

## Availability and Affordability of Essential Medicines and Patient Satisfaction on Pharmacy Services: Case of Two Public Hospitals in Gamo Zone, Southern Ethiopia

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### Abstract

#### Background

Availability of essential medicines is necessary to maintain health of the community. In Ethiopia, availability of life saving medicines was 80% and availability of essential drugs was 70%. Most of drugs used for treatment of chronic illnesses were unaffordable and reported Patient satisfaction on pharmacy service was suboptimal.

#### Objective

To assess availability, affordability and patient satisfaction on pharmacy service at public hospitals in Gamo Zone Southern Ethiopia, July 2017.

## Methods

Facility based descriptive cross sectional study was conducted at two public hospitals by using new version of standardized tool for assessing patient satisfaction on pharmacy services. Two hundred patients from each hospital from adult outpatient departments were interviewed, outpatient Prescriptions and pharmacy dispensing register were reviewed to get price of drugs and stock status was checked at facility warehouse for determining availability of selected tracer drugs. Descriptive data were collected and analyzed by Microsoft Excel and findings were presented in tables and narrative descriptions.

## Results

In this study we have described the availability, affordability essential medicines and patient satisfaction to pharmacy services. This study revealed that only 15(60%) of selected tracer drugs were available in district hospital and 19(76%) of selected tracer drugs were available in General Hospital. Most drugs used for treatment of chronic diseases like (diabetes and cardiovascular diseases) were unaffordable for patients in general Hospital. The lowest paid government worker needed a 1.22 and 1.63 day's wages to treat common disease conditions in district hospital and general hospital respectively. Concerning Patient satisfaction on pharmacy services more than one half (53.3%) of patients in district hospital and 55.5% of patients in general hospital were satisfied with pharmacy services provided during the study period.

## Conclusion and Recommendations

In conclusion availability and affordability of essential medicines were much lower than their ideal value. More than one third of patients were not satisfied with pharmacy services provided in these hospitals. Therefore designing and implementing strategies to reduce identified problems by responsible bodies is critical. Further research on determinants of availability, affordability and poor patient satisfaction on pharmacy service is way forward.

## Introduction

Access to health care is a fundamental human right, enshrined in international treaties and recognized by governments throughout the world. Access to essential medicines is part of the fulfilment of this right. Currently nearly one third of people across the globe go without the treatments they need due lack of availability and affordability of medicines to those who need them. The situation is even worse in the poorest countries of Africa and Asia, where as much as 50% of the population lacks such access [1,2].

In developing countries today medicines account for 25-70% of overall healthcare expenditure, compared to less than 10% in most high-income countries [2,3]. Moreover, up to 90% of the population in low and middle-income countries must pay for medicines out of pocket due to lack of social insurance and inadequate publicly subsidized services [1,4].

In Ethiopia lack of access to essential drugs is major challenge for public health facilities. A national survey estimated that only 80% of Life saving drugs and 70% of key essential medicines were available in the public sector [5]. Another study revealed that availability of essential medicines varied among facilities with range of 26 to 91% [6].

Another similar study conducted to evaluate Availability of essential medicines in Ethiopia: an efficiency-equity trade-off, indicated that availability based on a list of selected drugs was 84%. However, less than half the prescribed drugs were obtained from the budget pharmacy, and one in six patients was forced to purchase drugs in the private sector, where drugs are roughly twice as expensive [7].

Study conducted on Prices and availability of locally produced and imported medicines in Ethiopia and Tanzania revealed declining status of medicine availability in Ethiopia. The mean availability of the medicines in the public sector outlets was 64% [8].

Study conducted in China on prices, availability and affordability of medicines revealed that the mean availabilities of originator brands and lowest-priced generics were 8.9% and 26.5% in the public sector, and 18.1% and 43.6% in the private sector, respectively. The lowest-paid government worker would need 0.1 day's wages to purchase captopril for lowest-priced generics from private sector, while 6.6 days' wages for losartan. For originator brands, the costs rise to 1.2 days' wages for salbutamol inhaler and 15.6 days' wages for omeprazole [9].

Patient satisfaction can be conceptualized as a patient's evaluation of health care services, i.e., as the patient's evaluation of the pharmacist's performance of a variety of patient care activities. It is essential components of the quality of health care and a key indicator of the quality of health care services and is crucial for quality control and quality improvement in health care systems [10-14]. Measuring satisfaction by provider setting is generally interpreted as a proxy for gauging patient perceptions of provider behavior. Research shows that patients place a high value on strong socio-psychological and communicative relationships with their caregivers [15].

The most explicit examination of the relationship between satisfaction and pharmacy was by MacKeigan and Larson, who developed and validated a survey of patient satisfaction with pharmaceutical services. This questionnaire, even in its streamlined, 1994 format, uses 33 statements to measure seven dimensions of satisfaction [15-17]. This questionnaire is again further streamlined to 6 domains including 27 seven questions and validated for use in different languages including Persian language [10].

Study conducted in Philadelphia on patient satisfaction on pharmacy service indicated that, an aggregate of responses across the two pharmacy types showed an excellent or very good rating given by most respondents ( $\geq 52\%$ ) for all items. Respondents were most satisfied with pharmacy location (excellent or very good by 69% of respondents) and least satisfied with time spent waiting for the prescription to be filled. The length of time spent waiting for the prescription to be filled was rated fair or poor by 11% of respondents. In all but this one category, a distribution of ratings across both pharmacy types yielded a rating of good or better by  $\geq 90\%$  of respondents. Satisfaction ratings differed with the type of pharmacy [18].

Patient satisfaction towards pharmacy services is low in different parts of developing world like Ethiopia. For example, Percentage of patients satisfied by pharmacy service was 77% in Debre Markos Referral Hospital [29] and 40% in Felege Hiwot Referral Hospital [19].

There have been many studies of availability, affordability and patient satisfaction with medical services, but few have specifically investigated pharmacy and even fewer have addressed different pharmacy settings [15]. To researchers level of understanding there is no similar study done in the study area. Therefore this study was conducted to Assess availability of key tracer drugs, affordability and patient satisfaction on pharmacy services at two public hospitals in Gamo zone, southern Ethiopia.

## **Methods and Materials**

### **Study Area and Period**

The study was conducted in two public hospitals namely Arba Minch General Hospital and Chench District Hospital. at Gamo Zone in July 2017. These are main public hospitals serving peoples in the area.

### **Study Design**

Facility based descriptive Cross-sectional study design was employed

### **Population**

#### ***Source Populations***

The source populations for this study were all patients who received pharmacy service during data collection period, Pharmacy warehouse manager, Patient prescription registration books and prescriptions papers.

#### ***Study Populations***

Selected patients who received pharmacy service during data collection period, Pharmacy warehouse manager and prescription registration books and prescriptions papers in outpatient pharmacy

### **Inclusion and Exclusion Criteria**

- Patients who received pharmacy service in the selected hospitals during the study period and willing to participate in the study with age greater than or equal to 18 were included in the study. While Patients who were very sick and unable to give information were excluded

### **Variables**

#### ***Dependent Variables***

Medicine, availability, affordability and patient satisfaction

### ***Independent Variables***

- Patient related (socio demographic characteristics,
- Health facility related (Waiting time, Pharmacy organization and workflow, Dispensing counter and Seated service for special counseling in OPD and chronic care pharmacies)

### **Sample Size and Sampling Technique**

#### ***Sample Size Determination***

The sample size was determined by using single population proportion formula by taking proportion of availability of selected drugs as 84% from previous studies [8] and Z value of 1.96 at 95% confidence interval.

$$n = \frac{(Z\alpha / 2)^2 P(1 - P)}{d^2} = 206.5$$

Where: n = is the sample size

- Z<sup>2</sup>= standard normal deviation, set at 1.96, correspond to the 95% confidence interval
- d = is the desired level of precision/margin of error (0.05)
- p= estimated proportion of availability of selected medicines (p=84%), and q is 1-p.

#### ***Sampling Techniques***

We have used consecutive sampling technique and interviewed patients receiving pharmacy service during data collection period until attaining the desired sample size was attained. Prescription papers and dispensing registration books were data concerning price of medicines

### **Data Collection Tools and Techniques**

#### ***Data Collection Tools***

Validated and standardized patient satisfaction assessment tool for pharmacy service which was developed by MacKeigan and Larson, was used for patient satisfaction pharmaceutical services survey. This questionnaire, even in its streamlined, 1994 format, uses 33 statements to measure seven dimensions of satisfaction [15-17].

This questionnaire is again further streamlined to 6 domains including 27 seven questions and validated for use in different languages including Persian language [10]. We further streamlined these questions to total 24 questions by omitting Q#17, Q# 19, and Q#24 because they are currently not practical in case of Ethiopian Public pharmacy services. Q#17 is concerning satisfaction with import substitution by local products; it is not feasible to ask about this in country where only about 20% of drugs are supplied by local production. Q#19 is concerning satisfaction with cosmetics dispensing; Public pharmacies in Ethiopia do not dispense

cosmetics. Q#24 is concerning insurance coverage of prescribed medicines. There is no functional insurance system covering the prescription medicine expense in Ethiopia and Majority of medicine costs are covered by out of pocket payment.

### ***Data Collection Techniques***

Patients who received pharmacy service during data collection period were interviewed consecutively until attaining the desired sample size from respective hospitals. Prescription register and prescription paper were evaluated to get price of selected medicines and Observation of warehouse stock with key medicine list was done for checking availability of drugs. To improve the consistency of the questionnaire, the English version was translated into Amharic and back translated by experts. The questionnaire was pretested on 5% of sample size in Nigisti Elleni Mohammed memorial Hospital. Possible Amendments were made as per findings from pre-test result. The Amharic version of the tool was used for data collection. On spot of checking of collected data on daily basis was done by investigators.

### **Data Quality Management**

One day orientation on data collection tools and principles was given for data collectors by principal investigators and daily checking of collected data about completeness was done by investigators.

### **Data Processing and Analysis**

Availability was based on presence of tracer drugs on stock during survey period. Affordability of medicines was assessed by comparing cost of treatment with the daily wage of the lowest-paid government worker (LPGW) which is approximately \$1.04 USD. We classified as a medicine unaffordable if the standard full course treatment cost is greater than or equal to a daily wage and affordable if it costs less than a daily wage. Patient satisfaction was reported as rating by patients from very poor to excellent satisfaction on services provided and Those who rated their satisfaction as 'very poor and poor' were labelled as unsatisfied while 'good, very good and excellent' were labelled as satisfied with pharmacy services.

### **Ethical Considerations**

Ethical clearance was obtained from Arbaminch College of Health Sciences ethical review board. After clarifying the study objective and Confidentiality of the information; A Written informed consent was obtained from each respondent prior to data collection.

### **Dissemination of Results**

The findings the study was presented to the Arbaminch College of Health Sciences and respective Hospitals. Finally attempt will be made to publish in peer reviewed national or international journal.

### **Definitions of Terms**

• ***Affordability of Medicine:*** Medicine is affordable "if it costs less than a day wage lowest paid worker (\$ 1.04 USD) and unaffordable otherwise."

- **Availability:** Presence of drugs in facility warehouse during the study period.
- **Satisfied Patient:** Patients were labelled as satisfied by pharmacy services if they answered 'Good, Very good and Excellent' for services in the domains of designed questionnaire.

## Results

### Socio-Demographic Characteristics

A total of 400 respondents (200 from each hospital) were participated in this study. More than 50% of participants were males. More than one third of the participants in primary hospital had completed Primary school 71 (33.5%) and 103 (51.5%) of participants in secondary hospital had completed higher education. With regard to marital status 164(82%) and 132(66%) were married in primary and general hospital respectively. Majority of the participants in both primary and general hospital were aged between 18 and 29 years (38% vs 39.5%) (Table 1).

**Table 1:** Socioeconomic and demographic characteristics and health care measures of the pharmacy service users at two public hospitals, in Gamo zone, southern Ethiopia, July 2017.

Characteristics	District hospital n (%), (n=200)	General hospital n (%), (n=200)
<b>Sex</b>		
Male	141(70.5)	122(61)
Female	59(29.5)	78(39)
<b>Age group</b>		
18-29	77(38.5)	79(39.5)
30-39	55(27.5)	63(31.5)
40-49	33(16.5)	24(12)
50-59	12(6)	20(10)
60+	23(11.5)	14(7)
<b>Self-reported health status</b>		
Good and above	99(49.5)	105(52.5)
Fair or poor	101(50.5)	95(47.5)
<b>Education status</b>		
Not able to read and write	54(27)	26(13)
Junior school	71(33.5)	48(24)
Secondary school	48(24)	23(11.5)
Higher Education	27(13.5)	103(51.5)

<b>Marital status</b>		
Single	36(18)	68(34)
Married	164(82)	132(66)
<b>Payment status</b>		
Free	9(4.5)	11(5.5)
Paying	191(95.5)	189(94.5)
<b>Service sought for</b>		
Self	104(52)	94(47)
Others	96(48)	106(53)
<b>Residence</b>		
Rural	114(57)	62(31)
Urban	86(43)	138(69)

### Availability of Key Medicines

Concerning availability of key medicines facilities have agreed on their key tracer medicines before data collection. Accordingly 25 medicines were selected and availability in stock during survey period was assessed. Fifteen out of 25 (60%) medicines were available in district hospital and nineteen out of 25 (76%) key medicines were available in General hospital (Table 2).

**Table 2:** Availability of key medicines at public hospitals in Gamo zone, southern Ethiopia, July 2017.

No.	List of key medicines	District Hospital	General Hospital
1	Amoxicillin with or without clavulanic acid	✓	✓
2	Oral Rehydration Salts	✓	✓
3	Artemether + Lumefantrine (co-artem) tabs	✓	✓
4	Mebendazole Tablets	✓	✓
5	Tetracycline Eye Ointment	-	✓
6	Paracetamol tablet/suspension	✓	✓
7	Ergometrine Maleate Injection/Tablets	-	-
8	Ferrous Sulphate plus Folic Acid	-	-
9	Lidocaine injection	✓	✓
10	TAT injection		-
11	Diclophenac injection	-	✓
12	Doxycycline capsule	✓	✓
13	Cimetidine injection	-	✓



14	Ceftriaxone injection	✓	✓
15	Fluconazole tablet/capsule	-	✓
16	Ciprofloxacin tablet	✓	✓
17	Co-trimoxazole tablet	✓	✓
18	Metronidazole injection	-	-
19	Adrenaline injection	✓	✓
20	Ringer lactate solution	✓	✓
21	Glucose 40% solution	✓	✓
22	Benzyl penicillin Na	-	✓
23	Gentamycin	✓	-
24	Cloxacillin	✓	✓
25	Albendazole	-	-

✓= Available: - Not-available

### Affordability of Medicines

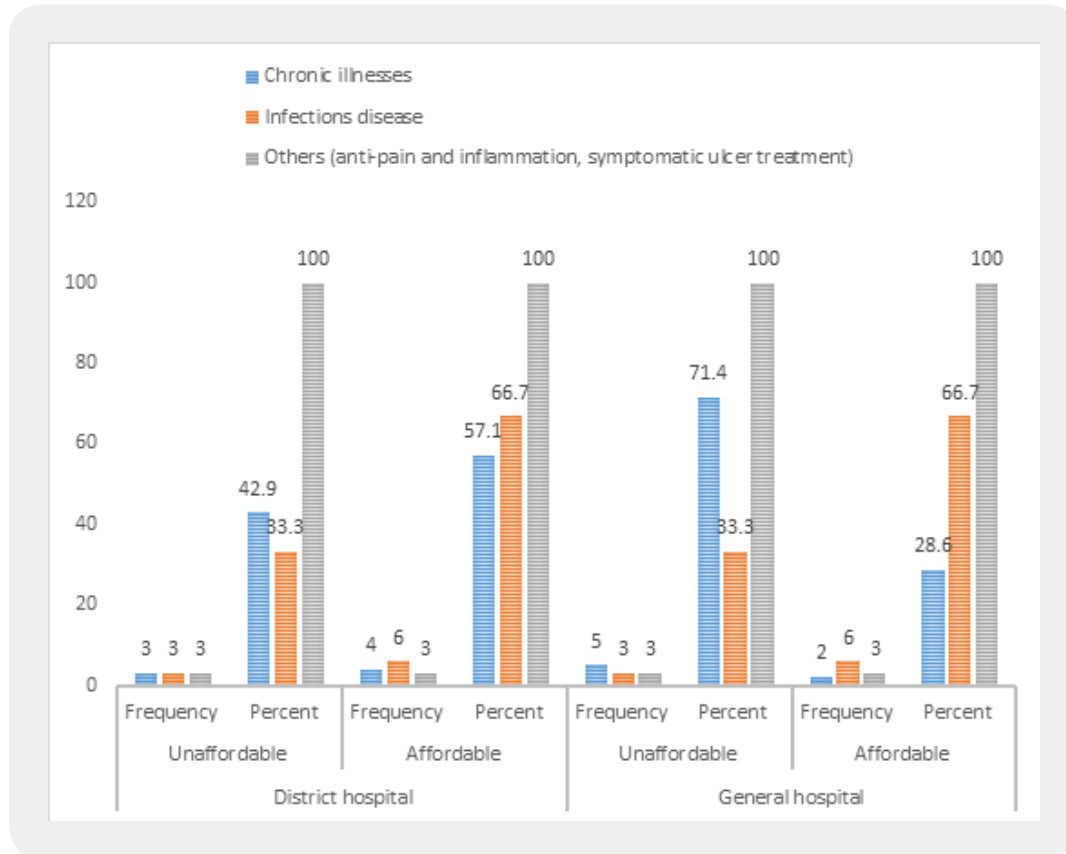
We have included key medicines from Global key-tracer medicines and drugs commonly used for treatment of common illness in the facility. Based on standard treatment guideline we have determined full-course of treatment for these common illnesses. After determining the full course of treatment, the cost of treatment is calculated by using facility specific price for each commodity. We have used the daily wage of lowest paid worker (1.04 USD) to compare the affordability of medicines in the public. With regard to affordability of medicines most of the lowest priced generics needed to treat common uncomplicated conditions cost less than a days' wages in both hospitals. From 14 medicines from Global core-list for affordability study only Simvastatin was not available in district hospital. Salbutamol, Glibenclamide, Ceftriaxone and Omeprazole were unaffordable for patients in district hospital. For patients in general hospital, salbutamol, Glibenclamide, all medicines for cardiovascular disease and ceftriaxone were unaffordable.

The unaffordability of lowest priced medicines in general hospital varied from 1.07 to 7.21 day wages. While in the district Hospital unaffordability of the lowest priced medicines varied from 1.07 to 5.34 day wages. The most unaffordable standard treatment was treatment of peptic ulcer with Amoxicillin 1g tablet + Clarithromycin 500mg tablet+ Omeprazole 20mg tablet in general hospital, which required 7.21 days of wage; While the most unaffordable standard treatment in district hospital was treatment for severe pneumonia by ceftriaxone injection Which required 5.34 days of wage for full course of treatment (Table 3).

**Table 3:** Affordability of medicines for common uncomplicated diseases at Public hospitals in Gamo Zone, Southern Ethiopia, July 2017

Affordability of Global core-list of medicines					
Disease Conditions	Drug name	Strength and dosage form	Treatment schedule	Day's wages to pay for treatment	
				District hospital	General hospital
Asthma	Salbutamol	0.1mg/dose, inhaler	2 inhaler/month	1.78	2.14
Diabetes	Glibenclamide	5mg, cap/tab	1tab*2*30= 60	1.07	1.07
Cardiovascular	Atenolol	50mg, cap/tab	1tan*1*30=30	0.71	1.07
Cardiovascular	Capitopril	25mg, cap/tab	1tab*2*30= 60	0.71	1.07
Cardiovascular	Simvastatin	20mg, cap/tab	1tab*1*30= 30	Not available	2.85
Depression	Amitriptyline	25mg, cap/tab	1tab*1*30= 30	0.36	0.53
Infectious	Ciprofloxacin	500mg, cap/tab	1tab*2*7= 14	0.71	0.71
Infectious	Co-trimoxazole	8+40mg/ml, suspn.	1 bottle	0.7	0.82
Infectious	Amoxicillin	500mg, cap/tab	1cap*3*7= 21	0.71	0.71
Infectious	Ceftriaxone	1g/vial, injection	1g*2* 7= 14	5.34	7.12
CNS	Diazepam	5mg, cap/tab	1tab*1*30= 30	0.36	0.53
Pain/inflammation	Diclofenac	50mg, cap/tab	1tab*3*7= 20	0.11	0.14
Pain/inflammation	Paracetamol	24mg/ml, suspn.	1 bottle	0.53	0.71
Ulcer	Omeprazole	20mg, cap/tab	1tab*2*14= 28	1.08	0.91
Locally selected conditions and treatment medicines					
Ulcer	Omeprazole	20mg, tab	1tab*2*14days=28	1.08	0.91
Mild Pneumonia	Clarithromycin	500mg, tab	1 tab*2*7days=14	2.49	2.36
Typhoid fever	Ciprofloxacin	500mg, tab	1tab*2*3days=7	0.23	0.19
Peptic ulcer	Amoxicillin+ Clarithromycin + Omeprazole	1g, tab 500mg, tab 20mg, tab	1tab*2*14days=28 1tab*2*14days=28 1tab*2*14days=28	3.15	7.21
Rheumatism and joint pain	Diclofenac	50mg, tab	1tab*3*7days=21	0.12	0.12
UTI	Ciprofloxacin	500mg, tab	1tab*2*6	0.23	0.19
Typhus	Doxycycline	100mg, cap	1tab*2*7days=14	0.50	0.43

Diabetes	Glibenclamide Metformin	5mg, tab 500mg, tab	1tab*2*30days=60 1tab*2*30days=60	2.14	2.67
Overall Average number of days work for full course of 21 disease conditions				1.22	1.63



**Figure 1:** Percentage Affordability of Global core-list and tracer medicines for treatment common illnesses at public hospitals in Gamo, Zone, Southern Ethiopia, July 2017

### Patient Satisfaction

Patient satisfaction was assessed by using standardized validated tool designed to assess patient satisfaction on pharmacy services. We streamlined the tool to our case by removing three questions that are not applicable to pharmacy services in Ethiopia (i.e. Satisfaction by import substitution with local products, Satisfaction by cosmetics service and insurance coverage of prescription medicines). Therefore, we used this modified tool to determine patient satisfaction on pharmacy services in outpatient set-up. To compute general satisfaction we have classified patients who rated activities in each domains as ‘Very poor and Poor’ as Unsatisfied and those who rate the services as ‘Good, Very good and Excellent’ as satisfied with pharmacy services. Based on this commonsense, about 53.3% of patients in district hospital and 55.5% were satisfied with pharmacy services provided during the study period. Pharmacists consideration for their patients and explanation of medical details were the most commonly agreed satisfaction areas. Patient satisfaction with pharmacists consideration for patients, Explanation of medicine details and accessibility of pharmacy were relatively

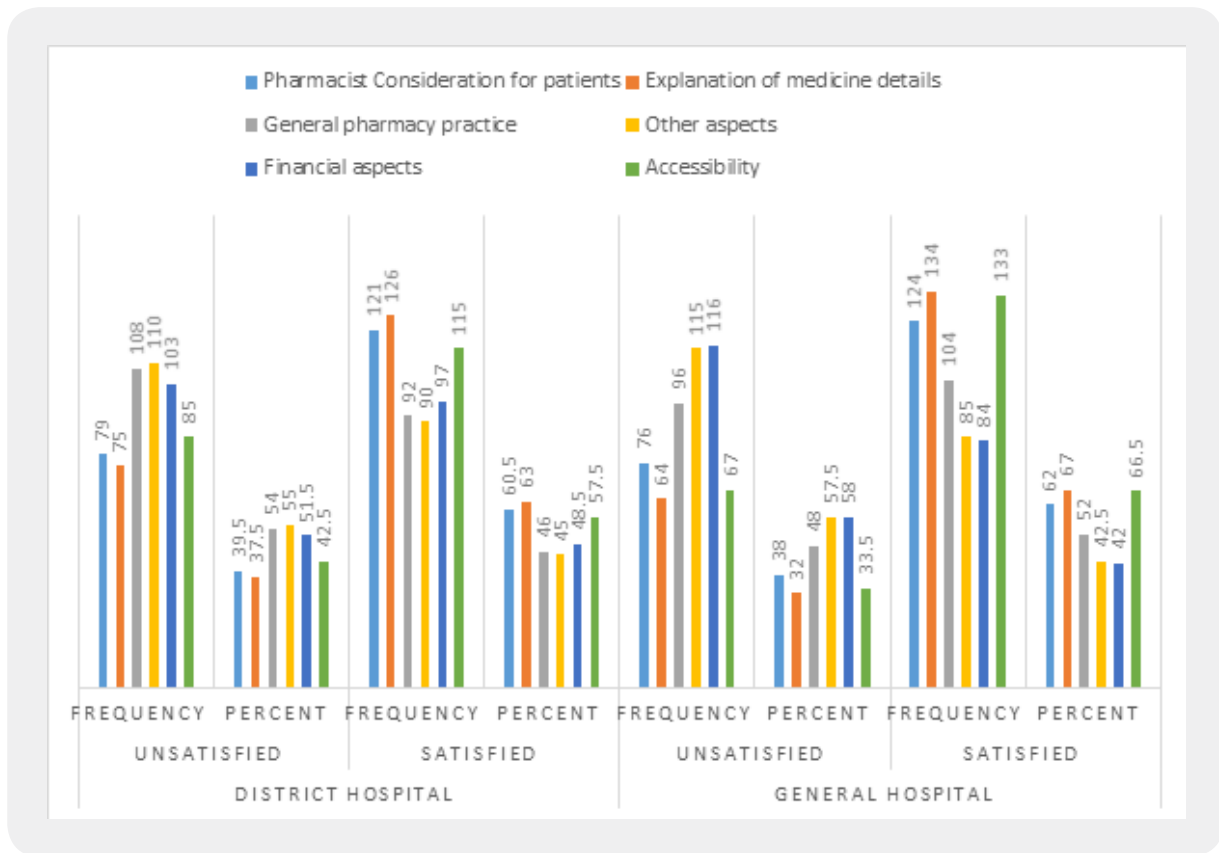
good, yet below three fourth of the ideal values which is 100%. However more than half of patients in two hospitals were unsatisfied with; other aspects like (pharmacy services with traditional medicines and pharmacy consultation with physicians when needed) and financial aspects of medicines. These could be explained by medicine affordability status described above and Lack of health insurance to cover cost of drug therapy for patients particularly receiving chronic care treatment (Table 4 and Figure 2).

**Table 4:** Number and percentage of Patient Reported satisfaction on pharmacy service in district and general hospital in Gamo Zone, Southern Ethiopia, July 2017: [n(%); n= 200 for each Hospitals]

Questionnaire	Very poor (1)		Poor (2)		Good (3)		Very good (4)		Excellent (5)	
	DH	GH	DH	GH	DH	GH	DH	GH	DH	GH
<b>Consideration</b>	<b>30</b> (15)	<b>37</b> (18.5)	<b>49</b> (24.5)	<b>34</b> (17)	<b>53</b> (26.5)	<b>47</b> (23.5)	<b>48</b> (24)	<b>59</b> (29.5)	<b>20</b> (10)	<b>18</b> (9)
1. The pharmacist spends enough time with me to provide pharmacy services	20 (10)	30 (15)	45 (22.5)	55 (27.5)	35 (17.5)	35 (17.5)	80 (40)	65 (32.5)	20 (10)	15 (7.5)
2. I'm satisfied with the waiting time my prescriptions are filled	40 (20)	52 (26)	50 (25)	37 (18.5)	30 (15)	31 (16.5)	50 (25)	67 (33.5)	30 (15)	13 (6.5)
3. I'm satisfied with the behavior and attitude of pharmacy staff	20 (10)	40 (20)	50 (25)	45 (22.5)	80 (40)	55 (27.5%)	35 (17.5)	52 (26)	15 (7.5)	8 (4)
4. The pharmacist has a respectful behavior with me	10 (5)	20 (10)	60 (30)	35 (17.5)	50 (25)	57 (28.5)	55 (27.5)	68 (34)	25 (12.5)	30 (15)
5. The pharmacist tries to make sure that I don't get into trouble using my medications	50 (25)	30 (15)	40 (20)	45 (22.5)	60 (30)	40 (20)	40 (20)	54 (27)	10 (5)	31 (15.5)
6. All in all, I have a positive judgment about the services I receive from the pharmacy	40 (20)	50 (25)	50 (25)	40 (20)	60 (30)	65 (32.5)	30 (15)	35 (17.5)	20 (10)	10 (5)
<b>Explanation</b>	<b>28</b> (14)	<b>26</b> (13)	<b>47</b> (23.5)	<b>38</b> (19)	<b>58</b> (29)	<b>49</b> (24.5)	<b>46</b> (23)	<b>52</b> (26)	<b>22</b> (11)	<b>33</b> (16.5)
7. The pharmacist provides adequate explanation when I get a prescription filled (especially for a prescription filled for the 1st time)	20 (10)	35 (17.5)	30 (15)	45 (22.5)	60 (30)	52 (26)	50 (25)	38 (19)	40 (20)	30 (15)

8. The pharmacist provides necessary warnings about my medications (side effects, drugdrug interactions, food and drug interactions), especially for medications received for the 1st time	40 (20)	20 (10)	50 (25)	30 (15)	70 (35)	50 (25)	30 (15)	66 (33)	10 (5)	34 (17)
9. The pharmacist explains sufficiently about the treatment period (when I receive a medication for the 1st time)	20 (10)	15 (7.5)	50 (25)	25 (12.5)	45 (22.5)	62 (31)	76 (38)	58 (29)	9 (4.5)	40 (20)
10. The pharmacist tries to make sure you understand how to take your medications properly	10 (5)	20 (10)	62 (31)	35 (17.5)	65 (32.5)	45 (22.5)	35 (17.5)	62 (31)	28 (14)	28 (14)
11. The pharmacist answers to my questions about other medications I take	50 (25)	40 (20)	40 (20)	52 (26)	48 (24)	38 (19)	40 (20)	36 (18)	22 (11)	34 (17)
<b>General</b>	<b>61 (30.5)</b>	<b>56 (28)</b>	<b>47 (23.5)</b>	<b>39 (19.5)</b>	<b>41 (20.5)</b>	<b>37 (18.5)</b>	<b>37 (18.5)</b>	<b>49 (24.5)</b>	<b>14 (7)</b>	<b>18 (9)</b>
12. The pharmacist is available to answer questions that I have about my medications	40 (20)	30 (15)	56 (28)	49 (24.5)	34 (34)	31 (15.5)	45 (22.5)	71 (35.5)	25 (12.5)	19 (9.5)
13. The pharmacist is able to explain things to me in a way that I can understand	35 (17.5)	20 (10)	36 (18)	33 (16.5)	49 (24.5)	47 (23.5)	55 (27.5)	57 (28.5)	25 (12.5)	43 (22.5)
14. I receive the medications from the pharmacy exactly according to the prescription	80 (40)	85 (42.5)	45 (22.5)	35 (17.5)	35 (17.5)	32 (16)	35 (17.5)	39 (19.5)	5 (2.5)	9 (4.5)
15. There is enough labeling on my medications	75 (37.5)	80 (40)	62 (31)	32 (16)	43 (21.5)	45 (22.5)	17 (8.5)	35 (17.5)	3 (1.5)	8 (4)
16. The instructions on my medications are easily readable	62 (31)	60 (30)	38 (19)	50 (25)	42 (21)	30 (15)	39 (19.5)	45 (22.5)	19 (9.5)	15 (7.5)
17. The pharmacy services provided to me are perfect	72 (36)	60 (30)	47 (23.5)	45 (22.5)	41 (20.5)	35 (17.5)	22 (11)	45 (22.5)	5 (2.5)	15 (7.5)
<b>Other aspects</b>	<b>55 (27.5)</b>	<b>55 (27.5)</b>	<b>55 (27.5)</b>	<b>60 (30)</b>	<b>42 (21)</b>	<b>30 (15)</b>	<b>44 (22)</b>	<b>40 (20)</b>	<b>6 (3)</b>	<b>15 (7.5)</b>
18. I'm satisfied with the services provided by pharmacists in relation to herbal medicines	80 (40)	70 (35)	56 (28)	65 (32.5)	20 (10)	25 (12.5)	42 (21)	35 (17.5)	2 (1)	5 (2.5)

19. When necessary, the pharmacist consults and cooperates with the physician	30 (15)	40 (20)	54 (27)	55 (27.5)	65 (32.5)	35 (17.5)	47 (23.5)	45 (22.5)	4 (2)	25 (12.5)
<b>Financial aspects</b>	<b>70 (35)</b>	<b>73 (36.5)</b>	<b>34 (17)</b>	<b>44 (22)</b>	<b>52 (26)</b>	<b>38 (19)</b>	<b>38 (19)</b>	<b>39 (19)</b>	<b>7 (3.5)</b>	<b>7 (3.5)</b>
20. I am satisfied with the amount of outofpocket payments for my medicines	80 (40)	86 (43)	35 (17.5)	46 (23)	30 (15)	32 (16)	45 (22.5)	33 (16.5)	10 (5)	3 (1.5)
21. I'm satisfied with medication costs compared to other household expenses	60 (30)	60 (30)	32 (16)	42 (21)	73 (36.5)	43 (21.5)	31 (15.5)	45 (22.5)	4 (2)	10 (5)
<b>Accessibility</b>	<b>34 (17)</b>	<b>30 (15)</b>	<b>49 (24.5)</b>	<b>37 (18.5)</b>	<b>41 (20.5)</b>	<b>45 (22.5)</b>	<b>49 (24.5)</b>	<b>48 (24)</b>	<b>25 (12.5)</b>	<b>40 (20)</b>
22. I'm satisfied with the time needed to get to the pharmacy where I fill my prescriptions	20 (10)	10 (5)	45 (22.5)	30 (15)	37 (18.5)	35 (17.5)	58 (29)	60 (30)	40 (20)	65 (32.5)
23. In an emergency, I can easily find a pharmacy to receive pharmacy services	40 (20)	30 (15)	56 (28)	42 (21)	44 (22)	56 (28)	36 (18)	38 (19)	24 (12)	34 (17)
24. My prescription medications are available in the pharmacy	42 (21)	50 (25)	45 (22.5)	40 (20)	41 (20.5)	45 (22.5)	62 (31)	45 (22.5)	10 (5)	20 (10)



**Figure 2:** Overall rating of patient satisfaction on pharmacy services at two public hospitals in Gamo, Zone, Southern Ethiopia, July, 2017.

## Discussion

In this study we have described the availability, affordability essential medicines and patient satisfaction to pharmacy services. Access to medicines and affordability are some of challenges to meet the health care needs of 21<sup>st</sup> century and it is more pronounced in developing countries like Ethiopia. World health organization (WHO) report on universal access to essential medicines, showed that one third of the global population or one half of the peoples in developing countries lack access to essential medicines. Similarly this study revealed that only 15(60%) of selected tracer drugs were available in district hospital and 19(76%) of selected tracer drugs were available in General Hospital. This is also similar with findings from Study conducted on Prices and availability of locally produced and imported medicines in Ethiopia and Tanzania revealed that mean availability of the medicines in the public sector outlets was 64% [9].

Affordability of drugs in this study was assessed in terms of the number of days the lowest paid unskilled governmental worker would have to work to pay for treatment course. At the time of the survey, the lowest paid unskilled governmental worker earned (US \$ 1.04). In our study most drugs used for treatment of chronic diseases like (diabetes and cardiovascular diseases) were unaffordable for patients in general Hospital. On the average, the lowest paid government worker needed a 1.22 and 1.63 day’s wages to treat common

disease conditions in district hospital and general hospital respectively. Least priced drugs are unaffordable for half of standard treatments of prevalent diseases in both hospitals since they cost more days' wages for lowest paid unskilled governmental worker. This is consistent with study conducted in China on prices, availability and affordability of medicines revealed that the lowest-paid government worker would need 0.1 day's wages to purchase captopril for lowest-priced generics from private sector, while 6.6 days' wages for losartan. For originator brands, the costs rise to 1.2 days' wages for salbutamol inhaler and 15.6 days' wages for omeprazole [10]. Reduced affordability of drugs have a number of negative health impacts including entrance of counterfeit or substandard medicines to distribution chain; treatment non-adherence; treatment failure and antimicrobial resistance.

Our study also revealed Patient satisfaction on pharmacy services. More than one half (53.3%) of patients in district hospital and 55.5% of patients in general hospital were satisfied with pharmacy services provided during the study period. Pharmacists consideration for their patients and explanation of medical details were the most commonly agreed satisfaction areas. However more than half of patients in two hospitals were unsatisfied with general pharmacy service and financial aspect of pharmacy service. However this is lower than findings from findings from Debre Markos Referral Hospital 77% [19], study conducted in Philadelphia, which showed an aggregate of responses across the two pharmacy types showed an excellent or very good rating given by most respondents ( $\geq 52\%$ ) for all items [18]. It could be explained by difference in economic status, sociodemographic characteristics of patients, type of institution and levels of dispensing professionals and difference in tool used for survey.

### **Strength of the Study**

Using validated patient satisfaction assessment tool

Adequate sample size based on WHO drug use evaluation criteria

### **Limitation of the Study**

Results of this study should be used in light of its limitations. Affordability was studied with currency exchange range of that year and it may not show the current status due to changes in currency exchange rate and other socio-economic factors. Being a cross sectional study, it doesn't determine cause and effect. The responses might be influenced by socially desirable bias. The patient satisfaction by pharmacy service was studied among outpatient pharmacy and this finding of this study may not generalized to other departments [20].

## **Conclusion and Recommendations**

### **Conclusion**

In conclusion availability and affordability of essential medicines were much lower than their ideal value. Particularly medicines for chronic care were less affordable for patients attending General Hospital. More than one third of patients were not satisfied with pharmacy services provided in these hospitals.



## Recommendations

Based on the major findings of this descriptive study we recommend the following responsible bodies:-

**1. Respective Hospitals:** Availability and affordability of essential medicines were low, these calls for actions that can improve these access and availability of essential medicines particularly for chronic illness. Strategies may include improving pharmaceutical supply chain at facility level, reasonable medicine budgeting, involving relevant stakeholders working on similar areas.

**2. Pharmacy Professionals:** Patient satisfaction to pharmacy services in every domain is below its ideal value. Therefore it is important to reevaluate pharmacy work flow and empower professionals, hence they can provide desired level of care.

**3. Researchers:** Further research on determinants of availability, affordability and poor patient satisfaction on pharmacy service using these standardized tool at wider level is important to improve medicine availability, accessibility and patient satisfaction on pharmacy services.

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## Contribution of Researchers

Mende Mensa Sorato is senior researcher lecturer from Arba Minch University, PhD scholar at Tehran University of Medical Sciences; analyzed and interpreted the findings of this study and he also prepared this document for publication. Biruk Wogayehu Taddele conceived the study and prepared the proposal and participated in data analysis and presented the work for responsible bodies.

## Conflicts of Interest

We have no conflict of interest during conducting this study or developing the manuscript.

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