

Availability of Selected Essential Prescription Medicines and Trained Dispensers in Accredited Drug Dispensing Outlets in Tanzania. A Case Study of Hanang District Council in Manyara Region Northern Tanzania

Deogratias M Katabalo¹, Kayo Hamasaki¹, Melkisedeck J Filin'gafu², Stanley Mwita¹

ABSTRACT

Introduction: The accredited drug dispensing outlet (ADDO), popularly known in Swahili as Duka la Dawa Muhimu (DLDM) are shops controlled by Pharmacy council under Pharmacy Act number 1 of 2011. The Act has specific premise standards for ADDO shops, and the owners must have a dispenser trained in ADDO programs. The purpose of this study was to determine the presence of selected essential prescription medicines and trained dispensers in Accredited Drug Dispensing Outlets shops.

Material and methods: A cross section survey was conducted in 44 Accredited Drug Dispensing Outlets out of 46 in five Divisions of Hanang district in Manyara region northern Tanzania. These Divisions were Balangda, Bassutu, Simbay, Endasack and Katesh.

Results: The study found 44(82%) of the interviewed dispensers were trained in Accredited Drug Dispensing Outlets programs. Also out of 14 selected essential prescription medicines which were assessed, only 60% were available in these shops.

Conclusion: Availability of selected essential prescription medicines is not adequate, as 40% of the assessed medicines were not available, despite of 82% of Accredited Drug Dispensing Outlets shops having trained dispensers, there is still a significant percent (18%) of them which are run by untrained dispenser posing risks of irrational treatment to clients of these shops.

Keywords: Accredited Drug Dispensing Outlets, Essential Medicines, Tanzania

effectiveness of all pharmaceutical services so that they conform to the National Health Policy which emphasizes on the availability of quality health services to all Tanzanians.⁴ Therefore the regulations require ADDO to be operated by a dispenser who has undergone basic training program in dispensing medicines. The program ensures the achievement of four specific goals. The goals are to improve the quality of healthcare delivery for rural and per-urban by providing access to drugs through official channels and training dispensers to recognize counterfeits, to increase the availability of medicines by improving record keeping and providing reliable supply chains, to improve the quality of dispensing services by training dispensers to recognize common symptoms and apply best practices for treatment and lastly is to ensure the affordability of medicines by increasing shop profitability and Purchasing power, and providing opportunities for subsidy partnerships. Progress toward these goals is evaluated by survey of consumer satisfaction, as well as median drug prices.^{5,6}

Furthermore, ADDO program improve communications among Dispensers and owners towards pharmaceutical business regulatory authorities.⁷ The minimum eligibility required for ADDO dispenser training is as follows, pharmaceutical technician, pharmaceutical assistant, nursing officer, nurse/midwife, clinical officer, clinical assistant and nurse assistant.⁸ The purpose of this study was to determine the presence of selected essential prescription medicine and trained dispensers in Accredited Drug Dispensing Outlets shops.

MATERIAL AND METHODS

The study was conducted in Hanang district council

¹School of Pharmacy, Catholic University of Health and Allied Sciences (CUHAS), P.O.Box 1464, Mwanza- Tanzania, ²Katesh/Hanang District council. P.O Box 51 Manyara Tanzania

Corresponding author: Deogratias M Katabalo, School of Pharmacy Catholic University of Health and Allied Sciences, Tanzania

How to cite this article: Deogratias M Katabalo, Kayo Hamasaki, Melkisedeck J Filin'gafu, Stanley Mwita. Availability of selected essential prescription medicines and trained dispensers in accredited drug dispensing outlets in tanzania. a case study of Hanang District council in Manyara region Northern Tanzania. International Journal of Contemporary Medical Research 2019;6(7):G1-G5.

DOI: <http://dx.doi.org/10.21276/ijcmr.2019.6.7.18>

INTRODUCTION

The accredited drug dispensing outlet (ADDO), popularly known in Swahili as Duka la Dawa Muhimu (DLDM), is the drug outlet registered by the Pharmacy council to store and sell Medicines that do not need prescriptions and some essential medicines that need prescriptions.¹ This program was established in 2003 by Tanzania Food and Drug Authority (TFDA) in collaboration with Medical Sciences for Health (MSH).² These outlets were subject to provisions of the TFDA act until 2011 when the parliament of Tanzania passed the pharmacy Act number one of 2011 which enabled pharmacy council to take some functions of the TFDA including the controls and registration of ADDO premises.³ Since then to date ADDO program is controlled by Pharmacy Council. The Tanzania pharmacy Act gives power to Pharmacy council of Tanzania to regulate the quality, safety, and

involving all five Divisions, which are Balangda, Basutu, Simbay, Endasack and Katesh. As per census of 2012, Hanang has a population of 275,990 of which Balangda has 39,398, Basutu has 73,216, Simbay has 29,765, Endasack has 63,076 and Katesh has 70,535.⁹ A cross section survey was conducted in ADDO Shops in five divisions of Hanang district.

The study started after the joint CUHAS/BMC Ethics and Research Committee granted a clearance certification and permission from Hanang district council. Further permission was sought and granted by ADDO shops owners and participation in the study was voluntary as consent through signing of the consent form by all participants.

Selection criteria

The study considered only ADDO shops within five divisions and fifteen Tracer Medicines (as shown in the table 1) among selected essential prescription medicines allowed to be stocked in these shops. The selection of these medicines was based on easy availability, affordability and common diseases affecting majority of the population.

Sample size and sampling procedure

Sample size was calculated using formula for calculation of finite population after calculating for infinity population Fischer's formula.

$$N = [Z^2 \times p \times (1-p)] / E^2$$

Where;

N= Is Sample size of infinite population

P= Is expected minimum proportion (79%)¹¹

E= is maximum likely error 5% (0.05)

Z= is standard normal deviation at (1.96 at 95%)

$$N = (1.96)^2 \times 79(100 - 79) / 5^2$$

$$N = (3.84 \times 1659) / 25$$

N = 254.82 ADDO shops which is infinite population. [255 ADDO Shops]

For finite population since

$N = B / (1 + B/P)$ where p = size of a finite population represents total number of

ADDO shops in Hanang.

B is infinite population which is 255.

$$N = 255 / (1 + (255/56))$$

$$N = 255 / 5.55$$

N = 45.95 Neglecting decimal places. N = 46.

So sample size was 46 ADDO Shops out of 56 in the five divisions in the District.

Since each Division has specific number of ADDO outlets, so calculation to enable random selection was done using excel program to get the number of the shops to be visited, as seen in the table 2.

Data collection procedure

A pre-constructed data collection tool was used to assess the availability of selected prescription medicine and trained dispensers within the ADDO shops (Physical observation and the use of questionnaire) and for assessment of medicines, list of selected essential prescription medicine was used for comparison.

STATISTICAL ANALYSIS

Raw data was collected using study tools and entered into a password protected Microsoft excel (version 2007) Database and then exported to SPSS version 17 for analysis.

RESULTS

Out of 46 ADDO shops, 44 were visited, giving a response rate of 96%. Two ADDO Shops were not covered because one was not operating during the study period and the other rejected to participate. Social demographic characteristics of ADDO dispensers were assessed and it was found that, majority were female (70.5%), aged between 26 to 40 years (54.5%) and had ordinary secondary level of education (61.4%). Other assessed social demographic characteristics were as shown in the table 3.

Availability of selected essential prescription medicines

Out of 15 selected essential prescription medicines, 14 of

Name of the medicine	Strength
Antibiotics	
1. Amoxicillin trihydrate capsules	250mg
2. Erythromycin tablets	250mg
3. Metronidazole tablets	200mg
4. Nitrofurantoin tablets	100mg
5. Phenoxymethyl penicillin tablets	250mg
Anti-inflammatory/analgesics	
6. Diclofenac sodium tablets	50mg
7. Indomethacin capsules	25mg
Anti-fungal	
8. Griseofulvin tablets	500mg
Anti-malaria	
9. Artemether+Lumefantrine tablets	20mg/120mg
Cardiovascular(Anti-arrhythmic Drugs)	
10. Propranolol tablets	10mg/40mg/80mg
Oral contraceptives	
11. Ethinylestradiol + Norethisterone	0.03mg+0.3mg
Minerals/vitamin	
12. Zinc sulfate tablets	20mg
Anti-emetic	
13. Promethazine hydrochloride injection	
Fluids and electrolytes	
14. Dextrose 5%	500ml/1000ml
15. Normal saline 0.9%	500ml/1000ml

Table-1: List of Tracer medicines.¹⁰

	No. of ADDO shops		Number of ADDO shops to be visited
Balangdalalu	6	(6/56) X 46 = 4.9	5
Bassutu	9	(9/56) X 46 = 7.3	7
Endasack	14	(14/56) X 46 = 11.5	12
Katesh	20	(20/56) X 46 = 16.4	16
Simbay	7	(7/56) X 46 = 5.7	6
	56		46

Table-2: Calculations of ADDO shops to be visited in each division.

Variable	Frequency	Percentage (%)
Age (years)		
18-25	8	18.2
26-40	24	54.5
>41	12	27.3
Sex		
Female	23	29.5
Male	31	70.5
Education level		
Primary education	12	27.3
Ordinary secondary	27	61.4
Diploma	5	11.4

Table-3: Social demographic characteristics of ADDO dispensers

Variables	Frequency	Percent
Trained	36	81.8
Not trained	8	18.2
Total	44	100.0

Table-4: Availability of trained dispensers

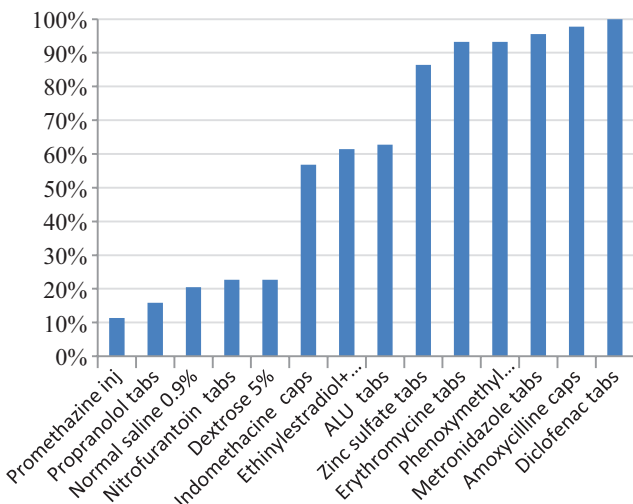


Figure-1: Availability of selected essential prescription medicines.

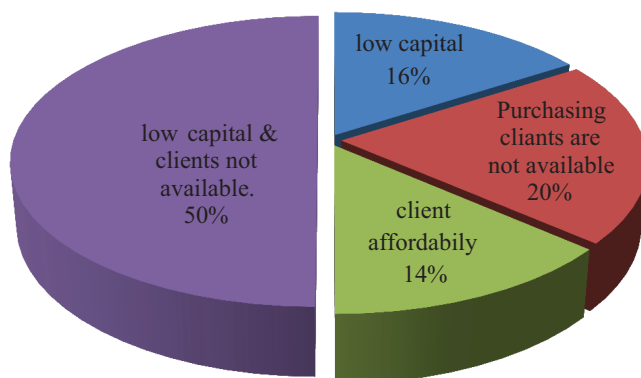


Figure-2: Factors associated with shortage of medicines.

them were assessed giving the rate of 93.3%. One item, ketoconazole tablets was not assessed because prior to commencement of the study it was removed from the market by Tanzania Food and Drug Authority (TFDA). In average the general availability of selected prescription medicines was 60.0%. The top five missing medicines were

Promethazine injections, Propranolol tablets, Normal saline 0.9% IV injections, Nitrofurantoin tablets, and Dextrose 5% IV injections (Figure 1).

Availability of trained dispensers

Despite of being the requirement for any one dispensing medicines in the ADDO shop, few of the dispensers 8(18.2%) had not been trained. However most of the dispensers had been through ADDO training program as shown in table 4.

The study went further to assess the qualifications of the dispensers and it was found that out of 44 participants, 34(77.3%) dispensers were nurse assistants, 3 (6.8%) were nurse officers and 7 (15.9%) were clinical officers.

To ensure continuous availability of medicines in the ADDO shops, dispensers must have a favorable system of ordering medicines timely. Because this was one of the knowledge provided by ADDO training program, our study ought to find out how ordering was conducted among ADDO dispensers and it was found that the time of ordering medicines was different among dispensers, whereby only 2 (4.5%) ordered in quarterly bases, 13 (29.5%) ordered on monthly bases, 16 (36.4%) ordered any time when the medicine finishes and 12 (27.3%) said were ordering medicine when medicine were about to finish. In this regard, study assessed on the presence of stock of medicine all the time, which all dispensers declared to have gone through time when the stock was not complete and they gave different reasons for out of stock medicines.

Most reasons given for out of stocks were, small capital to purchase all the requirements, clients are not available and some medicines are costly that client cannot afford. Therefore factors associated with shortage of medicines in ADDO shops were as shown in the figure 2.

However there was no significant statistical association between these factors and the level of availability of medicines in ADDO shops in Hanang District, (p-value is 0.176).

DISCUSSION

The role of ADDO shops is to make sure that people especially in rural and per-urban areas have access to quality medicines and services. As most of public health services do lack medicines and medical supplies due to poor budget and improper drug management.^{12,13} Unfortunately this is not well implemented by responsible authorities. This can be done by ensuring availability of medicines especially those selected essential prescription medicines in ADDO shops, and availability of well trained dispensers in these shops to ensure good pharmaceutical services to the majority of Tanzanians who are in areas of rural and per-urban.

This study involved 46 ADDO shops out of which 44 ADDO shops were visited (response rate of 96%) in which 60.0% of the 14 selected essential prescription medicines were available in these ADDO shops. This is low compared to a study done in Ruvuma southern Tanzania whereby 79% of selected essential medicines were available.¹⁴ However this is high compared to another study done in Singida central Tanzania which was 42%.^{7,15} This difference could be due

to the time factor, Ruvuma was a pilot area for ADDO program, and so much effort was placed there. Furthermore the difference between Hanang and Singida is that at the time of conducting study in Singida, ADDO program was not yet implemented in all Districts, there were still Duka La Dawa Baridi (DLDB) the previous form of DLDM, another reason might be the sampled area, in Singida, the whole region was covered while in Hanang the study involved only one district. The top five most missing Medicine in these ADDO shops were; Promethazine injections, Propranolol tablets, Normal saline 0.9% i/v, Nitrofurantoin tablets and Dextrose 5% i/v. The most common factors associated with this shortage were; both low capital and unavailability of clients and it contributed 50% of the unavailability. Others were, High cost of medicines that clients can't afford (13.6%), Clients who can purchase are not available (20.5%) and, Low Capital (15.9%). However there were no significant statistical association between shortage of medicines and the reasons given (p-value 0.18). This shows that there could be other reasons behind this shortage. These other reasons could be, the highly availability of these medicines in public health centers and hospitals, or in other hands most clients for these such as those suffering from hypertension (Propranolol), Hypotension (normal saline), Intractable vomiting (Promethazine), Hypoglycemia (Dextrose 5%) and Urinary tract infections (Nitrofurantoin) who would benefit from these medications normally are treated in hospital.¹⁶ Not only that but the shortage might be cause by time of ordering the medicines, as 36.4% of dispensers used to order medicine when they are completely finished which normally causes shortage.

Trained Dispensers were found to be 81.8% in all 44 ADDO shops. Of which 8 ADDO shops (18.2%) did not have a trained dispenser. This is low number compared to only 40% ADDO Shops, which had employed untrained Dispensers according to the study done in three Districts, Mvomero, Kilombero and Morogoro rural District.^{17,18} However it is still high according to the requirement of the pharmacy council which tolerate 0% availability of untrained dispensers in ADDO shops.¹⁹

Most of Dispensers were aged 26-35(54.5%) which is little similar to Kyela district 36-45(36.2%).²⁰

CONCLUSION

Our study shows 60% availability of selected essential prescription medicines in Hanang District which is poor and does not reflect goal of establishments of Accredited Drug Dispensing Outlets. Low financial capital and lack of clients to purchase some authorized medications stands as a major reason for unavailability of certain selected prescription medications. Also few shops lacked trained dispenser due to lack or presence of few trained dispensers and also insufficient financial generation from these shop to enable reasonable payments of the trained dispensers.

Recommendations

The Pharmacy Council should create other means of ensuring each ADDO shop has a trained dispenser on ADDO program.

We do suggest that each ADDO shop must have a specific trained dispenser, who shall sign a particular agreement with the owner, and the copy of that agreement should be sent to the pharmacy council. This will reduce the shortage of trained Dispenser.

It true that some medicines are not affordable to majority of Tanzanians especially those in rural areas, hence owner do not sell them because no client who can afford to buy them. Thus we recommend to responsible authorities which are Tanzania Food and Drug Authorities (TFDA) and Pharmacy Council to set rules and regulations or to review the current tracer medicine list so that these medicines can be available and accessible to the majority of population in Tanzania.

REFERENCES

1. Rutta E, Senauer K, Johnson K, Adeya G, Mbwaswi R, Liana J, et al. Creating a new class of pharmaceutical services provider for underserved areas: the Tanzania accredited drug dispensing outlet experience. *Prog Community Health Partnersh Res Educ Action*. 2009;3:145–53.
2. Rutta E, Shekalaghe E, Sillo H, Liana J, Johnson K, Embrey M, et al. Accrediting retail drug shops to strengthen Tanzania's public health system: an ADDO case study. *J Pharm Policy Pract*. 2015;8:23.
3. Mori AT, Kaale EA, Risha P. Reforms: a quest for efficiency or an opportunity for vested interests? a case study of pharmaceutical policy reforms in Tanzania. *BMC Public Health*. 2013;13:651.
4. Mamdani M, Bangser M. Poor people's experiences of health services in Tanzania: a literature review. *Reprod Health Matters*. 2004;12:138–53.
5. Bruxvoort K, Festo C, Kalolella A, Cairns M, Lyaruu P, Kenani M, et al. Cluster randomized trial of text message reminders to retail staff in tanzanian drug shops dispensing artemether-lumefantrine: effect on dispenser knowledge and patient adherence. *Am J Trop Med Hyg*. 2014;91:844–53.
6. Wiedenmayer KA, Kapologwe N, Charles J, Chilunda F, Mapunjo S. The reality of task shifting in medicines management-a case study from Tanzania. *J Pharm Policy Pract*. 2015;8:13.
7. Rutta E. Accredited Drug Dispensing Outlets.
8. Sigonda-Ndomondo M, Mbwaswi R, Shirima R. Accredited drug dispensing outlets: improving access to quality drugs and services in rural and peri-urban areas with few or no pharmacies. In 2004.
9. Dar es Salaam. National Bureau of Statistics. Available <http://www.tanzan.go.tz/census>. 2011;
10. Embrey M, Vialle-Valentin C, Dillip A, Kihyo B, Mbwaswi R, Semali IA, et al. Understanding the role of accredited drug dispensing outlets in Tanzania's Health System. *PLoS One*. 2016;11:e0164332.
11. Larsson M, Pettersson KO, Kashiha J, Ross MW, Agardh A. Stretching the Boundaries: Tanzanian Pharmacy Workers' Views and Experiences of Providing STI Services for Men Who Have Sex with Men. *PLoS One*. 2016;11:e0166019.
12. Wales J, Tobias J, Malangalila E, Swai G, Wild L. Stock-outs of essential medicines in Tanzania. *Polit*

- Econ Approach Anal Probl Identifying Solut Overseas Dev Inst Lond. 2014;
13. Laing R, Waning B, Gray A, Ford N, Hoen E. 25 years of the WHO essential medicines lists: progress and challenges. *The Lancet*. 2003;361:1723–9.
 14. Alba S, Hetzel MW, Goodman C, Dillip A, Liana J, Mshinda H, et al. Improvements in access to malaria treatment in Tanzania after switch to artemisinin combination therapy and the introduction of accredited drug dispensing outlets—a provider perspective. *Malar J*. 2010;9:164.
 15. Hetzel MW, Iteba N, Makemba A, Mshana C, Lengeler C, Obrist B, et al. Understanding and improving access to prompt and effective malaria treatment and care in rural Tanzania: the ACCESS Programme. *Malar J*. 2007;6:83.
 16. Minzi O, Manyilizu V. Application of basic pharmacology and dispensing practice of antibiotics in accredited drug-dispensing outlets in Tanzania. *Drug Healthc Patient Saf*. 2013;5:5.
 17. Kaale E, Manyanga V, Chambuso M, Liana J, Rutta E, Embrey M, et al. The Quality of Selected Essential Medicines Sold in Accredited Drug Dispensing Outlets and Pharmacies in Tanzania. *PLoS One*. 2016;11:e0165785.
 18. Hodel EM, Kabanywany AM, Malila A, Zanolari B, Mercier T, Beck H-P, et al. Residual antimalarials in malaria patients from Tanzania—implications on drug efficacy assessment and spread of parasite resistance. *PLoS One*. 2009;4:e8184.
 19. Khatib RA. Malaria control dynamics in rural Tanzania: Evaluation of implementation of Artemisinin based Anti-malarial Combination Therapy. 2010;
 20. Battersby A, Goodman C, Abondo C, Mandike R. Improving the Supply Distribution and Use of Antimalarial Drugs by the Private Sector in Tanzania. Report prepared for the National Malaria Control Programme, United Republic of Tanzania. 2003;

Source of Support: This study was supported by funds from the Higher Education Students Loan Board granted to Melkisedeck J Filng'afu.; **Conflict of Interest:** None

Submitted: 27-05-2019; **Accepted:** 20-06-2019; **Published:** 19-07-2019