

# Mental health capacity building in northern Sierra Leone: lessons learned and issues raised

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## **Abstract**

**Background:** For most low- and middle-income countries, mental health remains a neglected area, despite the recognized burden associated with neuropsychiatric conditions and the inextricable link to other public health priorities.

**Aims:** To describe the results of a free out-patient mental health program delivered by non-specialist health workers in Makeni (Sierra Leone) between July 2008 and May 2012.

**Methods:** A nurse and two counselors completed an eight-week training course focused on the identification and management of seven priority conditions: psychosis, bipolar disorder, depression, mental disorders due to medical conditions, developmental and behavioral disorders, alcohol and drug use disorders, and dementia. The WHO recommendations on basic mental health care packages were followed to establish treatment for each condition.

**Results:** Five hundred and forty-nine patients were assessed and diagnosed as suffering from psychotic disorders (n=295, 53.7%), manic episodes (n=69, 12.5%), depressive episodes (n=53, 9.6%), drug use disorders (n=182, 33.1%), dementia (n=30, 5.4%), mental disorders due to medical conditions (n=39, 7.1%), and developmental disorders (n=46, 8.3%). Four hundred and seventeen patients received pharmacological therapy and 70.7% of them were rated as much or very much improved. 93.4% of those who could not be offered medication dropped out of the program after the first visit.

**Conclusions:** The identification and treatment of mental disorders must be considered an urgent public health priority in low- and middle-income countries. Trained primary health workers can deliver safe and effective treatment for mental disorders, this being a feasible alternative to ease the scarcity of mental health specialists in developing countries.

**Declaration of interest:** none.

## Introduction

Mental disorders are an important cause of long-term disability and dependency, with the 2005 WHO report attributing 31.7% of all years lived-with-disability to neuropsychiatric conditions<sup>1</sup>. The five major contributors to this total are unipolar depression (11.8%), alcohol-use disorder (3.3%), schizophrenia (2.8%), bipolar depression (2.4%), and dementia (1.6%)<sup>2</sup>. This significant burden of mental, neurological, and substance use disorders affects not only more developed countries but also those which are poorer and less well resourced. However, mental health remains a low priority in most low- and middle-income countries (LMIC), which tend to prioritize the control and eradication of infectious diseases, as well as reproductive, maternal, and child health<sup>3</sup>. Investment in mental health is often perceived in these countries as having an unaffordable opportunity cost. As a result, there is an astonishingly large treatment gap for people with neuropsychiatric disorders in LMIC<sup>4</sup>. While at least two-thirds of all persons with mental illnesses go untreated worldwide, the figure for low-resource countries exceeds 90%<sup>5</sup>.

There is also a conspicuous lack of published literature evaluating the implementation of mental health care programs in low-income countries<sup>6</sup>. Fewer than 1% of identified trials worldwide that aimed to treat or prevent schizophrenia, depression, developmental disabilities, or alcohol-use disorder were conducted in low-income countries, and of these about two-thirds come from China<sup>7</sup>. In the case of sub-Saharan Africa the vast majority of published data from mental health research (nearly 70%) is focused on South Africa<sup>8,9</sup>, an emerging country that is not representative of the region as a whole. Sierra Leone, in the sub-Saharan area, occupies one of the lowest positions in the Human Development Index drawn up in 2008<sup>10</sup>, it being ranked 128<sup>th</sup> among 135 countries for which a Human Poverty Index was calculated<sup>10</sup>. The proportion of its population below the poverty line of 1.25 USD per day is estimated at 47.7%. The country has recently emerged from a brutal, decade-long civil war during which civilians were victims of widespread violence, including amputation of body parts, rape, and forced labor<sup>11</sup>. After this devastating conflict, the health system, like all public systems, was in tatters. Nevertheless, the country has managed to implement a free healthcare plan for pregnant women, breastfeeding mothers, and children younger than five years, that has been proposed as an example for LMIC<sup>12</sup>. As countries such as Sierra Leone continue to rebuild after conflicts, the need to develop services for all from

the ground up may offer a unique window of opportunity for the inclusion of persons suffering from mental disorders into the health system.

Locally-conducted research is crucial to provide more direct evidence regarding cost-effective interventions that may help low-income countries use their limited financial and human resources for mental health as effectively as possible<sup>13</sup>. This paper describes the results of a free out-patient mental health program that was run in Makeni (Sierra Leone) between July 2008 and May 2012. The program was delivered by trained non-specialist health workers integrated into the existing healthcare system.

## MATERIAL AND METHODS

### **Intervention site**

At present there is not a single psychiatrist in Sierra Leone, and only occasionally is there input from foreign professionals via NGOs. The country has only one facility for treating mental health patients on a long-term basis using Western medicine, the Kissy Mental Hospital in Freetown, the capital of Sierra Leone. Makeni, located approximately 137 km east of Freetown, is the fifth largest city in Sierra Leone and is the economic center of the Northern Province. It has a current estimated population of 109,112 inhabitants and is the capital of the Bombali District, whose estimated population is 439,319.

The Holy Spirit Hospital is linked to the University of Makeni, and both form part of the Catholic Diocese of Makeni. The hospital has a 70-bed admission ward and treats 300 in-patients and 1200 out-patients per month. It has three general doctors and 50 nurses and support staff. The mental health program was initiated in July 2008 as a free out-patient program open to patients from Makeni and its surrounding district. The program staff comprised a nurse and two counselors, who underwent an eight-week training course, run by a volunteer psychiatrist, focusing on the identification and management of mental disorders. Seven priority conditions were considered: depression, psychosis, bipolar disorder, mental disorders due to medical conditions (mainly epilepsy, stroke and brain injury), developmental and behavioral disorders in children and adolescents, alcohol and drug use disorders, and dementia. These areas were chosen because they represent a considerable burden in terms of mortality, morbidity, or disability, have high economic costs, and are often associated with violations of human rights<sup>14,15</sup>. Patel et al.<sup>14</sup>, as well as the Mental Health Gap Action Program (mhGAP) published by the WHO in 2010, recommend the use of similar

global diagnostic classes in order to increase the validity of the diagnostic process, since non-specialist health workers generally find it easier to differentiate *between* these major classes of disorders (e.g., schizophrenic disorders versus affective disorders) than *within* classes of disorders (e.g., schizophrenic disorders versus schizoaffective disorders); the latter would, of course, allow the use of more complicated diagnostic classifications such as DSM-IV-TR or ICD-10.

The WHO recommendations on basic mental health care packages were followed in order to establish treatment for each diagnostic condition<sup>16</sup>. This means outpatient-based treatment of schizophrenia and bipolar disorder with first-generation antipsychotic drugs and adjuvant psychosocial treatment, and proactive care of depression with generic selective serotonin reuptake inhibitors or tricyclic antidepressants and maintenance treatment of recurrent episodes. Mood stabilizing drugs such as lithium or valproate were not administered for bipolar disorders due to the lack of laboratory facilities for monitoring these drugs. Anticholinergic agents were not routinely prescribed but were given to those patients who developed extrapyramidal side effects. Patients were asked to attend the program accompanied by a family member, who was responsible for medication administration. Pharmacological treatment was provided solely by the nurse for an initial period of three days, after which the patient was asked to re-contact the program. If no severe adverse effect was detected, medication was provided for a maximum period of one month. All patients were asked to contact the program for follow-up assessment at least monthly. Brief psychological interventions, based on motivational techniques for alcohol and other drug use disorders, as well as psycho-education about mental illness, promotion of treatment adherence, and support to families and caregivers for the other conditions, were offered by the two counselors. The cost of the program was borne by 1) CAFOD (the Overseas Development and Relief Agency of the Catholic Church in England and Wales), which provided medication and covered the salary of the two counselors, and 2) the Holy Spirit Hospital/University of Makeni, which paid the nurse's salary and provided a hospital annex area from which the program could be run.

### **Data collection**

A specific form was developed to facilitate the assessment of patients (see Supplementary material). This covered socio-demographic information (age, gender, completed years of education, marital status, and employment), service utilization

(previous contact with primary healthcare providers, traditional healers, and hospital services; medication use), and clinical information (alcohol and drug consumption, family psychiatric history, age at onset of psychiatric symptoms, and psychopathological assessment). All patients were initially assessed by the nurse and then independently reassessed by one of the counselors. Any differences in diagnostic opinion were discussed by the three members of the program team until a consensus was reached.

Clinical changes were evaluated with the Clinical Global Impression — Improvement Scale (CGI-I), a 7-point scale that assesses how much the patient's illness has improved or worsened relative to baseline. The patient's status is rated as 1, very much improved; 2, much improved; 3, minimally improved; 4, no change; 5, minimally worse; 6, much worse; or 7, very much worse.

Direct supervision on diagnoses and treatment procedures was provided for four weeks a year by different volunteer psychiatrists. All case records obtained during the previous year were examined during this supervision period in order to ensure optimal data collection, as well as to supervise the establishment of diagnoses. Informed consent was not available due to the characteristics of the environment, but the Institutional Review Board of the Adler School of Professional Psychology evaluated the project and did approve the analysis of data and presentation of results. All analyses were conducted in compliance with the principles set out in the Declaration of Helsinki (2008).

### **Data analysis**

A database was built between July 2011 and May 2012 reviewing all available records. Descriptive statistics were applied to the socio-demographic and clinical characteristics of the sample. Gender differences and differences between diagnostic conditions were explored using  $\chi^2$  tests for categorical variables and independent samples *t* tests for continuous variables. These analyses were performed with SPSS v.19 (SPSS Inc., Chicago, IL) and significance thresholds were set at  $p < 0.05$ , two-tailed.

### **RESULTS**

Five hundred and forty-nine patients (327 males and 227 females) were assessed between July 2008 and May 2012 (see Figure 1). Men were significantly younger,

tended to be single, reported a higher mean educational level, and were more likely to have a history of nicotine, alcohol, or cannabis abuse/dependence. Agitation and hallucinations were more common among men than women, whereas the latter reported more affective symptoms (from both the depressive and manic poles), loss of appetite, and a positive family psychiatric history (see Table 1).

#### Insert Table 1

The main psychiatric symptoms reported were agitation (76.8%); disorganized behavior (74.4%); insomnia (70.8%); heteroaggressive behavior (69.2%); hallucinations (52%); delusions (38.2%); loss of appetite (25%); depressive mood (15.8%), which included low mood, hopelessness, helplessness, worthlessness, loss of energy, and loss of interest in pleasurable activities; manic mood (12.5%), including elevated or irritable mood, expanded self-esteem, pressured speech, reduced need of sleep, increased distractibility, racing thoughts, and hyperactivity; and cognitive dysfunctions (10.0%), including disorientation, memory loss, difficulties with judgment, reasoning and understanding, and impaired organizational and language skills. Self-aggressive behavior, including suicide attempts and self-injurious behavior, was present in ten patients (1.8%).

The main psychiatric diagnoses were psychotic disorders (n=295, 53.7%), manic episodes (n=69, 12.5%), depressive episodes (n=53, 9.6%), substance use disorders (n=182, 33.1%), dementia (n=30, 5.4%), mental disorders due to medical conditions (n=39, 7.1%), and developmental disorders (n=46, 8.3%). Although not included in the seven priority clinical conditions, 12 patients received a diagnosis of an anxiety disorder (post-traumatic stress disorder (PTSD) n=9, panic disorder n=2, obsessive-compulsive disorder (OCD) n=1). Socio-demographic and clinical differences between diagnoses are described in Table 2. While psychotic and substance use disorders were significantly more common among men, women presented significantly higher rates of affective episodes (manic and depressive) and dementia.

#### Insert Table 2

Pharmacological treatment was recommended in accordance with WHO criteria and, when available, was provided free to all patients (see Table 3 for specific drug prescriptions). Four hundred and seventeen patients received pharmacological therapy,

while in 123 cases medication was prescribed but not available because of a run-off medication period in the program. In nine cases, pharmacological treatment was not considered necessary and some kind of counseling was implemented. Patients receiving pharmacological treatment attended the program for  $6.0 \pm 8.2$  months (range, 0 to 42), while for those who were not offered medication the mean period of adherence to the program was  $0.1 \pm 0.8$  months ( $t=-8.1$ ;  $p<0.001$ ). Seventy of the patients receiving pharmacological treatment (16.7%) dropped out of the program after the first visit, while the corresponding figure for those who could not be offered medication was 115 of 123 (93.4%) ( $X^2=245.04$ ,  $p<0.001$ ). Two hundred and ninety-five of the patients receiving medication (70.7%) were rated as much or very much improved, whereas no patients achieved these ratings in the group not receiving medication.

### Insert Table 3

Three hundred and eighty-nine patients (70.8%) reported having visited a traditional healer before contacting the mental health program. The percentage was significantly higher among women (77.1% vs. 66.5% in men) ( $X^2=8.2$ ,  $p<0.01$ ). Regarding referral networks, 124 patients were referred to the mental health program by their family doctor (22.7%), while the remainder asked for help under their own initiative after having heard about the mental health program through other members of their communities.

## DISCUSSION

This is the first description of the results of a mental health program designed and implemented in one of the world's poorest countries, Sierra Leone, where not a single psychiatrist is available. Our results add to the emerging body of evidence showing that trained primary health workers can deliver safe and effective treatment for mental disorders by using low-cost pharmacological strategies and brief psychological interventions within a functioning primary healthcare system<sup>17-20</sup>.

Most of the patients who were seen by the program presented severe mental disorders (psychotic disorders, manic episodes, severe depressive episodes), with the main reason for attending being behavioral disturbances (such as psychomotor agitation, heteroaggressive or disorganized behavior) that were having a significant impact on their environment. This is consistent with a previous report by Gesler and Nahim<sup>21</sup> concerning 407 patients treated at the Kissy Mental Hospital in Freetown. These authors



found that 79.5% of in-patients and 62.8% of out-patients were diagnosed as psychotic, suggesting that in African cultures it is only individuals with severe and disruptive forms of mental disorders who seek treatment based on Western medicine. Anxiety disorders, which together with depressive disorders are the most commonly observed psychiatric condition<sup>22</sup>, were highly under-represented in our sample. In the future it would therefore be necessary to design programs that are able to detect and offer treatment to people with mental disorders that are not accompanied by severe behavioral disturbances, but which nonetheless produce significant distress and functional impairment in the patient<sup>23</sup>.

Our results also highlight the fact that when patients with severe mental disorders are not offered medication there is a high risk that they will drop out of psychiatric care. By contrast, when some treatment is provided, help-seeking behavior is strengthened and this results in a greater demand for services<sup>9</sup>. Consequently, an adequate supply of psychotropic medication at primary healthcare level is an essential first step in the process of decentralization and the reintegration into society of users with severe mental disorders<sup>9</sup>. To this end, campaigns are required to raise awareness among donor agencies and policy makers in LMIC of the need for a sufficient and constant supply of psychotropic medication. The WHO Mental Health Gap Action Program (mhGAP) estimated the cost of the basic mental health care package for the seven most prevalent neuropsychiatric conditions to be US\$ 3-4 per head of population per year in sub-Saharan Africa<sup>15</sup>. Treatments for common mental disorders are about as cost-effective as antiretroviral treatments for HIV/AIDS, secondary prevention of hypertension, or glyceemic control for diabetes<sup>24</sup>, and that is before taking into account the other economic benefits of mental health care such as reductions in inappropriate use of health care, absence from work due to sickness, and premature mortality, which could even outweigh the investment costs<sup>25</sup>. Furthermore, non-economic criteria, such as equitable access to health care, human rights protection, and poverty reduction might be at least as important within the broader process of setting priorities in mental health<sup>26</sup>. A substantial number of our patients, especially women, sought help from traditional healers before contacting our Western mental health program. These findings are consistent with previous data from Sierra Leone reported by Gesler and Nahim<sup>21</sup>, who found that 35.5% of in-patients and 65.2% of out-patients attending the Kissy Mental Hospital had previously contacted a traditional healer. Given the enormous shortage of skilled mental health human resources in Africa and the great inequities in their

distribution, some authors have argued that traditional healers might play a role in the mental health care system alongside biomedical providers, although no consensus has been reached on this issue<sup>27,28</sup>.

Our data should be interpreted in the light of several limitations. Firstly, Sierra Leone might not be representative of other low- and middle-income countries in other areas of the world. Therefore, more locally conducted research is needed in order to build knowledge about countries that, for example, have been exposed not to armed conflicts but to other poverty-maintaining factors. Secondly, patient clinical outcomes were evaluated solely by means of the CGI-Improvement Scale, and no global outcome data were available. In this regard, determining the real efficacy of the program would require more detailed information about patients' ability to reintegrate within their family, work, and social contexts. Thirdly, there is a need for objective measures of the quality and quantity of supervision required to enable adequate delivery of mental health care by primary care workers. Establishing these measures would require more complex experimental interventions than the present observational design. Nonetheless, this is a key issue that needs to be addressed, not only for determining the validity and true applicability of primary care worker-led mental health programs, but also for clarifying the role to be played by specialist staff in these programs.

The ratio of burden to available resources for mental health care in LMIC is extremely inequitable, perhaps one of the worst among all major health domains<sup>5</sup>. However, since mental disorders are so inextricably linked to other public health priorities<sup>29</sup> (such as HIV/AIDS, maternal and child health, and diabetes) it is increasingly clear that there can be “no health without mental health”<sup>30</sup>. Effective, locally feasible, and affordable treatments for mental disorders do exist in developing countries<sup>7</sup>, but in order to take these further, common mental disorders need to be considered alongside other diseases associated with poverty so as to attract attention from health policy-makers and donors. However, this is not just an economic question. Government commitment on the need for a mental health policy and legislation, building mental health literacy, and implementing strategies for combating stigma and discrimination for the whole population are also critically important<sup>9</sup>. Given the scarcity of mental health specialists, one option for developing countries might be to decentralize and integrate mental health care into routine primary healthcare programs that are built around collaboration between non-specialist and specialist health workers. However, more studies are needed on the benefits, the human resources required, and the costs of such interventions, since

current competing priorities and budgetary constraints force resources to be targeted at cost-effective care and prevention strategies for which there is credible evidence of effectiveness.

**Authors' contribution:** Pino Alonso, Brian Price, Carmen Valle and Joseph A. Turay have substantially contributed to the design of the project. Abdul R. Conteh, Patrick E. Turay and Lourdes Paton have significantly contributed to the execution of the project, as well as to the analysis and interpretation of the results. Pino Alonso and Brian Price have been responsible for drafting the article, and all the other authors have critically revised it and they have all read and approved the final version of the manuscript for publication.

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The authors declare that they have no conflict of interest.

## References

1. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med* 2006; **3**(11): e442.
2. Murray CJL, Lopez AD, eds. The global burden of disease and injury series, volume 1: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020. Cambridge, MA, USA: Harvard University Press, 1996.
3. Eaton J, McCay L, Semrau M, Chatterjee S, Baingana F, Araya R, et al. Scale up of services for mental health in low-income and middle-income countries. *Lancet* 2011; **378**(9802):1592-603.
4. Kohn R, Saxena S, Levav I, Saraceno B. The treatment gap in mental health care. *Bull World Health Organ* 2004; **82**(11):858-66.
5. Wang PS, Aguilar-Gaxiola S, Alonso J, Angermeyer MC, Borges G, Bromet EJ, et al. Worldwide use of mental health services for anxiety, mood, and substance disorders: Results from 17 countries in the WHO world mental health (WMH) surveys. *Lancet* 2007; **370**(9590):841-50.
6. Patel V, Kim YR. Contribution of low- and middle-income countries to research published in leading general psychiatry journals, 2002-2004. *Br J Psychiatry* 2007; **190**:77-8.
7. Patel V, Araya R, Chatterjee S, Chisholm D, Cohen A, De Silva M, et al. Treatment and prevention of mental disorders in low-income and middle-income countries. *Lancet* 2007; **370**(9591):991-1005.
8. Hanlon C, Wondimagegn D, Alem A. Lessons learned in developing community mental health care in Africa. *World Psychiatry* 2010; **9**(3):185-9.
9. Petersen I, Ssebunnya J, Bhana A, Baillie K. Lessons from case studies of integrating mental health into primary health care in South Africa and Uganda. *Int J Ment Health Syst* 2011; **15**: 5:8.
10. UNDP. Human development report: United Nations Development Program., 2009.
11. Gberi L. A dirty war in West Africa: The RUF and the destruction of Sierra Leone. London: Hurst & Company, 2005.
12. Donnelly J. How did Sierra Leone provide free health care? *Lancet* 2011; **377**(9775):1393-6.
13. Yasamy MT, Maulik PK, Tomlinson M, Lund C, Van Ommeren M, Saxena S. Responsible governance for mental health research in low resource countries. *PLoS Med* 2011; **8**(11):e1001126.
14. Patel V, Thornicroft G. Packages of care for mental, neurological, and substance use disorders in low- and middle-income countries: PLoS Medicine Series. *PLoS Med* 2009; **6**(10):e1000160.
15. WHO. mhGAP Intervention Guide for mental, neurological and substance use disorders in non-specialized health settings. Geneva: World Health Organization, 2010.
16. Dua T, Barbui C, Clark N, Fleischmann A, Poznyak V, van Ommeren M, et al. Evidence-based guidelines for mental, neurological, and substance use disorders in low- and middle-income countries: summary of WHO recommendations. *PLoS Med* 2011; **8**(11):e1001122.
17. Thara R, Padmavati R, Aynkran JR, John S. Community mental health in India: A rethink. *Int J Ment Health Syst* 2008; **2**(1):11.
18. Jenkins R, Kiima D, Njenga F, Okonji M, Kingora J, Kathuku D, et al. Integration of mental health into primary care in Kenya. *World Psychiatry* 2010; **9**(2):118-20.
19. Rahman A, Malik A, Sikander S, Roberts C, Creed F. Cognitive behaviour therapy-based intervention by community health workers for mothers with depression and their infants in rural Pakistan: a cluster-randomised controlled trial. *Lancet* 2008; **372**(9642):902-9.
20. Patel V. The future of psychiatry in low- and middle-income countries. *Psychol Med* 2009; **39**(11):1759-62.
21. Gesler WM, Nahim EA. Client characteristics at Kissy Mental Hospital, Freetown, Sierra Leone. *Soc Sci Med* 1984; **18**(10):819-25.
22. Ormel J, VonKorff M, Ustun TB, Pini S, Korten A, Oldehinkel T. Common mental disorders and disability across cultures. Results from the WHO Collaborative Study on Psychological Problems in General Health Care. *JAMA* 1994; **272**(22):1741-8.
23. Patel V, Maj M, Flisher AJ, De Silva MJ, Koschorke M, Prince M. Reducing the treatment gap for mental disorders: a WPA survey. *World Psychiatry* 2010; **9**(3):169-76.
24. Group LGMH. Global Mental Health 6. Scale up services for mental disorders: a call for action. 2007.
25. Rupp A. The economic consequences of not treating depression. *Br J Psychiatry Suppl.* 1995; **27**:29-33
26. Lund C, De Silva M, Plagerson S, Cooper S, Chisholm D, Das J, et al. Poverty and mental disorders: breaking the cycle in low-income and middle-income countries. *Lancet* 2011; **378**(9801):1502-14.
27. Meissner O. The traditional healer as part of the primary health care team? *S Afr Med J* 2004; **94**(11):901-2.

28. Patel V. Traditional healers for mental health care in Africa. *Glob Health Action* 2011; **4**.
29. Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. *Lancet* 2007; **370**(9590):859-77.
30. WHO. Mental health: facing the challenges, building solutions. Report from the WHO European Ministerial Conference. Copenhagen, Denmark: WHO Regional Office for Europe. 2005.

Figure 1. Number of patients assessed by the mental health program between July 2008 and May 2012.

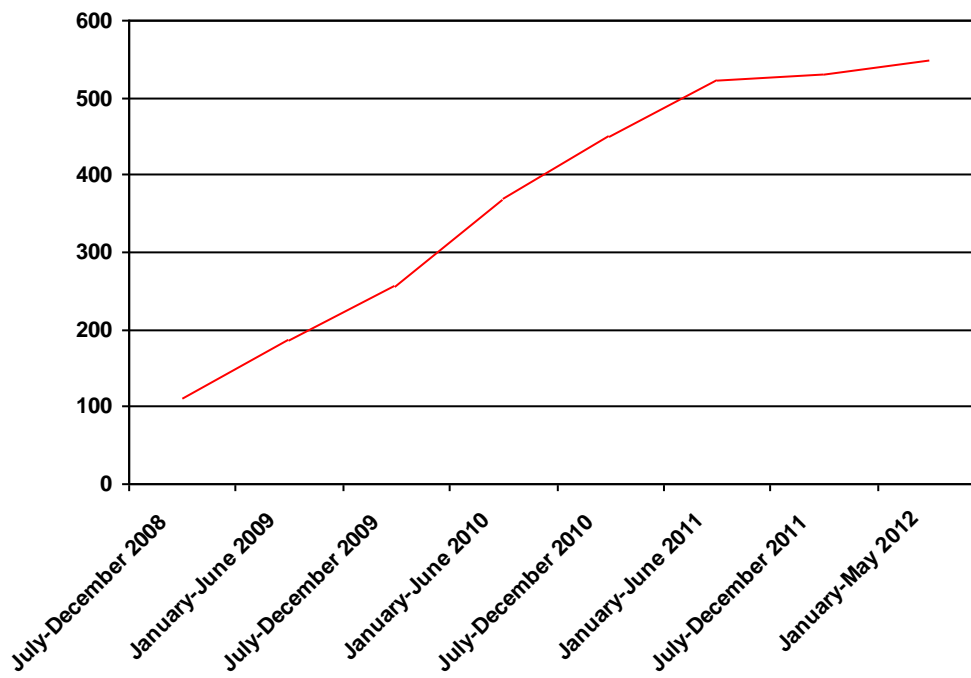


Table 1. Sociodemographic and clinical data of the 549 patients assessed at the mental health programme and comparison between genders.

	Total (n =549)	Male (n =327)	Female (n =222)	Comparison among genders		
	Mean, ± SD (range)	Mean, ± SD (range)	Mean, ± SD (range)	t	p	95% Confident Interval
Age (years)	31.3 ± 16.1 (3-90)	28.1 ± 13.6 (3-90)	36.0 ± 18.4 (4-81)	-5.7	<b>&lt;0.001</b>	-10.5- -5.1
Age at onset of mental disorder (years)	27.2 ± 16.4 (1-89)	24.3 ± 14.2 (1-89)	31.5 ± 18.4 (1-81)	-5.0	<b>&lt;0.001</b>	-10.0- -4.4
Alive children	0.9 ± 1.6 (0-7)	0.2 ± 0.5 (0-7)	1.8 ± 2.0 (0-7)	-5.7	<b>&lt;0.001</b>	-.21 – -1.0
Treatment duration (months)	4.6 ± 7.6 (0-42)	4.3 ± 6.9 (0-42)	5.0 ± 8.5 (0-42)	-1.0	0.2	-2.0 – 0.6
				X <sup>2</sup>	p	
Marital status (single, n, %)	284 (51.7%)	210 (64.2%)	74 (33.3%)	35.6	<b>&lt;0.001</b>	
Education (n, %)				44.7	<b>&lt;0.001</b>	
- None	79 (14.3%)	21 (6.4%)	58 (26.1%)			
- Primary	145 (26.4%)	87 (26.6%)	58 (26.1%)			
- Secondary	298 (54.2%)	203 (62.0%)	95 (42.7%)			
- University	21 (3.8%)	12 (3.6%)	9 (4.0 %)			
<b>Drugs abuse/dependence</b>						
Nicotine (n, %)	114 (20.7%)	95 (29.0%)	19 (8.5%)	35.6	<b>&lt;0.001</b>	
Alcohol (n, %)	89 (16.2%)	75 (22.9%)	14 (6.3%)	28.4	<b>&lt;0.001</b>	
Cannabis (n, %)	158 (28.7%)	147 (44.9%)	11 (4.9%)	106.4	<b>&lt;0.001</b>	
Cocaine (n, %)	8 (1.4 %)	7 (2.1%)	1 (0.4%)	3.2	0.1	
Heroin (n, %)	1 (0.1%)	1 (0.3%)	0 (0%)	1.2	0.5	
Other drugs (n, %)	19 (3.4%)	17 (5.1%)	2 (0.9%)	7.5	<b>0.02</b>	
<b>Family psychiatric history (n, %)</b>	127 (23.1%)	45 (13.7%)	82 (36.9%)	8.7	<b>0.01</b>	
<b>Somatic illnesses</b>						
Cerebral malaria (n, %)	7 (1.2%)	4 (1.2%)	3 (1.3%)	1.9	0.3	
Head injury (n, %)	26 (4.7%)	15 (4.6%)	11 (4.9%)	2.6	0.2	
Epilepsy (n, %)	25 (4.5%)	14 (4.2%)	11 (4.9%)	3.0	0.2	
<b>Psychiatric symptoms</b>						
Agitation (n, %)	422 (76.8%)	261 (79.8%)	161 (72.5%)	4.6	<b>0.03</b>	
Heteroaggressive behavior (n, %)	380 (69.2%)	248 (75.8%)	132 (59.4%)	16.6	<b>&lt;0.001</b>	
Delusions (n, %)	210 (38.2%)	136 (41.5%)	74 (33.3%)	4.8	0.08	
Hallucinations (n, %)	286 (52.0%)	192 (5.7%)	94 (42.3%)	14.8	<b>&lt;0.001</b>	
Disorganized behavior (n, %)	409 (74.4%)	252 (77.0%)	157 (70.7%)	3.3	0.06	
Self-aggressive behavior (n, %)	10 (1.8%)	7 (2.1%)	3 (1.3%)	0.4	0.4	
Sleep disturbances				5.9	0.05	
Insomnia	389 (70.8%)	234 (71.5%)	155 (69.8%)			
Reduced need of sleep	33 (6.0%)	13 (3.9%)	20 (9.0%)			
Reduced appetite	140 (25.5%)	67 (20.4%)	73 (32.8%)	10.9	<b>0.004</b>	
Depressive Mood (n, %)	87 (15.8%)	38 (11.6%)	49 (22.0%)	12.6	<b>0.002</b>	
Manic mood (n,%)	69 (12.5%)	32 (9.7%)	37 (16.6%)	6.1	<b>0.04</b>	
Cognitive difficulties (n, %)	55 (10.0%)	30 (9.1%)	25 (11.2%)	0.5	0.4	



Table 2. Diagnoses established in the 549 patients assessed at the mental health programme.

	Psychotic disorders	Manic episodes	Depressive episodes	Dementia	Mental disorders due to medical conditions	Developmental and behavioral disorders in children	Substance use disorders	PTSD	Anxiety disorders other than PTSD
Cases (n)*	295	69	53	30	39	46	182	9	3
Gender (male/female, X <sup>2</sup> , p)	205/90 X <sup>2</sup> = 8.4 P= 0.004	31/38 X <sup>2</sup> = 7.0 P= 0.008	20/33 X <sup>2</sup> = 11.6 P= 0.001	11/19 X <sup>2</sup> = 6.9 P= 0.008	24/15 X <sup>2</sup> = 0.2 P= 0.6	26/20 X <sup>2</sup> = 0.1 P= 0.6	160/22 X <sup>2</sup> = 17.1 P <0.001	7/2 X <sup>2</sup> = 1.2 P= 0.02	0/3 X <sup>2</sup> = 4.4 P= 0.03
Age (years, mean ± SD)	27.5 ± 8.9	32.5 ± 12.6	42.8 ± 13.8	73.0 ± 8.3	34.4 ± 15.3	11.0 ± 5.8	28.6 ± 9.7	27.7 ± 9.2	37.0 ± 15.1
Age at onset (years, mean ± SD)	23.7 ± 7.1	28.4 ± 11.8	39.0 ± 13.5	70.0 ± 8.4	29.3 ± 16.7	2.5 ± 2.1	24.5 ± 8.8	20.5 ± 6.4	18.3 ± 7.0
Treatment duration (months, mean, ± SD)	5.3 ± 8.1	6.1 ± 8.5	5.0 ± 8.2	1.5 ± 2.9	3.8 ± 7.1	1.4 ± 2.8	5.2 ± 8.0	1.4 ± 1.5	0.3 ± 0.5
Family psychiatric history (n, %)**	52 (26.1%)	22 (52.3%)	12 (37.5%)	6 (30%)	0 (0%)	3 (11.5%)	26 (21.6%)	0 (0%)	0 (0%)

PTSD: post-traumatic stress disorder

\* Total cases > 549 patients, since SUDs (Substance use disorders) could be diagnosed as a comorbid condition to other psychiatric disorders.

\*\* Percentage of family psychiatric history was calculated for those patients with available information (n = 339 patients).

Table 3. Pharmacological treatment implemented in the mental health programme.

	Total (n=549)	Male (n =327)	Female (n =222)	Comparison among genders		
	Mean, ± SD (range)	Mean, ± SD (range)	Mean, ± SD (range)	t	p	95% Confident Interval
Treatment duration (months)	4.6 ± 7.6 (0-42)	4.3 ± 6.9 (0-42)	5.0 ± 8.5 (0-42)	-1.0	0.2	-2.0 – 0.6
	n,%	n,%	n,%	X <sup>2</sup>	p	
Psychopharmacological treatment*	417 (75.9 %)	245 (74.9%)	172 (77.4%)	0.3	0.5	
Chlopromazine	315 (57.3%)	184 (56.2%)	131 (59.0%)	0.4	0.5	
Flufenazine	167 (30.4%)	109 (33.3%)	58 (26.1%)	3.2	0.07	
Haloperidol	11 (2.0%)	7 (2.1%)	4 (1.8%)	0.07	0.7	
Benzhexol	106 (19.3%)	75 (22.9%)	31 (13.9%)	7.0	<b>0.008</b>	
Amitryptiline	41 (7.4%)	17 (5.1%)	24 (10.8%)	5.4	<b>0.01</b>	
Traditional healer	389 (70.8%)	217 (66.5%)	172 (77.1%)	9.0	<b>0.01</b>	
Drop-out after the first visit	184 (33.5%)	109 (33.3%)	75 (34.2%)	0.04	0.8	
Rated as much or very much improved (CGI=1-2)	295 (53.7%)	180 (55.0%)	115 (51.8%)	1.9	0.3	

\*Patients could receive more than one pharmacological treatment.