MEDICAL EVALUATION ABNORMALITIES IN ACUTE PSYCHOTIC PATIENTS SEEN AT THE EMERGENCY DEPARTMENT, MUHIMBILI NATIONAL HOSPITAL, DAR ES SALAAM, TANZANIA.

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By

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A dissertation Submitted in (partial) Fulfillment of the Requirements for the Degree of Master of Medicine (Emergency Medicine) of Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a thesis/dissertation entitled ***Medical evaluation abnormalities in acute psychotic patients seen at the Emergency Department, Muhimbili National Hospital, Dar es salaam, Tanzania,,*** in (Partial) fulfillment of the requirements for the degree of Master of Medicine (Emergency Medicine) of Muhimbili University of Health and Allied Sciences.

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DEDICATION

To my family who have supported and encouraged me through it all.

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LIST OF ABBREVIATION

EMD	Emergency Medicine Department
ED	Emergency Department
MNH	Muhimbili National Hospital
MSE	Mental Status Evaluation
ICU	Intensive Care Unit
RBG	Random Blood Glucose
RDT	Rapid Diagnostic Test
FBP	Full Blood Picture
CCP	Comprehensive Chemical Profile
HIV	Human Immunodeficiency Virus
DKA	Diabetic Keto Acidosis
GCS	Glasgow Coma Scale
PPE	Pruritic papular eruption

ABSTRACT

Background

Psychosis is defined as a thought disorder characterized by false beliefs (delusions) or perception (hallucinations) that significantly hinder the person's ability to function. Because there are many life threatening conditions that may manifest with psychosis, it is essential to evaluate these patients for medical conditions. Prior studies have shown varied rates of medical pathology in patients presenting to acute care settings with psychosis.

Problem Statement

The rate and range of medical pathology in patients presenting with psychosis in our region is unknown and this hinders attempts to develop a systematic diagnostic approach to these patients.

Aim of study

To determine the proportion of patients presenting to the MNH EMD with acute psychosis who have abnormal findings on a standardized medical screening evaluation.

Methods

This was a prospective observational study of adult patients presenting to the EMD at MNH with acute psychosis. A standardized evaluation form was used to collect data on demographics, history and physical examination. The study data were entered into an Excel

database (Microsoft Corporation, Redmond, WA, USA) and analyzed with SAS (SAS Institute Inc., Cary, NC, USA).

Results

A total of 252 participants were enrolled; 69% were male and the mean age was 30. Our study showed that history and physical examination findings were not sufficient to rule out serious medical conditions. Laboratory investigations were taken for 206 patients of whom 19% had abnormal lab findings, and two-thirds of these abnormal labs were clinically significant. Overall, 11% of patients tested had clinically significant abnormal lab findings.

Conclusion and recommendation

The overall rate of underlying laboratory abnormality was 19%, which is higher than previously published rates from high-resource settings(1), and these included a small but significant percentage of patients with potentially life-threatening medical conditions, including hypoglycemia and newly-diagnosed HIV and DKA. Based on our findings, patients presenting with psychosis to an acute care facility in this region should be evaluated with physical examination and laboratory studies to rule out underlying medical illness.

1.0: INTRODUCTION AND LITERATURE REVIEW

Definition:

Psychosis is defined as a thought disorder characterized by false beliefs (delusions) or perceptions (hallucinations) that significantly hinder a person's ability to function. Psychotic episodes may or may not be accompanied by agitation or aggression (2). While psychosis is frequently presumed to be primarily of psychiatric origin, there are many reversible causes of acute psychosis. Because there are many life-threatening conditions that may manifest with psychosis or delirium, it is essential to evaluate these patients for medical conditions.

Causes:

Psychosis can be caused by several underlying conditions, including infections, trauma, vitamin deficiency, neoplasm and degenerative brain diseases (3). Thiamine deficiency is cause of Wernicke's encephalopathy which may present with acute psychosis (4). Chronic systemic disease may also be a predisposing factor. Aszalos, et al. found that neurological or psychiatric manifestations were present in 60% of systemic lupus erythematosus patients (5).

Medical relation to psychosis:

Several substances are also known to be associated with psychotic symptoms, and daily substance use is a significant risk factor for sudden onset psychosis (6). In one US study, 42% of acutely psychotic patients had a history of daily use of cannabis (7). With regard to East Africa specifically, the overall prevalence rate of cannabis use is estimated to be 1.7–6.5% of the population (8). The annual opioid use prevalence rate for East Africa is 0.1–1.0% for the

population aged 15–64 years (8). Maharaj, et al. reported that police referrals were three times more likely to be diagnosed with mental or behavioral disorders due to psychoactive substance (drugs and alcohol) use and less likely to be diagnosed with mood disorder (9).

Emergency Departments receive a high volume of patients presenting with acute psychosis or altered mental states, especially in settings where the availability of outpatient psychiatric care is limited. Seeking emergency care for acute psychosis is also associated with male gender, minority race, severe illness, homelessness, and less family support (10). Without an adequate medical screening evaluation, underlying medical causes may be missed, and patients mistakenly diagnosed as having a primary psychiatric process, resulting in inappropriate disposition to the psychiatric department without medical treatment (9).

Young and Rund discuss the potential interaction between pre-existing psychiatric disease and acute medical conditions, in which the medical presentation may be altered by psychiatric disease or by treatment complications. They suggest that laboratory testing of such patients should be considered based on the initial clinical evaluation (11). Richard and Gurr also discuss the duty of emergency physicians to differentiate between psychotic symptoms caused by general medical conditions and psychosis caused by a primary psychiatric disorder. They go on to note that an underlying medical cause is found in up to 20% of ED patients with acute psychosis (12). In patients with an underlying psychiatric disorder, an acute medical condition may precipitate an episode of acute psychosis (13). In psychotic patients presenting for medical chief complaints and those with known chronic medical conditions, medical evaluation is even more critical. Korn et al found that up to 62% of psychotic patients

presenting to the ED with medically based chief complaints or prior medical conditions require further evaluation in the ED before discharge (14). Patients at particular risk for underlying medical illness include the elderly, those with substance abuse, patients without a prior psychiatric history, and those with preexisting or new medical complaints. (15) (16).

There has been a disagreement regarding the diagnosis of acutely psychotic patients between emergency physicians and psychiatrists at many health care facilities (17). The underlying reason for this disagreement is likely multifactorial, but a common reason is incomplete evaluation by emergency physicians. Studies have shown that 56% of patients do not undergo mental status examination, and 20% of the time, there is incomplete documentation of the ED evaluation. This is despite the fact that 32% of psychotic patients have abnormal vitals (18). These gaps place these vulnerable patients at increased risk for morbidity and mortality. Major causes of death overall among psychiatric patients are the same as in the general population, except for those with suicidal tendencies (19). Thus medical causes of death are as at least as common in psychiatric patients as in any other person. In addition, while the psychotic patients may manifest their psychiatric disease by physical complaints or abnormal vitals, they are also less likely to be able to communicate or seek medical care effectively for their medical conditions.

Prevalence:

Prior research at MNH EMD shows that approximately 7% of patients presenting to the EMD overall are psychiatric patients, approximately a third of whom present for acute

psychosis(20), and this is similar to other published rates (21). Currently these patients are sent directly to the psychiatric department for evaluation and management without any baseline evaluation of vital signs, physical examination, or basic blood work to rule out an underlying emergency medical condition as a potentially treatable cause of their psychosis. Thus patients sometimes get admitted inappropriately to psychiatric department without necessary medical treatment.

2.0: PROBLEM STATEMENT

Most of the literature on protocols for the medical evaluation of ED patients presenting with psychosis is from high-resource settings where the local burden of disease is very different from our setting. The prevalence and range of medical disease in psychotic patients presenting to our setting is not known and this hinders our ability to develop a systematic diagnostic approach to these patients.

3.0 RATIONALE:

This study will provide essential information on the prevalence of medical disease in psychotic patients in a sub-Saharan African setting, and will facilitate the development of appropriate evaluation and management protocols for these patients. Identifying treatable medical conditions and ensuring proper disposition for acutely psychotic patients will improve patient care and decrease morbidity.

4.0 OBJECTIVES:

4.1 Broad Objective:

To determine proportion of patients presenting to the MNH EMD with acute psychosis who have abnormal findings on a standardized medical screening evaluation.

4.2 Specific Objectives:

1. To describe the basic demographics of patients presenting to MNH EMD with psychotic symptoms.
2. To determine the prevalence of known risk factors (as reported by patients and their friends/families) among psychotic patients presenting to the MNH EMD.
3. To determine the proportion of patients presenting to the MNH EMD with acute psychosis who have abnormal findings on physical exam.
4. To determine the proportion of patients presenting to the MNH EMD with acute psychosis who have abnormal findings on a standardized laboratory screening.

5.0 METHODOLOGY:

5.1 Study design: This was a 3-month prospective observational cohort study conducted at the Muhimbili National Hospital Emergency Medical Department (EMD), a tertiary care center with approximately 36,000 EMD visits per year. The Institutional Review Board of the Muhimbili University of Health and Allied Sciences approved the study protocol. We enrolled a convenience sample of 252 patients presenting with acute psychosis. Treating providers used a standard evaluation form to determine the presence of psychosis and to record data on history, physical exam, and the results of diagnostic testing.

5.2 Study population:

All patients presenting to the Muhimbili National Hospital EMD with acute psychosis

5.3 Study site:

The EMD at Muhimbili National Hospital, Dar es Salaam, Tanzania.

5.4 Inclusion criteria:

All patients presenting at MNH-EMD with acute psychotic symptoms.

5.5 Exclusion criteria:

Patients who had repeat visits during the study period were not re-enrolled in the study for the second and subsequent visits.

5.6 Recruitment of study participants:

Upon presentation of a patient with acute psychotic symptoms, triage personnel contacted research staff. Patients and/or their accompanying proxy were approached and offered the opportunity to participate in the study.

5.7 Data collection and instruments:

Treating physicians prospectively completed a standardized data collection form, including demographic data, vital signs, pertinent data from the history and physical examination, laboratory results, treatment delivered, and the final EMD diagnosis. All diagnostic and treatment decisions were made at the sole discretion of the treating physician. Data collected included basic demographic information, prior episodes, HPI, physical exam, vital signs, MSE, diagnostic testing and final EMD diagnosis. Telephone follow up was done at 1-3 month after enrollment to determine patient status. The study data were entered into an Excel database (Microsoft Corporation, Redmond, WA, USA) and analyzed with SAS (SAS Institute Inc., Cary, NC, USA).

5.8 Laboratory investigation and measurements:

The standard evaluation included a Random Blood Glucose (RBG), Rapid Diagnostic Test (RDT) for malaria and Determine test for HIV. Additional blood investigations included Full Blood Picture (FBP) Comprehensive Chemical Profile (CCP), venous blood gas, blood slide for malaria parasites. In addition, Toxoplasmosis, Syphilis, and Rubella screening were done if

rapid testing for HIV was positive. Additional tests were performed as indicated by the patient's clinical condition.

5.9 Data analysis

Descriptive statistics and SAS were used to report the number and proportion of patients presenting to the MNH EMD with acute psychosis and the proportion those patients with abnormal findings on the standardized medical screening examination. The Mann-Whitney U test, Fisher test and Chi Square test were used to compare continuous and categorical data respectively, with a p-value of 0.05 considered to represent a significant difference between groups.

5.10 Sampling Design

We enrolled a convenience sample of patients presenting to the EMD with acute psychosis at times when research personnel were available for enrollment. Sample size was calculated by using a formula from a textbook called Principle and Practice of Medical Statistics by Prof. Karim Hirji. Chapter 2, page 42. Taking 90% CI, where *N* is sample size, *d* is degree of precision and π is presumed prevalence

$N= (1.96/d)^2 \pi(1-\pi)$

$N = (1.96/0.05)^2 0.127(1-0.127)$

N=169.0304

N=170

5.11 Informed Consent and Ethical Issues

The patient and or family or accompanying proxy were informed of the study and offered the opportunity for the patient to participate. In cases where consent was denied, the patient received usual standard care as determined by the treating doctor. The study was explained to patients with alert mental status wishing to participate and they were asked to provide informed written consent. For patients with abnormal mental status, an accompanying proxy was allowed to provide consent. All data collected were treated with strict confidence and stored in locked cabinets and on encrypted computers. Clearance was obtained from the MUHAS research committee and permission to conduct the study obtained from the respective department.

6.0 RESULTS

Table 1 shows subject characteristics. The median age was 30, and 69% of subjects were male. Sixty-four percent reported a prior psychiatric history, and 54% were on psychiatric medication at the time of presentation. Only a minority of patients had a known pre-existing medical condition. Forty-five percent of patients reported substance use, and specific substances are listed below. A small percentage (6.7%) of psych patient were living alone .

Table 1. Patient Characteristics

	All (n=252)	Lab data available (n=206)
Age (range)	4.5-88	4.5-88
Median	30	30
Mean	32	32
Male	173 (69%)	142 (69%)
Psychiatric/medical history		
Psychiatric illness	161 (64%)	127 (62%)
On psychiatric medication	137 (54%)	110 (53%)
History of suicidal ideation	34 (14%)	30 (15%)
Diabetes mellitus	2 (0.8%)	2 (1.0%)
Recent trauma	5 (2.0%)	4 (1.9%)
Dementia	6 (2.4%)	6 (2.9%)
Cerebrovascular accident	1 (0.4%)	1 (0.5%)
HIV positive	5 (2.0%)	4 (1.9%)

Other chronic medical conditions	21 (8.3%)	18 (8.7%)
Social history		
Lives alone	17 (6.7%)	11 (5.3%)
Cigarette use	77 (30%)	61 (30%)
Cannabis	68 (27%)	55 (27%)
Alcohol	84 (33%)	67 (33%)
Heroin	8 (3.2%)	8 (3.9%)
Other drug use	2 (0.8%)	3 (1.5%)

Vitals were taken for 221 (88%) patients of 252 patients enrolled. There were 28 patients who did not get vitals, among whom 22 were too aggressive and 6 refused. In addition, there were 3 pediatric patients of age 4.5, 9 and 10 years of age who did not have blood pressure measured, as a pediatric cuff was not available, though the rest of their vitals were normal for age. On physical examination the most common positive finding among all systems were skin findings (11.1%) and these were mostly skin infections, bruises, cuts, lacerations and rashes.

Two patients had abnormal cardio-respiratory findings. One was a 23 year old male with a systolic murmur. He had normal vitals, normal GCS, a normal random blood glucose level, and he was asymptomatic medically. The second was a 34-year old male who had a crepitations on respiratory exam. He had normal vitals including temperature and oxygen saturation, normal GCS, normal random blood glucose level, and was asymptomatic.

Neurologic exam was abnormal in one patient who was altered with GCS of 9/15. This patient was found to be in DKA, and was diagnosed with new onset DM.

During Mental Status Evaluation, the most common abnormal findings were poor insight (73%), mood changes (64%) and speech changes (53%).

Table 2: Abnormal Physical Examination Findings

Finding	Number of patients with finding (% of all patients)
Skin	28 (11)
Cardio-respiratory	2 (0.8)
Central Nervous System	1 (0.4)
Other physical findings	2 (0.8)
Mental Status Examination	
Clothing	92 (37)
Grooming	85 (34)
Motor	110 (44)
Attention	123 (49)
Speech	134 (53)
Orientation	44 (18)
Memory	84 (33)
Eye contact	70 (28)
Attitude towards examiner	122 (48)

Affect	101 (40)
Mood	161 (64)
Hallucinations	122 (48)
Delusions	116 (46)
Insight	184 (73)

Table 2 shows patient examination findings. The most common physical finding was that of skin changes. Prominent MSE findings were poor insight (73%), hallucinations (48%) and delusions (46%).

Table 3

LABS	Number of patients (%)
Patients with any labs done	206 (82)
Patients with any labs results available	206 (82)
Patients with any abnormal labs	39 (19)
Patients with any clinically significant abnormal labs	27 (11)

Table 3 shows that 82% of the participants had labs done and at least some results available for analysis. Among the 206 patients for whom labs were done, 34 patients had some missing result. Missing labs were due to samples lost or results never reported by the laboratory system. Among the 46 patients (18%) who did not have labs done, the primary reasons were concern for staff safety with aggressive patients (25 patients) and patient refusal to have labs

drawn (8 patients). Other reasons included police refusal to remove handcuffs, absence of tubes to draw labs, and provider failure to order labs per protocol.

Overall, 19% percent of patients had any lab abnormality. Eleven percent of patients had lab abnormalities that were clinically significant.

Table 4: Abnormal laboratory findings by test

Test	Patients with test results available (% of total subjects)	Abnormal findings (% of tests performed)	Clinically important (% of tests performed)
Random blood glucose	206 (82)	3 (1.5)	3 (0.9)
Rapid HIV test	140 (56)	9 (6.4)	9 (6.4)
Blood gas analysis	31 (12)	1 (3.2)	1 (3.2)
Rapid malaria test	196 (78)	5 (2.5)	5 (2.5)
Blood smear for malaria	64 (259)	0 (0)	0 (0)
Full blood picture	139 (55)	16 (12)	4 (3)
Chemistry panel	117 (46)	11 (9)	7 (6)
Liver function tests	107 (42)	7 (7)	2 (2)
Syphilis test	5 (2)	1 (20)	1(20)
Rubella	8 (3)	1 (13)	1 (13)
Toxoplasmosis assay	10 (4)	1 (10)	1(10)

Table 4 shows that the most frequent labs done were rapid blood glucose for 206 (82%) patients followed by rapid malaria test for 196 (78%) patients and rapid HIV test for 140 (56%) patients. Out of all the labs done the highest rate of abnormal findings was Syphilis (20%), (1 test out of 5 tests done), followed by Full Blood Picture abnormalities of 12% (16 out 139 tested).

Three patients had abnormal blood glucose values, and 3 were clinically important. Two values were high enough to be clinically important, and the third one was 3.6mmol/dl and required treatment. The two hyperglycemic values were "HI" and 29.6mmol/dl. The patient with "HI" reading was a 42 year old male, known psych patient who was found "mute" by aunt, he became altered and was brought to EMD-MNH. He was taking his regular psychiatric medications and was otherwise well. On presentation, he was afebrile, hypotensive (92/57mmHg), tachycardic (119b/m), dyspnoeic with respiratory rate of 28/minute, hypoxic with a SpO2 of 95% on room air, and altered with a GCS of 9/15. He was diagnosed with new-onset DKA and was treated with IV fluids, IV insulin and IV potassium. He improved over several hours and was admitted to the medical ward. The second hyperglycemic patient was a 46 year old female who was a known diabetic and psychiatric patient who ran out of her diabetic medications. She was alert and had normal vitals and was given fluid bolus of 1 litre and admitted to the psychiatry service.

Full blood picture was done for 139 (55%) out of 252 subjects. Baseline anemia is common in Tanzania, and we observed that 16 patients had a hemoglobin level between 10-12 g/dl, while 3 patients had serum hemoglobin levels less than 10g/dl, with the lowest being 9.6g/dl.

Four patients had clinically important findings. The first was a 44year old female who was a known psychiatric patient brought in for aggressiveness. She had no history of substance use. Her vitals were all normal, with normal random blood sugar and no abnormal physical findings. Her MSE was abnormal; she had delusions, flight of ideas, hallucinations, poor insight and she was unkempt, aggressive and confused. She was given Haloperidol and Diazepam intramuscularly for further evaluation. Her rapid malaria test was negative, and chemistry panel and liver enzymes were normal. Full blood picture revealed very low platelets of 35.9 K/UL and moderate anemia of 10.4g/dl.

The second was a 42 year old female, known psychiatric patient, with a history of weekly alcohol use brought for abnormal behaviour. Her vitals, blood sugar, and physical exam were normal. MSE findings included unkempt appearance, agitation, suspicious affect and selectively mutism. Rapid malaria test was negative, blood slide for malaria was negative and liver enzymes were lost in the laboratory. Her full blood picture showed a serum hemoglobin of 9.83g/dl and very low platelets of 55.9K/uL.

Third was a middle age male, known psychiatric patient, brought for abnormal behavior, with normal vitals except for tachycardia of 115 beats per minute. His physical exam was notable for a few crepitations on auscultation of lungs, and was otherwise normal. His MSE was normal; he was cooperative, with normal psychomotor findings, normal mood, with no hallucinations, no delusions, and good insight. He had no history of substance use and he had normal blood sugar levels. On full blood picture, his total white blood cells, hemoglobin, hematocrit were normal, with slight elevation of lymphocytes (53.8%) and significantly low

platelets of 35.9K/UL. His rapid malaria and HIV test were negative. His liver enzymes were normal.

The fourth patient was a 51 year old male, known psychiatric patient brought for abnormal behavior. He had a history of trauma one month prior. His vitals and physical exam was normal. Rapid malaria and HIV tests were negative. Blood glucose, chemistry and liver enzymes were normal. Full blood picture showed severe thrombocytosis of 1,236K/UL and slight lymphocytosis at 55.3%. The patient drank alcohol socially.

Liver function testing was abnormal and clinically important for two subjects. The first was a 44 year old male, known HIV patient with no known psychiatric history with abnormal behavior of recent onset. His vitals, MSE and random sugar were normal. On physical exam, rashes were observed to be the only abnormal finding. He reported occasional tobacco, cannabis, and cocaine. His alkaline phosphatase (389 U/L) and GGT (265U/L) were significantly elevated. Potassium was slightly elevated (5.6mmol/L) and his complete blood count showed hemoglobin of 9.63g/dL and platelets of 132K, all slightly low. The second patient was a 28 year old female, known psychiatric patient with normal vitals and normal sugar levels. On physical exam she had an extremity wound and no other findings. On MSE she presented disheveled, aggressive, agitated, and with impaired memory and poor insight. The only liver enzyme elevated was alkaline phosphatase of 258 U/L. Her chlorine was slightly elevated to 111mmol/L and her total white cell count was 14.4U/L.

Table 5: Substance abuse among all study subjects

Substance use	Number of participants (%)
Tobacco	77 (31)
Cannabis	67 (27)
Alcohol	83 (33)
Heroin	8 (3)
Other substances	3 (1)

Table 5 shows the frequency of substance abuse by patients the most frequent being tobacco (31%) followed by alcohol (33%) and Cannabis (27%). Forty five percent of patients reported some substance use. Substance use being a risk factor for psychosis, could explain the high prevalence of psychosis among our population.

Out of 252 patients, 212 (84%) patients had their phone numbers in our records. Based on telephone follow-up all patients were alive at one month after EMD enrollment. The following is table showing the characteristics of patients lost to follow up (N=41) is similar to the overall cohort but shows 7% more lab abnormality than the overall cohort. Follow up for this patient would have helped us to rule out morbidity and mortality.

	Overall cohort (N=252)	Lost to follow up (N=41)
Age (median)	30	30
Male	173 (69%)	27 (66%)
Known psych illness	137 (54%)	23 (56%)
On anti-psychotics	114 (45%)	18 (44%)
Any exam abnormality	44 (17%)	5 (12%)
Any lab abnormality	39 (15%)	9 (22%)

7.0 DISCUSSION

Prior literature on patients presenting with acute psychosis for emergency care in high-resource settings has shown a relatively low rate of abnormal lab findings suggesting underlying medical illness (1). Given the distinct regional disease burden, the rate of clinically important abnormal labs in psychotic patients in Sub-Saharan Africa may be distinct from other areas.

To our knowledge, this is the first study done in East Africa looking at the emergency department evaluation of psychotic patients (15). The majority of patients in our study were male and the median age was 30. The male predominance reflects the overall ED population and this and the median age are consistent with prior literature on psychotic patients. (22).

Our study showed that 63% of patients were known psychiatric patients and 54% were on anti-psychotic medication.

Thirty-three percent of our total study population reported substance use, and this is similar to the rate of substance use reported in prior studies on acutely psychotic patients (23). For example, a 2013 study done in Norway reported a substance use rate of 56% among patients presenting with psychosis (23) Among subjects reporting substance use in our study, the most common substances reported were alcohol, cigarettes and cannabis. One third of our study population reported using alcohol and cigarettes, and a quarter reported cannabis use. Other drugs reported included cocaine and heroin.

Non-psychiatric co-morbidities reported were dementia (2.3%), HIV (1.9%), diabetes mellitus (0.8%) and a history of cerebrovascular accident (0.4%). Other chronic medical conditions included epilepsy, hypertension, asthma, etc. Overall, 8% (21 out of 252) of our study population reported a chronic medical condition at presentation, and 1.9% reported recent trauma.

Mental status evaluation was often positive, identifying hallucinations (48%), delusions (46%) and poor insight (73%). Physical exam also identified multiple abnormalities. The most common abnormal physical exam findings were skin findings (11%).

Sixty five percent of our patients had their labs done and 19% of the labs were abnormal. Of particular concern, our data showed that 9% of patients on whom chemistry panels were done had abnormalities, and 6% (9 out of 140) of our screened patients had rapid HIV test positive. All of these were new diagnoses of HIV.

Our results confirm prior findings of an a high prevalence of HIV among patients with severe mental illness in sub-Saharan Africa(23). There is need for more research to be done to characterize the HIV prevalence among psychiatric patients in Tanzania, and to evaluate the impact of substance abuse on their sero-conversion, as both psychiatric patients and substance users are more prone to high risk behaviors(8),(24) .

Contrary to other prior research in higher-resource settings, our study suggests that there may be underlying medical conditions in acutely psychotic patients that will not be detected by history or physical exam. While one study of 604 acutely psychotic patients in South Africa

showed that patients with abnormal laboratory studies had abnormalities evident on history or physical (1), we found clinically significant laboratory abnormalities in patients without corresponding historical or physical findings. In prior U.S. studies of patients presenting to the ED with psychiatric chief complaints with benign histories and normal physical exams there was a very low prevalence of clinically significant laboratory findings (25),(21).

In our study, basic diagnostic investigations identified several medical problems that could be addressed and treated, including pneumonia, hypoglycemia, hyperglycemia and malaria.

Contrary to prior research in other settings (25),(1), our results suggest that medical patients presenting to the emergency department with psychosis have a significant rate of laboratory and exam abnormalities, some associated with potentially life-threatening conditions.

8.0 LIMITATIONS

1. Some lab results were lost between the lab, EMD and psychiatric departments. This could have led to missed important lab findings. However, we doubt that this produced systematic bias as there should be no association between which labs were lost and disease characteristics.
2. The research time was restricted to 3 months. This limited the size of our cohort and means that our results may have been influenced by the impact of seasonal variation on medical illness. However, our sample size as calculated from the standard deviations derived from prior literature, was appropriately powered for the prevalence of medical illness found.
3. Our setting may not be generalizable because MNH is a national referral hospital with one of the rare psychiatric inpatient facilities with qualified psychiatrists. A large number of patients are referred for its specialist care, and may not reflect the psychiatric population presenting to a first-level facility. However, our data accurately identify a range of medical pathologies that may be present in acutely psychotic patients and provide relevant background data for studies in other settings.
4. Lab results were not available in the some agitated patients and this might create systematic bias if degree of agitation is associated with a higher rate of abnormal lab findings. In this case, we may have underestimated the prevalence of medical disease.

9.0 CONCLUSION:

Our results show important medical conditions identified up through history, physical exam and lab investigations. We found a significant rate of medical abnormalities overall with a notable percentage of very serious disease, including HIV, DKA and hypoglycemia. Of note, some of the patients with laboratory abnormalities did not have physical exam abnormalities. In our study, history and physical exam were not adequate to diagnose all underlying medical pathology in psychotic patients.

10.0 RECOMMENDATION

Acutely psychotic patients should be properly evaluated with vitals and physical examination to rule out medical causes of acute psychosis to improve patient outcome. All acutely psychotic patients need to be evaluated with history, physical exam including MSE, and focused lab evaluation.

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APPENDICES

Appendix 1- Data collection form

MEDICAL EVALUATION FORMS FOR PSYCHIATRIC PATIENTS

DATE: **MUHIMBILI NATIONAL HOSPITAL-EMD**

NAME: _____ **AGE:** _____
ADDRESS: _____ **GENDER: M /F**

Known psych patient: Yes / No	Registration No.:
Lives with:	Facility treated previously:

VITALS				
TIME →				
BP				
PR				
RR				
TEMP				
SP02 (RA/O2)				
RBG				

History by (relation to the patient):
_____
Phone No._____

Complains:
_____
_____
_____
_____
_____

SKIN:
Soft tissue infections
Wounds
Jaundice
Rash
Needle marks

CVS / RS
Murmur
RR
Chest rise
Air entry
Added sounds:

Other findings:

CNS
AMS
Focal neurological deficit
Pupils
GCS-E ___V___ M___ = _____
Meningismus

Past Psych history:

Number of episodes:

Number of admissions:

Suicidal history:

Medications:

Substance usage	Usage	Number per day
Cigarette	**Daily/weekly/socially**	
Cannabis	**Daily/weekly/socially**	
Alcohol	**Daily/weekly/socially**	
Heroin	**Daily/weekly/socially**	

MEDICAL PROBLEMS	
	DIABETES
	RECENT TRAUMA
	DEMENTIA
	CVA
	OTHERS-SPECIFY

IF YOU HAVE ANY QUERY OR QUESTION-PLEASE CONTACT DR. SHAINA.G. YUSUF 0712132485

Appendix 2- Normal lab values according to CPL at MNH

FULL BLOOD PICTURE / COMPLETE BLOOD COUNT	
WBC	4-11 K/UL
Neutrophils	37-80%
Lymphocytes	10-50%
Monocytes	0-12%
Eosinophils	0-7.6%
Basophils	0-2.56%
Hemoglobin	12.6-18 g/Dl
Hematocrit	37.7-53.7%
Mean c volume (MCV)	80.9-97fL
(MCH)	27.6-31.2pg
Platelets	142-424 K/UL
LIVER FUNCTION TEST	

Alb/Glob	1.0-999999.0
AlbG	35-50g/L
AlkP	40-150U/L
ALT	0-55U/L
AST	5-34U/L
BilD	0-8.6umol/L
BilT	3.4-20.5umol/L
GGT	9-36U/L
Globulin	26-44g/L
Total Protein	60-80g/L
CHEMISTRY	
Sodium (Na2+)	136-145mmol/L
Potassium (K+)	3.5-5.1mmol/L
Chloride (Cl-)	98-107mmol/L
Calcium (Ca2+)	

Urea	2.5-6.7mmol/L
Creatinine	
CO2	
BLOOD GASES	
pH	
pCO2	
pO2	
HCO3	
Base Excess	
Lactate	
Hematocrit	