

African Journal of Pharmacology and Therapeutics Vol. 6 No. 2 Pages 102-108, 2017

Open Access to full text available at <http://www.uonbi.ac.ke/journals/kesobap/>

Research Article

Accessibility of medicines used in the management of substance use disorders in selected hospitals in Nairobi

Clarice A. Ambale ^{a,*}, Kipruto A. Sinei ^a, Beatrice K. Amugune ^b, and Margaret N. Oluka ^a,

^a *Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi, Kenya*

^b *Department of Pharmaceutical Chemistry, School of Pharmacy, University of Nairobi, Kenya*

* **Corresponding author:** Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi, P.O. Box 19676-00202, Nairobi, Kenya; **Tel:** +254-72-3629157; **Email:** clarisambale1983@gmail.com

Background: Substance use disorder is a complex chronic disease that requires a multidisciplinary approach in treatment. Pharmacotherapy is one of the components in the treatment of this condition. This study sought to assess the accessibility of medicines used in the treatment of substance use disorders in both a public and a private health facility in Nairobi.

Methodology: This descriptive cross-sectional study with both qualitative and quantitative components was carried out in April and May 2015 at two hospitals in Nairobi, Mathare Mental Hospital (public) and Chiromo Lane Medical Centre (private). Data on availability and affordability was collected from the two sites and the WHO performance indicators for health facilities used to assess availability. Affordability was determined using the daily wage of the lowest paid government worker. Interviews with the key informants were conducted to determine factors that influence the accessibility of the medicines.

Results: About 50% of medicines on the Kenya Essential Medicines List for management of substance use disorders were available in Mathare while Chiromo Lane had all of them. The mean stock out duration was 8 months and 0.5 months in Mathare and Chiromo Lane, respectively. More than 67 % of the medicines required less than a single day's wage to buy a month's supply in Mathare while in Chiromo Lane all the medicines required more than a single day's wage to purchase. The cheapest medicine required 0.3 days wage to purchase while the most expensive drug required 50 days wage to purchase.

Conclusion: Medicines for the treatment of substance use disorders had limited availability but were relatively affordable in Mathare while their availability was better in Chiromo Lane but with limited affordability. The Kenya Essential Medicines List for substance use disorders requires updating to include newer and more efficacious medicines. National guidelines for the treatment of substance use disorders should be developed and disseminated.

Key words: Substance use disorders, pharmacotherapy, accessibility and affordability

Received: March, 2017

Published: June, 2017

1. Introduction

Drug addiction is compulsive drug seeking and using behaviour even in the face of terrible personal and social consequences. It is a brain disease that affects

multiple brain circuits, including those involved in reward and motivation, learning and memory, and inhibitory control over behaviour. Addiction is preceded by dependence which is an adaptive state that occurs after repeated administration of a substance

leading to substance use disorder (SUD). It develops on the basis of an interaction between several factors that include pharmacological properties of the drug, vulnerability of the person and the environmental influence (Noeline, 2009). Patients with SUDs are usually regarded as social misfits or even criminals and do not receive the necessary treatment required and where available it has been segregated from the rest of the general healthcare either geographically, financially or both (McLellan et al, 2014).

According to the global status report on alcohol and health 2014, approximately 5.1 % of the global burden of disease is due to alcohol use which is responsible for 3.3 million deaths accounting for 5.9% of all the deaths annually (World Health Organization, 2014). The World drug report of 2010 estimated that about 5% of the world's adult population had used an illicit drug at least once in that year about 27 million being problem users (United Nations Office on Drugs and Crime, 2012).

SUD is a common problem globally with extensive public health effects ranging from poor health outcomes, reduced economic productivity and insecurity among others (National Authority for the Campaign against Alcohol and Drug Abuse, 2012).

Access to health care is a fundamental right of all citizens and is included in many international agreements and government policies. There are however factors that preclude attainment of this right. These include unaffordable medicine prices, poor availability, irrational use of medicines, unfair health financing mechanisms and unreliable medicines supply systems (Kenya Service Provision Assessment Survey, 2010). In Kenya, SUDs commonly reported are alcohol, nicotine, cannabis, opioid and psycho-stimulant use dependence.

All substances of abuse are associated with poor health care service-seeking behaviours that lead to worsening of other medical conditions not associated with the substance giving poor prognosis of many curable diseases among substance abuse patients (McCoy et al, 2001).

The treatment of substance abuse is multidimensional and may consist of biophysical, pharmacological, psychological and socio-cultural components. Pharmacological treatment is crucial as it enhances abstinence and prevents relapse, complementing psychosocial interventions that have been in use for many years. This is usually done at two levels involving detoxification and medication assisted treatment (MAT). Detoxification involves the treatment of withdrawal symptoms usually in patients with severe dependence (Fujii et al, 1974).

There is substantial evidence supporting the role of pharmacotherapy in the management of substance abuse disorders (National Institute on Drug Abuse, 2012). The type of pharmacotherapy employed varies depending on the substance of abuse. The new evidence-based modes of treatment are however not widely used in Kenya because protocols have not been disseminated and health care workers have not embraced them due to various factors.

The main objective of this study was to carry out an assessment of the accessibility of pharmaceutical commodities used in the treatment of patients with substance use disorders in a public and a private hospital in Kenya. The specific objectives were to determine the availability and affordability of essential medicines used in the treatment of SUDs and factors that influence this.

2. Methods

2.1 Study design, site and population

This was a cross-sectional study that was carried out in April and June 2015 at the drug rehabilitation units at Mathare Hospital and Chiromo Lane Medical Centre. These were the centres offering pharmacotherapy for SUDs in Nairobi at that time.

2.2 Sampling Procedure

The key informants were selected purposively from the two facilities and other locations such as the National Authority for the Campaign against Alcohol and Drug Abuse (NACADA) office, MOH office, retail chemists and private consultation clinics.

2.3 Data Collection

The availability and affordability of medicines for SUDs listed on Kenya Essential Medicines List (KEML) was assessed. The drugs were diazepam, methadone, clonidine, carbamazepine, thiamine and haloperidol. Other drugs not on the KEML but have been proven to be efficacious in evidence-based studies and are used routinely were also assessed. These drugs were: disulfiram, naltrexone, acamprosate, buprenorphine, bupropion and nicotine replacement therapy (NRT).

A data collection form was adapted from the Medicine Price Data Collection Form of the WHO/Health Action International manual and was used to collect data. Relevant inventory records on the medicines from the selected hospitals such as bin cards, stock cards, delivery notes and S11 books for the period January to December 2014 were also examined.

Qualitative data was collected through 13 interviews were carried out with the hospital in-charges/medical superintendents, pharmacy in-charges, consultant psychiatrists, psychologists and community pharmacists as the key-informants. The interviews were tape-recorded and later transcribed.

2.4 Data analysis

The indicators on availability of the medicines were determined as a proportion/percentage. The total number of medicines that were available out of the total number of medicines under study gave the percentage availability. The number and percentage of expired medicines were also determined. The stock out period was taken as the number of days that the medicine was absent in the facility. The equivalent stock -out period was taken as the number of days the medicine was absent, multiplied by the number of days in a year and divided by the number of days covered by the study. Affordability was estimated as the number of days'

wages of the lowest paid unskilled government worker needed to purchase medicines prescribed standard dose.

The deductive approach was used in analysing qualitative data. The transcribed data was read and research questions were used in grouping the data and looking for similarities and differences in the data collected. Codes were assigned to different themes. The themes identified were then organized into coherent categories that brought meaning to the text.

2.5 Ethical consideration

Ethical approval was obtained from ethics review committee by Kenyatta National Hospital and University of Nairobi (KNH/UON-ERC, Ref No.: P721/12/2014) before the study commenced. The researcher further sought permission from the management of the study sites before commencing data collection.

3. Results

The availability and affordability of medicines on KEML list for SUDs was assessed. The drugs are diazepam, methadone, clonidine, carbamazepine, thiamine and haloperidol. Other drugs not on the KEML but have been proven to be efficacious in evidence-based studies and are used routinely were also assessed. These drugs were: disulfiram, naltrexone, acamprosate, buprenorphine, bupropion and nicotine replacement therapy (NRT). Availability of the medicines was

assessed in the two facilities for the period from January 2014 to December 2014. Stock out was used to describe any drug that was not in stock at any time during the study period.

In Mathare, diazepam and haloperidol (tablets and injections) were available but thiamine, clonidine and carbamazepine were out of stock. Data on methadone was not accessed. About 50 % of medicines on the KEML that were available in Mathare while all medicines were available at Chiromo Lane but reported one expired medicine (Methadone)

Disulfiram, naltrexone, acamprosate, buprenorphine, bupropion and nicotine replacement therapy (NRT) were completely missing in Mathare. This is because the ordering for the medicines is usually done using the KEMSA standard order form which is adopted from the KEML. Medicines not on this list are usually not purchased except under special circumstances. About 72% of this category of medicine was available in Chiromo Lane. Acamprosate and buprenophin were not available as they are currently not registered by the regulator for use in Kenya.

The presence of expired commodities was assessed and proportion of the expired medicines out of all the medicines assessed was reported. Expiries were present in Chiromo at 25% of the medicines not on KEML. The number of days the selected medicines were out of stock was recorded and the equivalent in a year was determined. The findings are summarized in **Figure 1**.

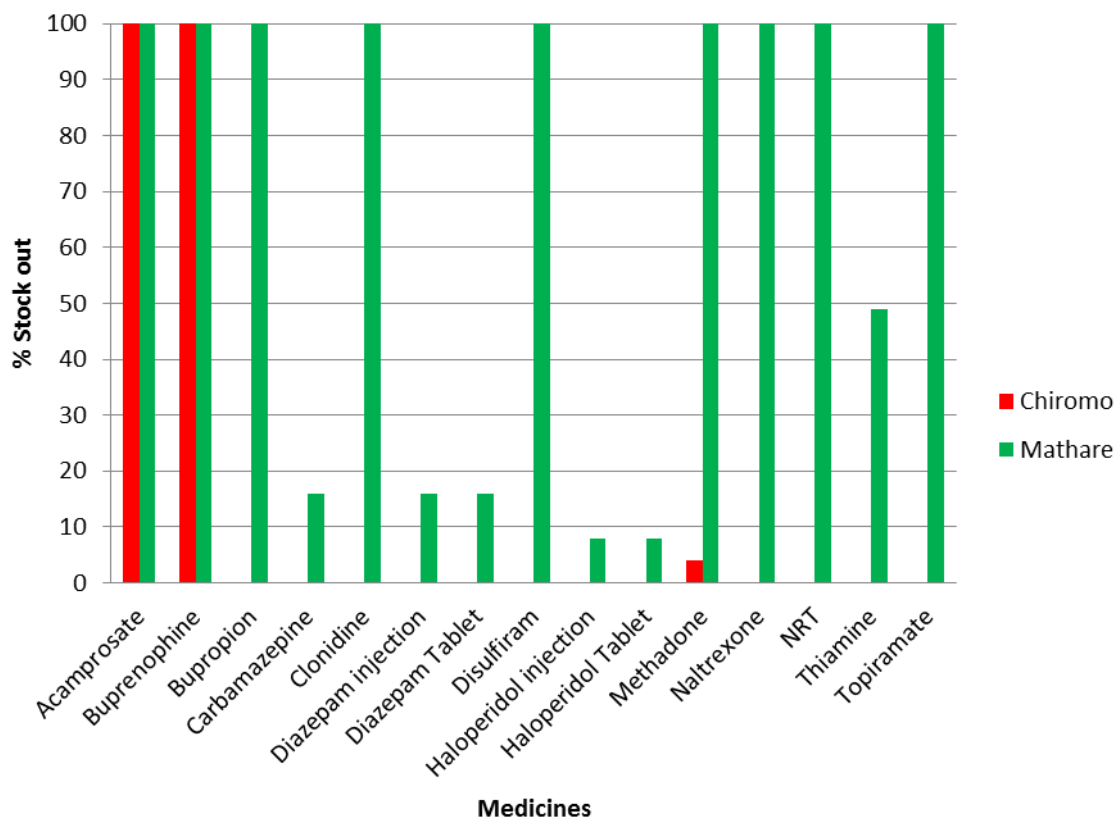


Figure 1: Percentage Stock out in a Year

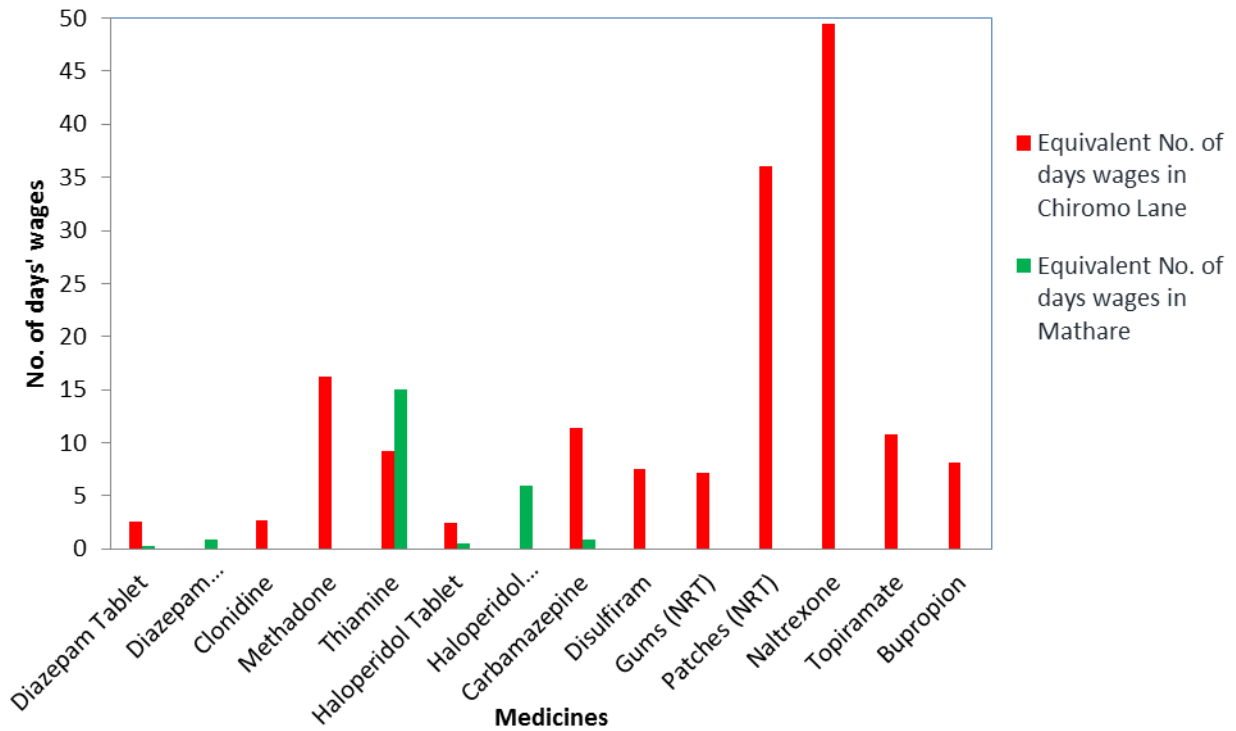


Figure 2: Number of Days' Wages Required to Purchase Medicine

In Mathare, 54% of the medicines were out of stock the whole year in. Of these, 23% were out of stock for 2 months while 8% were out of stock for 6 months. The average stock out period for this facility was 8 months. In Chiromo Lane, only one drug was out of stock for 14

days in the year, accounting for 7% of the drugs surveyed. The average stock out period for this facility was 0.5 months. The affordability of treatment was investigated and reported as shown in **Figure 2**.

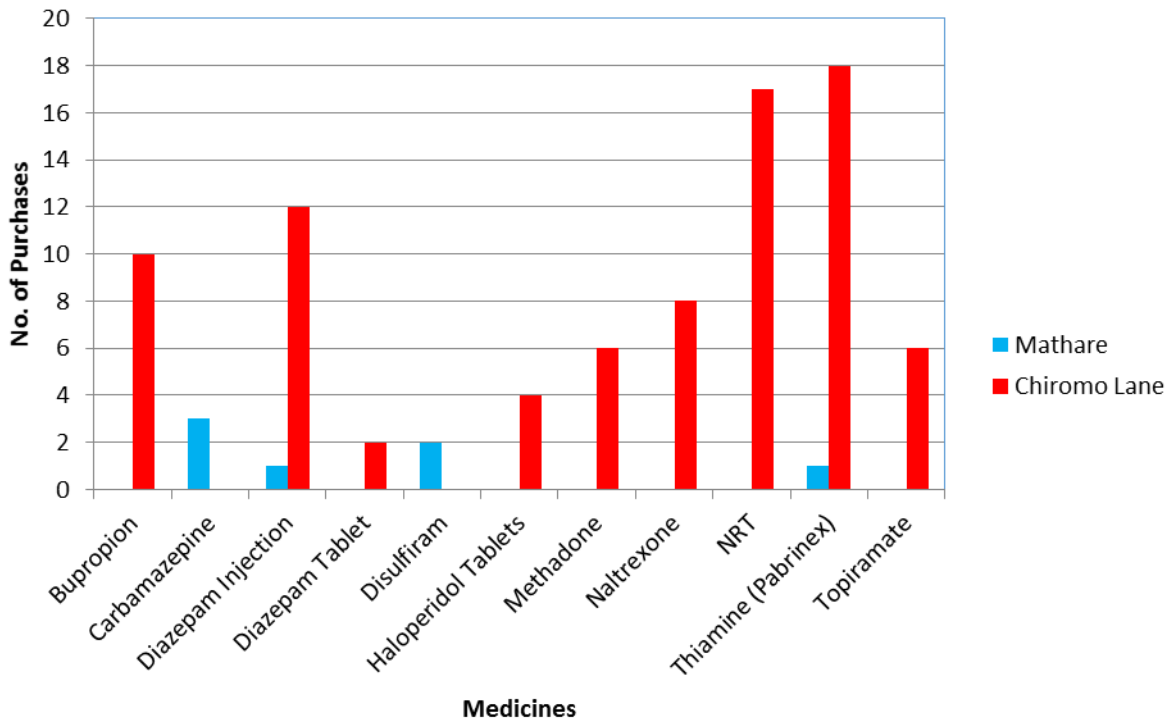


Figure 3: Number of Times Medicines Were Purchased in the Year

More than 67% of the medicines required less than a single day's wage to buy a month's supply in Mathare. In Chiromo Lane all the medicines required more than a single day's wage to purchase. Cheapest medicine in Mathare was diazepam tablets which required 0.3 days wage to purchase while the most expensive was thiamine, requiring 15 days wage to purchase. In Chiromo Lane, the cheapest medicine was diazepam injection which required 1.5 days of wage to purchase while the most expensive was naltrexone requiring 50 days of wage to purchase.

In Mathare, it was not possible to stock the relatively more expensive medicines not on KEML even if evidence had shown them to be more effective. This is because the money used for such is usually from the revolving fund or facility improvement fund (FIF) that requires replenishment of funds through patient purchases. Drugs that are not affordable are unlikely to be purchased and thus jeopardise the objectives of the scheme.

The number of times medicines for the treatment of SUDs were purchased for the facilities was investigated and the findings are presented in **Figure 3**.

In Mathare, drugs for SUD treatment were purchased in only four months throughout the year. Carbamazepine, a medicine is usually used in the management of alcohol withdrawal symptoms was purchased the highest number of times.

Procurement in public hospitals like Mathare is usually done bi-monthly. This could explain the few number of times when medicines were purchased. The list of medicines purchased is dependent on availability of funds and medicines could be dropped from the list an observation that can be a hindrance to ensuring compliance with medication

In Chiromo Lane, medicines were purchased all year round. Procurement was not fixed to particular times but was need-based. Patients received all required medicines as per the prescription ensuring patient compliance with treatment.

The medicine purchased the highest number of times was thiamine in Chiromo lane compared to carbamazepine in Mathare. The finding that both carbamazepine and thiamine were the most purchased in both facilities could be an indication that there were more patients with alcohol use disorders compared to other substances.

A total of 8 key informants were interviewed. They were drawn from various sectors including policy makers (MOH), academia (UON), Public health sector (Mathare Hospital, KNH), Private health sector (Chiromo Lane, private consultants) and NACADA. All the key informants interviewed reported that combination therapy was most effective. Both psychotherapy (for attitude change) and pharmacotherapy (for detoxification and management of withdrawal symptoms) have to be used in order to achieve treatment success and prevent relapses. However, some of the key informants were not aware of some of the medicines used in management of particular SUDs.

Medicines are used at almost all the stages of management of SUDs. For instance, detoxification from alcohol, the following were reported to be used by the interviewees: thiamine, diazepam, and carbamazepine. For maintenance, medicines for managing craving such as naltrexone are used. Antabuse® (disulfiram) was found to be very unpopular with the interviewees because of its side effects.

With regard to guidelines/protocols used in management of SUDs, interviewees reported to be using different guidelines for the management of SUDs. Some were not aware of the availability of a Kenya National guideline or protocol. The following documents came up from the interviews as being used by various key informants; National treatment protocol for substance abuse disorders in Kenya, NIDA, BNF. Some practitioners did not use any and they managed each patient as per their symptoms.

The National treatment protocol for substance use disorders in Kenya is available to only a few practitioners in hard copy. It is not yet available in soft copy and hence not widely accessible. It was prepared in partnership between MOH department of mental health and the United Nations Office on Drugs and Crime (UNODC) but and was biased towards the narcotic substances.

The medicines on the KEML were regarded by the interviewees to be more readily available. They however noted that the list was inadequate and needed to be updated as some of the medicines had become obsolete. Availability varied across the public and private facilities. Interviewees who were affiliated to private facilities reported a higher rate of availability compared to those affiliated to the public facilities. The lack of medicines in the facilities contributes to delayed treatment and worsening of symptoms. Availability of medicines for various SUDs differed considerably. For instance an interviewee reported that their facility did not have any form of NRT.

Most of the interviewees had knowledge of newer and more efficacious drugs which were not on the KEML although not readily available. Generics were available for most of the medicines surveyed although for some medicines, only originator brands that are more expensive were available. There are plans by NACADA to contract a manufacturer in India to produce generic naltrexone. This will increase its availability. The naltrexone will be used for "mass treatment " of alcohol use disorders.

The issue of lack of registration for use of efficacious medicine in Kenya as used in other Countries was of concern. Similarly, local regulations on the handling of opioids could be a hindrance to the availability of these medicines at lower levels of health care. For instance, methadone which is a synthetic opioid can only be available at facilities from level 4 upwards.

The general opinion of the interviewees was that medicines for the treatment of SUDs were affordable with a few exceptions. It was argued that if the patient is able to spend money on the substance of abuse on almost a daily basis, he should be in a position to afford the medicine and avert the adverse health outcomes associated with the use of the substance. This can only

be done if the health care worker manages to convince the patient of the benefits associated with abstaining from substance use.

The lack of generics for some of the medicines has made the cost to be high and unaffordable to the lowest-paid government workers who make most of the payments for the medicines out of pocket (OOP). Considering that these are disorders that require long term management, this type of payments is not sustainable. Local insurance companies do not cover the cost of SUD treatment with exception of a few international insurance companies.

4.0 Discussion

Results obtained in this study support the hypothesis that the essential medicines for substance use disorders are not readily available and may not be affordable especially in the public sector. This compares with other studies done in Kenya and in other countries on the availability and affordability of essential medicines (MOH, 2009). The availability of medicines on the KEML was fairly high in the private facility as compared to the availability in the public facility. This compares with the study on availability of essential medicines for non-communicable diseases done in Sri-Lanka which showed an availability of 54 % in public facility and 89% in private sector (Dabare et al, 2014).

In Chiromo Lane, 7% of the drugs were out of stock for less than a month due to unavailability of the drugs in the market at the particular time. Otherwise stock-outs were rare and over a short mean period (0.5 months) as medicines were procured promptly as per the patients' needs.

There is need to update the essential medicines list to include newer and efficacious molecules arising from evidence based studies (Lingford-Hughes et al, 2012).

From the key informant interviews, availability was poor in public facilities due to lack of funds and also poor prioritizing. Prolonged public procurement bureaucracy, lack of funds and poor estimation of quantities were named as some of the reasons for the long periods of stock-outs. These reasons were also found in other studies on the availability of essential medicines (Mendis et al, 2007).

SUDs and mental health in general are not regarded with the seriousness they deserve and there is therefore low allocation of funds to this department. Availability is further affected by the fact that most of the medicines are imported.

The low incidence of expired medicines at the study sites showed good commodity management by the personnel. Some of the medicines found to have expired in the facilities were donated close to their expiry date. This contravenes the guidelines to drug donations which advise against donation of drugs close to their expiry date. This can be achieved through better inventory control by the donor companies and the intermediaries and also communication with the recipient prior to donating the medicines (World Health Organization, 2011).

Medicines in the Chiromo Lane were significantly more costly than those in Mathare. This finding is supported by the findings in the study done in 2009 on accessibility to essential medicines (MOH, 2009).

Medicines that cost more than a day's wage could be out of reach to many patients. There are patients who might not be in any form of employment and may not afford the medicines. About 50% of Kenyans live below 1.00 US \$ a day according to a study done by commonwealth in 2011. Citizens in this group are unlikely to afford the medicines (Kenya Economic Report, 2013).

Accessibility of essential medicines for the treatment of non-communicable diseases is generally low in low-income countries (Hogerzeil et al, 2013). However there has been tremendous progress in improving accessibility to other drugs such as antiretroviral drugs, which are more expensive to produce. Medicines for treatment of SUDs are mostly off-patent and therefore cheap to produce. Urgent measures should be taken to improve the availability and affordability of medicines for the treatment of SUDs.

Limitations

The study was successfully carried out as planned. However, there were some limitations which could affect the generalization of these results since the other rehabilitation centres or hospitals in Nairobi do not provide pharmacotherapy for substance use disorders, only two hospitals were included in the study. It is acknowledged that a larger sample size would be more precise and provide more information.

5.0 Conclusion

Most of the essential medicines for the treatment of SUDs were available at both study sites. In Mathare, representing public sector, the availability was low compared to Chiromo Lane (private facility). The frequent stock-outs reported of essential medicines at Mathare, could affect the accessibility of the medicines by the poor who would not afford to buy them at private facilities. Medicines found to be efficacious for the treatment of SUDs but not on the KEML were completely absent at Mathare although they were present at Chiromo Lane. Most of the medicines in Mathare were affordable, costing less than a day's wage with exception of a few which cost more than 30 days' wage and are therefore out of reach for most of the patients.

Conflict of Interest declaration

The authors declare no conflict of interest.

Acknowledgements

This project was supported by the Linked-Mental Health Research training for improved Health outcomes in Kenya, National Institutes of Health/National institute of Mental Health grant R25-MH099132.

References

- Beckerleg S, Telfer M, Hundt GL (2005). The rise of injecting drug use in east Africa: a case study from Kenya. *Harm Reduct. J.* **2**:11-12.
- Dabare P R, Chandanie A W, Beneragama BVS (2014). A national survey on availability, price and affordability of selected essential medicines for non-communicable diseases in Sri Lanka. *BMC Public Health* **14**:817.
- Fujii ET (1974). Public investment in the rehabilitation of heroin addicts. *Soc Sci Q.* 1974 *55*(1):39-51.
- Hogerzeil HV, Liberman J, Wirtz VJ, Kishore SP, Selvaraj S, Kiddell-Monroe R (2013). Promotion of access to essential medicines for non-communicable diseases: practical implications of the UN political declaration. *Lancet.* **381**: 680-9.
- Kenya Economic Report (2013). Kenya Institute for Public Policy Research and Analysis (KIPRA).
- Kenya Service Provision Assessment Survey, 2010 (2011). National Coordinating Agency for Population and Development (NCPD) (Kenya), Ministry of Medical Services (MOMS) (Kenya), Ministry of Public Health and Sanitation (MOPHS) (Kenya), Kenya National Bureau of Statistics (KNBS) (Kenya), ICF Macro. Nairobi, Kenya
- Lingford-Hughes AR, Welch S, Peters L, Nutt DJ, British Association for Psychopharmacology, Expert Reviewers Group. (2012). BAP updated guidelines: evidence-based guidelines for the pharmacological management of substance abuse, harmful use, addiction and comorbidity: recommendations from BAP. *J Psychopharmacol.* **26** (7):899-952.
- McCoy CB, Metsch LR, Chitwood DD, Miles C (2001). Drug Use and Barriers to Use of Health Care Services. *Subst. Use Misuse.* **36**:789-804.
- McLellan AT, Starrels JL, Tai B (2014). Can substance use disorders be managed using the chronic care model? Review and recommendations from a NIDA Consensus Group. *Public Health Rev* ; 35: <http://www.journalindex.net/visit.php?j=6676>
- Mendis S, Fukino K, Cameron A, Laing R, Filipe Jr A, Khatib O (2007). The availability and affordability of selected essential medicines for chronic diseases in six low-and middle-income countries. *Bull World Health Organ.* **85**:279-88.
- Ministry of Medical Services and Ministry of Public Health & Sanitation (2009). Access to Essential Medicines in Kenya - A Health Facility Survey. (Accessed March 2015). Available at: <http://apps.who.int/medicinedocs/documents/s18695en/s18695en.pdf>
- Ministry of Medical Services (2012). National Treatment Protocol for Substance Use in Kenya. (Accessed March 2015). Available at: <http://nairobi parenting clinic.blogspot.co.ke/2015/10/national-treatment-protocol-for-97.html>
- National Authority for the Campaign against Alcohol and Drug Abuse (2012). Rapid situation assessment of the status of drug and substance abuse in Kenya.
- Noeline L (2009). Addiction Medicine. Oxford University Press. UK.
- National Institute on Drug Abuse (2012). Principles of drug addiction treatment. 3rd Edition. National Institutes of Health, US.
- United Nations Office on Drugs and Crime (2012). World Drug Report. (Accessed March 2015). Available at: <https://www.unodc.org/unodc/en/data-and-analysis/WDR-2012.html>
- World Health Organization (2014). Global status report on alcohol and health. (Accessed March 2015). Available at: <http://apps.who.int/iris/handle/10665/112736>
- World Health Organization (2011). Guidelines for medicine donations. (Accessed March 2015). Available at: http://www.who.int/medicines/publications/med_donations_guide2011/en/