Abnormal       | No                       | No                              | No                         | –             | No                         | No                        | D            | –                      | Chlorpromazine    |
| 26     | Abnormal       | No                       | No                              | Pneumonia                  | No            | Yes                        | D                         | Respiratory distress syndrome | Chlorpromazine |
| 27     | –              | No                       | No                              | HIV                        | No            | No                         | N                         | –            | –                      | Chlorpromazine, Haloperidol |
| 28     | Normal         | No                       | No                              | Epilepsy                   | No            | No                         | No                        | N            | –                      | Chlorpromazine    |
| 29     | –              | No                       | No                              | –             | No                         | No                        | D            | –                      | Chlorpromazine    |
| 30     | Abnormal       | Yes                      | Yes                             | No                         | HIV           | No                         | No                        | N            | –                      | Chlorpromazine    |

**Methods**

This was a retrospective chart review of patients who died while admitted to the psychiatry ward of Mbarara Regional Referral Hospital between January 1995 and July 2020.

Using the inpatient record book that records the outcomes of the patients, we traced files of the patients who died while on the ward during the stated duration and retrieved the files from the records office. A careful chart review of the clinical notes was performed independently by two trained research assistants using a pretested data extraction tool. Data about age, sex, diagnosis, number of clinical reviews per day, number of days in the ward, presence of extrapyramidal side effects, investigation outcomes, prior history of mental illness, family history of mental illness, number of years with mental illness, medical comorbidities, history of attempted suicide, medications prescribed, history of physical trauma,
time of death, and cause of death were collected. Data were entered parallel by two investigators (MMK and SMN) in a pretested web-based Google form. In case of discrepancies in data entry, the two data entrants had to discuss them with the SA. The Microsoft Excel sheet of the data entered in the Google form was downloaded and checked for completeness and errors by SMN.

Results

We retrieved 43 records from the report book, and 13 were excluded due to missing records (n=8) and incomplete data (n=5).

Over the 25-year period, mortality remained almost constant, with most deaths occurring in 2002 (Table 1). The deceased were aged 15–52 years, only 12 were male, 7 (23.3%) had a family history of mental illness, 14 (46.7%) had a positive history of mental illness, and the years lived with mental illness ranging from 0 to 30. The majority of the deceased were diagnosed with brief psychotic disorder, 7 (23.3%), followed by bipolar disorder 6 (20.0%). HIV and epilepsy were the most common comorbidities. The majority of the deceased spent two days in the ward. They were reviewed 0 to 6 times a day, 10 (33.3%) were reviewed by the consultation-liaison team, 11 (26.7%) had investigations performed, and six were normal. Most of the deceased were on antipsychotics 25 (83.3%) and diazepam 15 (50.0%). The majority of deaths, 20 (66.7%), had unknown causes of death, with only three postmortem reports available in the data to confirm the causes of death (Supplementary file 1). The most common cause of death was heart attacks.

Discussion

Death among patients admitted to the psychiatry ward is no longer rare. In this study, mortality became a prevalent event in the psychiatric inpatient ward over the 25 years, with a minimum of two deaths every two years since 2000. Higher incidences were observed in the early 2000s. This may be attributed to the increasing number of patients requiring inpatient mental health care following an increased prevalence of medical conditions presenting with mental illness symptoms such as HIV/AIDS. HIV/AIDS is one of the most prevalent conditions in Uganda, with 6.7% of adults living with HIV in Uganda. However, its accurate diagnosis was rare in the late 1990s and the early 2000, and with minimal or no attention paid to psychiatric complications of HIV at the time, thus, more deaths occurred in 2002.

Heart attack (20%), the most common cause of mortality in our study, is a common effect of metabolic disease (hypertension, diabetes, weight gain) and adverse effects of chronic antipsychotic use. Metabolic disease and other chronic medical conditions are common among patients and are implicated in their reduced lifespan and mortality compared to the general population. These conditions put most patients at risk of premature death through heart attack and hypoglycemia, among others, if poorly controlled during admission. These conditions are due to patients associated with risky lifestyles such as substance use, obesity, physical inactivity, risky sexual practices, poor nutrition, and use of psychiatric medications. Despite the increased risk to medical conditions, they are rarely diagnosed and managed adequately because fewer patients’ visits are made to other physicians, few consultations to physicians, and if done, most of their symptoms are misinterpreted as somatic symptoms. They also rarely undergo a complete physical examination by their primary physicians, who mainly deal with mental health issues.

In this study, the majority of the causes of death are unknown. A finding that points to commonly observed causes of death, such as suicide. Many admitted patients resort to suicide due to their experience of traumatic symptoms or shortcut to end suffering from their symptoms. One study in Israel reported a high mortality rate among admitted young (18 to 44 years) people with mental disorders linked mainly to suicide. Despite only two individuals having previous suicide attempts, suicide is common among patients with mood disorders and psychosis - the majority of the studied population. Previous studies also shown that most suicide-related deaths among patients with mental illness occur at night. In our study, most patients (53.3%) died in the afternoon. However, our study had a small sample, and suicide was not among the reported causes of mortality to make any association between the time of death and suicide. The unknown causes of death may also be due to the complication of epilepsy - status epilepticus, accidents, suicide, and sudden unexpected death.

There has been at least one death every year since 2000 due to various causes. An increased continuous review of patients by clinicians, a proven method that significantly lowers mortality, should be emphasised. Frequent patient reviews per day contribute to the timely detection of life-threatening conditions such as hypoglycemia and appropriate management, which reduces mortality risk. In...
addition, regular patient reviews increase patient adherence to medication, which accelerates recovery. Thus, significantly lowering the chances of poor patient-doctor relationships which leads to delays in noticing dangerous signs and symptoms. Another way of preventing death among psychiatric patients is through management of the risk of commonly occurring non-communicable diseases (diabetes, hypertension, CVDs, and related heart attack) by providing and supporting services that increase healthy behaviours such as increased physical activities, healthy diet, and reducing/cessation of use of substances of addiction.

**Limitations**

First, this was a retrospective chart review with data extracted from patients’ medical charts; thus, the choice of study variables was contingent on the data available. Second, the patients sampled in the current study were from a single health facility; therefore, the findings may not be generalizable to other psychiatric facilities in the country. Finally, the sample of the charts reviewed was too small to draw generalizable conclusions.

**Conclusion**

The majority of the causes of mortality were unknown. All the mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. Mortality audits are warranted for every deceased patient to identify possible causes in order to develop strategic interventions for mortality prevention.

**Ethical Considerations**

This study was conducted in accordance with the Declaration of Helsinki.

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Annet Mutayomba, Department of Psychiatry Mbarara Regional Referral Hospital, retrieved the records.

**Author Contributions**

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data: took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agreed to be accountable for all aspects of the work.

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The authors declare that they have no conflicts of interest.

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