## Original Research Article

# Assessment of the availability of essential medicines and inventory control practice at university of Gondar comprehensive specialized hospital, Amhara regional state of Ethiopia: institutional based cross-sectional study design

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### ABSTRACT

**Background:** Assessment of availability of essential medicines is a critical component of universal health coverage and important factor to address patients' satisfaction and increase their health seeking behavior. Proper inventory management of essential drugs in the health facilities is critical in ensuring availability of essential drugs. The objectives of the study were to assess availability of essential medicines and inventory control practice in university of Gondar comprehensive specialized hospital.
**Methods:** The study was conducted using institution based cross sectional study design from March 10 to April 10, 2019. The data was collected by data abstraction formats and structured observation checklist and data was analyzed by Microsoft office excel for the assessment of the essential medicine's availability and inventory control practices in Gondar university comprehensive specialized hospital.
**Results:** The overall average availability of essential medicines during survey period in Gondar university hospital was 79.17%. The average stock out in the last six months period was 41.67%. The mean duration of stock out of essential medicines of the hospital in the last six months period was 31.7 days and average frequency of stock out was 0.7. The discrepancy between physical count and stock record count of essential medicines ranged from 0% to about 95%.
**Conclusions:** The average availability of essential medicines during data collection period was fairly high. However, the facility was stock out for significant percent of essential medicines over the last six months period and stock out to lesser extent of percent at the time of survey period.

**Keywords:** Availability, Essential medicines, Inventory control practice, Gondar university

## INTRODUCTION

Essential medicines (EM), are those that fulfill the health care needs of the population and are deliberated to be available within the context of a functioning health system at all times in adequate quantity, in the right dosage form, and at the price the community can afford

Inequities in access to medicines reflect failures in health systems and policy.[1] Availability of essential medicines is commonly cited as the most important element of quality by health care consumers, and the absence of medicines is a key factor in the underuse of government health services.[2]

One-third of the world's population does not have a regular access to full and effective treatments with the medicine they need. Lack of access to essential drugs (EDs) is still a serious global public problem, despite considerable progress made since introduction of ED concept unaffordable for large sectors of the global population and major burden of government. Stock management, also known as inventory management, involves all the policies, procedures, and techniques used to maintain the optimum amount of each item in stock. It involves ordering or receiving, items. Stock and inventory management are the heart of the medicines supply system. Stock status is affected by a number of factors related to the store man ability and practice. The principal goal of inventory management involves having to balance the conflicting economics of not wanting to hold too much stock.[3,4]

The inventory management can bring out significant improvement not only in-patient care but also in the optimal use of resources. Continuous management can provide the value-added services to the patients.[5] A well-functioning health system ensures equitable access to essential medical products, vaccines and technology of assured quality, safety and efficacy as well as their scientific soundness and cost effectiveness to use.[6]

The main work involve in the inventory management operation of pharmacy is the balance of stock used for pharmacy to ensure that the needs of patients are adequately addressed and also ensure that the time taken in ordering and purchasing is reduced. It also prevents costs associated with damages and expiration of inventory and it reduces the total cost to pharmacy and hence the entire health care facility.[7] The objective of the study was to assess availability and inventory control practice of essential medicines at university of Gondar comprehensive specialized hospital, Gondar, Northwest Ethiopia.

## METHODS

The study was conducted in Gondar university compressive specialized hospital which was established in 1954 E.C in Northwest Ethiopia, Amhara region, which is located 738 km northwest from the capital city Addis Ababa. Gondar university compressive specialized hospital (UGCSH) has two stores which is programmed and budget (revolving drug fund) drug stores. Gondar hospital, as it is located in the capital city of the zone, played a pivotal role by providing generalized services for the community.

The UGCSH also enables easy access to patients from different areas due to its location in the center of the zone. Institution based cross sectional study was conducted using structured questionnaire for the assessment of the essential medicine's availability and inventory control practices at UGCSH from March 10 to April 10, 2019.

### Ethical consideration

Ethical clearance was obtained from ethical review committee of School of Pharmacy, University of Gondar. All store managers were informed by a formal written letter.

## RESULTS

### Background information

A total of two pharmacy stores found in university of Gondar comprehensive specialized hospital were studied. This included budget and programmed drug stores; store recording for both stores were taken at every two weeks to check availability and requesting additional stock if the stock level it is below minimum stock level. Regarding store managers, three pharmacists were worked in two storage units of the hospital with average work experiences of 4.3 years and all are degree holders. Concerning trainings, all store managers were asked whether they had received pharmaceutical supply management related training or not during their stays in the facility 2 (66.7%) of them were trained on IPLS and only one 33.3% was on job training and all satisfied with their current position.
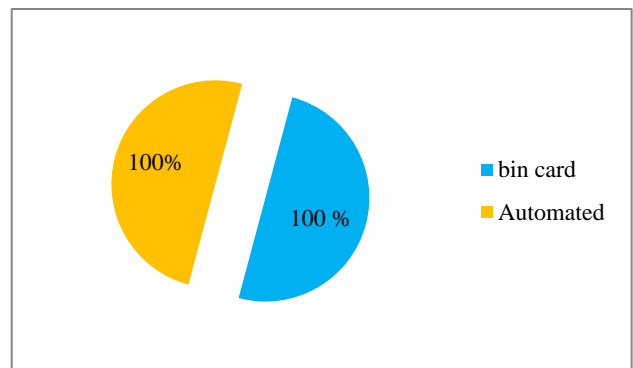


**Figure 1: Availability of logistic tools UGCSH, April 2019.**

### Availability and stock out of essential medicines

Twenty-four essential medicines were assessed and the overall average availability of essential medicine was 19 (79.17%). Average stock out of medicine in the survey period was 5 (20.83%). significant number of selected essential drugs was stocked out during survey period and 10 (41.67%) EMs was stocked out in the last six months period (Figure 2).

Out of stocked out drugs 2 (8.33%) were stock out in the last six months, for less than 40 days. Drugs which was stockout in a total of 40-80 days in last six months period were 4 (16.7%). 3 (12.5%) drugs were stock out in a total of geater than 90 days.
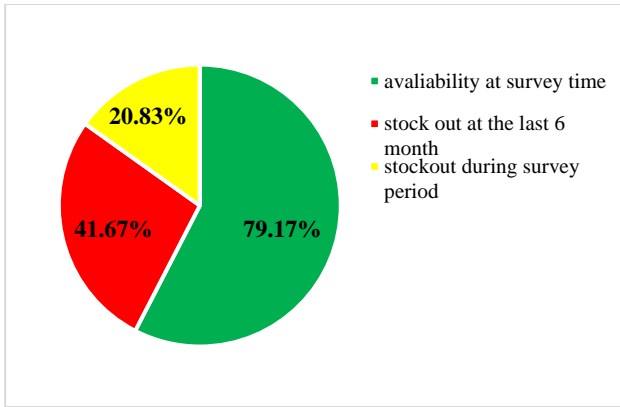
**Figure 2: Availability essential medicines (n=24) at UGCSH, April 2019.**

Total number of days which a drug stockout were ranges from the shortest duration of days for amoxacilline capsule which was about 15 days to the longest amoxacilline syrup which was about 180 days (shown in the figure below). Average number of days of stock out was 31.7 days and frequency of stock out was 0.7.
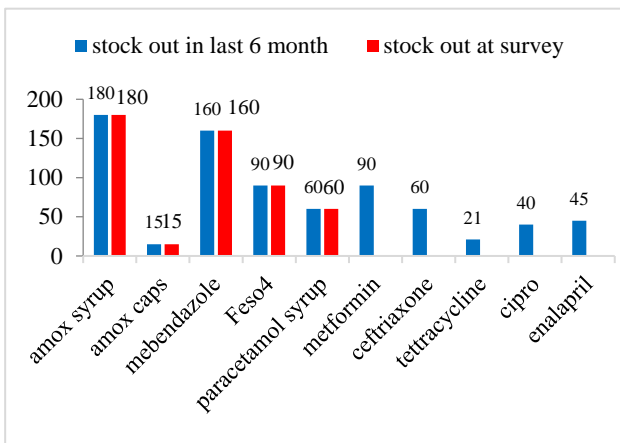


**Figure 3: Stock out of essential medicines at survey period in stock units at UGCSH, April 2019.**

*Inventory control practice (n =2, pharmacy stores)*

All selected essential medicines had bin-cards which kept in the store rooms but not kept separately for each product type and in front of shelf rather all were kept in one carton. However, most 21 (87.5%) of the bin cards were updated regularly where as some 3 (12.5%) of them were not updated.

In addition to this stock accuracy was determined by cross checking physical inventory counted and stock recorded and the stock records for most 18 (75%) were accurate and the near discrepancy recorded on the study samples were 5 (20.8%) and only 1 drug 4.2% which was cotrimoxazole suspension is discrepancy measures about approximately 95%. The discrepancy rate was observed

by the product types and ranges from cotrimoxazole suspension 95% to metformin 0.91%.

## DISCUSSION

The most important output of a logistics system is stock availability, which will improve health outcomes. Stock outs in any health system represent a critical system failure. They can result in patients going without life-saving pharmaceuticals and reduced confidence in the health system. Even where stock outs are not high, facilities with too little stock at the time of the visit are either likely to stock out or will require an emergency order before they receive their next routine order; while overstocks can mean waste and inefficiency.

The current study was found that availability of selected EMs was 79.17% which was fairly high. The study conducted at 36 developing and middle-income countries in 2008, on price, avail-ability and affordability of medicines in 10 private retail pharmacies and 10 public health facilities, the result showed that 68% available in the public sector.[8]

Another study conducted in Jimma health center, on barriers to access: availability and affordability of EDs in a retail outlet of a public health center in 2013, the result showed that only 128 (55.65%) EDs were available in Wellega also on availability and affordability of essential medicines for children, in 2015 showed that average availability of essential medicines was 43% at public and 42.8% at private sectors.[9,10] When we comparing finding of the above study availability of essential medicines in our facility is relatively higher. This might be due to, better supply from the source.

Comparative study conducted at Addis Ababa in 2009 on availability of EMs, showed that availability of essential drugs at facility level was 91% based on a list of selected drugs vs 84% based on prescriptions filled.[11] In population based cross sectional study was con-ducted in south Wollo zone in 2015 on access to EMs in primary health care units, showed that average availability of EMs in PHCU and private medicine outlets was 85.5% and 91% respectively.[12] While we were comparing the findings of current study with the above study, the availability of Ems in our setting was low, this might be due to high burden of patients entitled in UGCSH.

In our study the average stocked out over the last six months period was 41.67% and mean duration of stocked out were 31.7 days and the frequency of stock out was 0.7 and discrepancy were range from 0% to 95% in the last six months periods.

study conducted at Gondar town in six primary public health facilities in 2003, on availability of EMs and inventory management practice in primary public health facilities of Gondar town, the result showed that the average stock out over the last six months period was

22.4% and the mean duration of stock out of tracer medicines of the health facilities in the six months period was 30.5 days. The average frequency of stock out was 0.8 over the six months period and the discrepancy between physical count and stock record count of essential medicines among the surveyed health facilities ranged from 0% to about 60%.[13] Compared to this study the stock out of essential medicine in our facility was high. This might be because of large number of populations were served in Gondar university compressive hospital and demand for essential medicines were high.

The discrepancy was also high (from 0% to 95%) in our finding might be because of number factors includes, work load was too high because only one or two managers that manages the steerage room, bin cards were not appropriately updated for all items, received items not documented because of not all ordered items reach in the store, missing cartons during current or previous inventories, stock is labeled with incorrect identification.

### *Limitations*

The emphasis was on selected essential medicines and it did not look availability of non-selected medicines and alternative choice for selected disease.

### CONCLUSION

Based on the result of current study average availability of essential medicines in UGCSH was fairly high. However, the facility was stock out for significant percent of essential medicines over the last six months period. There was also discrepancy of recorded balance with the physical count in this health facility was too high.

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