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# A CROSS-SECTIONAL STUDY ON AVAILABILITY OF ESSENTIAL MEDICINES AND BASIC DIAGNOSTIC EQUIPMENTS IN TANZANIA.

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**ABSTRACT**

The objective of this study was to determine availability of medicines and diagnostic equipments in public and private health care facilities in Tanzania. Four regions participated in the study and for each region, two districts were randomly chosen, one rural and one urban, in which 67 health facilities were drawn studied. Sixteen medicines were picked from National Essential Medicines List and ten diagnostic equipments were selected and their availability determined. The Statistical Package for Social Sciences (SPSS) version 16.0 SPSS, Inc. Chicago, USA, was used to analyse data. Mean availability of medicines was 80% in studied facilities; regional mean availability of medicines was 86% for Dar es Salaam, 82% for Kilimanjaro, 85% for Mbeya, and 70% for Mwanza. Availability of diagnostic equipments in consultation rooms was 39% (N=143). Availability of medicines and diagnostic equipments in studied health facilities were sub-optimal and interventions to address the situation are required.

## INTRODUCTION

Lack of regular access to essential medicines and diagnostic equipments remains a major public health concern globally. The World Health Organization (WHO) defines essential medicines as "those that satisfy the priority health care needs of the population" and they should be made available in "functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford".[1] However, before prescribing an essential medicine, correct diagnosis is required and availability of basic diagnostic equipments is a pre-condition in a functional health care facility. While access has

improved considerably since the introduction of the essential medicines concept in 1977, one-third of the world's population is still not properly diagnosed and treated with the needed medicines.[2–5] Nearly 10 million lives could be saved by improved access to and availability of essential medicines and diagnostic equipment. Out of those millions of lives, 4 million are in Africa and South-East Asia alone.[6]

Availability of essential medicines and basic diagnostic equipments is a major indicator of perceived quality of health care services for most people in Tanzania.[7, 8] It is therefore considered an important prerequisite for motivating people to utilize health facilities and enrol in voluntary financing schemes such as Community Health Fund.[8, 9]

Despite of tremendous efforts by the government to improve the health of its citizens through provision of medicines and diagnostic equipments, erratic supply and frequent stock-outs of medicines and medical equipments are common in the health care facilities. A situational analysis in Dodoma region, Tanzania in 2010 and a comprehensive baseline survey which was conducted by the Health Promotion and System Project (HPSS) in 2012 showed that the availability of essential medicines was 53% with a corresponding stock-out rate of 47% for 26 tracer medicines.[10] The HPSS project baseline survey applied a comprehensive approach to health system strengthening: it looked both at the supply side (availability of medicines, financing) and the demand side (health promotion priorities from a community perspective). In a baseline survey conducted by WHO in Tanzania in 2002, Mbeya and Kilimanjaro regions had availability of essential drugs of about 90% while Dar es Salaam and Mwanza had lower availability of about 80%.[11]

In 2014, a measure of availability of medicines and diagnostic equipments for non-communicable and HIV disease was conducted in primary healthcare facilities in Tanzania.[12] Their findings indicated that basic medicines and diagnostic equipment for HIV and diabetes were available more frequently in hospitals than in health centres and dispensaries. Basic diagnostic equipments were consistently available in 63-75% of health facilities, but even hospitals outpatient departments sometimes did not have basic diagnostic instrument such as sphygmomanometers. Other equipment such as weight scales and height measurement devices were scarce in studied health centres and dispensaries. A similar survey conducted in Uganda with representative sample of 889 patients indicated that half of those with hypertension had not had their blood pressure measured in the past 5 years, and 42% had never had their blood pressure measured. One third of those with diabetes had not had their glucose levels measured in the past twelve months.[13] This information implies scarce of diagnostic equipment testing reagents in health care facilities. Therefore, this study was undertaken in order to assess availability of selected essential medicines and basic diagnostic equipments in four regions of Tanzania.

**MATERIALS AND METHODS**

*Study objectives:* Objectives of the study were to determine availability of essential medicines and basic diagnostic equipments in selected public and private healthcare facilities in Tanzania, by considering rural and urban facilities, and guide the

Ministry of Health on possible interventions for improving availability of medicines and diagnostic equipments

*Study setting:* The assessment of essential medicines and diagnostic equipments availability was conducted in 4 regions of Tanzania mainland, namely Dar es Salaam, Kilimanjaro, Mwanza and Mbeya between August and October 2014. The four regions were purposefully selected because of presence of zonal medical stores and relatively better availability of medicines hence creating a favorable environment for assessment of availability of medicines and diagnostic equipment. Similarly, in 2002 WHO collected baseline data on Pharmaceutical Sector in Tanzania from those four regions with focus to medicine availability. Collecting data from these 4 regions provided an opportunity for comparison with those collected by the WHO.

*Study design:* This is a cross-sectional study in which data were collected using both prospective and retrospective methods. The data collection tools on availability of essential medicines and for availability of diagnostic equipments, were prepared, pre-tested, corrected and printed for use in the field. Research assistants were trained on research methodology, ethics and on how to collect data.

In each of the four selected regions, 2 districts were randomly chosen, one rural and one urban, that is, rural or urban districts were listed and grouped together for each region and one district was picked from each group to form a total of 8 districts (four rural and four urban) which were included in the study. Sixteen common and frequently used tracer medicines were picked from National Essential Medicines List and studied. Similarly, ten common and basic diagnostic equipments were selected and their availability was determined. Selected tracer medicines and diagnostic equipments were those which could be available in various levels of healthcare facilities such as dispensaries, health centres and hospitals.

*Data collection:* The fourth version of standard treatment guidelines and national essential medicines list for Tanzania printed in 2013 has listed 500 as essential medicines.[14] From this list, 16 common and frequently used essential medicines (tracer medicines) were identified and selected to determine their availability. The availability of selected essential medicines was captured using prepared recording tool by simply ticking absent or available during the day of visit of health care facility.

The tool for recording availability of diagnostic equipment such Stethoscopes, Otoscope, Foetoscope, Blood Pressure Machine etc. was also prepared.

***Data analysis:*** Both selected essential medicines and diagnostic equipments availability were further analysed using the Statistical Package for Social Sciences (SPSS) version 16.0 SPSS, Inc. Chicago, USA. Data were initially entered into excel database before migrating them to SPSS database for detailed analysis. Descriptive statistics were used to calculate frequency counts, averages and percentages. We compared percentages using Fisher's exact test. P-value $<0.05$ was considered significant.

***Ethical issues:*** This study did not require ethical clearance however ethical principles for conducting medical research were adhered to during implementation of this study. Permission was requested from in-charges of health care facilities and where patients were involved their verbal consent was sought. The study was approved by the Ministry of Health, Community Development, Gender, Elderly and Children.

**RESULTS**

The study included 67 health care facilities in four regions and eight districts of Tanzania. Seven facilities were dropped out during data analysis because of missing data therefore results presented are from 60 health care facilities with a total of 143 consultation rooms.

***Availability of medicines and diagnostic equipments:*** Table 1A indicates mean availability of selected essential medicines in the health care facilities by regions. It shows that facilities in Dar es Salaam with 86% availability of essential medicines well stocked than other regions. Mwanza region, with 70% availability of essential medicines, health care facilities were least stocked with essential medicines. The medicines for managing non-communicable diseases such as Bendrofluazide and Glibenclamide tablets showed lowest percentage of availability of 22% and 48% respectively. Table 1B indicates that all basic diagnostic equipments were inadequately available at consultation rooms across the studied regions and the differences were statistically significant. Most consultation rooms lacked Timepiece and Patella Hammer, as percentage of availability of these diagnostic equipments was low in all studied regions. Results indicate that 39% of consultation rooms had all required basic diagnostic equipments. Consultation rooms in Kilimanjaro region scored the highest percentage (49%) of

availability of basic diagnostic equipments while Mbeya region scored the least (32%).

Results have shown further that, mean availability of selected essential medicines were better in urban health care facilities (85%) than in rural facilities (73%) (Table 2A). Also availability of Bendrofluazide and Glibenclamide tablets were statistically lower in rural health care facilities than in urban facilities. The comparison on the availability of basic diagnostic equipments between rural and urban health facilities revealed no statistical significant difference. However rural facilities had much lower percentages of availability of Stethoscope, Otoscope, Blood Pressure Machine, Torch, Patella Hammer and Tongue depressor (Table 2B). Less than 33% of consultation rooms in the rural health facilities had all basic diagnostic equipments compare to 43% in urban.

Data indicates that mean availability of selected essential medicines in private health care facilities was less (79%) compared to public health care facilities (81%). Also, Ferrous Salt + Folic acid tablets had better availability in public health facilities (91%) compared to 54% in private facilities (Table 3A). Results revealed poor availability of basic diagnostic equipments in consultation rooms for both private and public health care facilities (Table 3B). However, 42% of the consultation rooms in public health facilities had all of basic diagnostic equipment's while only 33% of consultation rooms in private health facilities had all basic diagnostic equipment.

**DISCUSSION**

The availability of essential medicines and basic diagnostic equipments is critical in the delivery of quality healthcare services in Tanzania. Lack of essential medicines has been described as a major reason for dissatisfaction among patients.[15] Similarly, lack of diagnostic equipments and medical supplies implies poor health care services, and impact upon staff morale through patients or clients pressure demanding diagnosis.[16]

This study has established that the availability of essential medicines across the studied regions, Dar es Salaam region had best availability (86%) compared to other regions. Mwanza region had the least (70%) availability of essential medicines. This information is in-line with Health Management Information System (HMIS) generated by the Ministry of Health and Social Welfare of Tanzania on health commodities stock outs across the regions.[17]

Mwanza region is one of highly populated region in Tanzania hence demand of medicines could be higher than other regions causing this gap of medicines availability.[18] On other hand, Dar es Salaam region is the largest commercial city in Tanzania with a number of well-equipped public and private healthcare facilities. These facilities are also well stocked with key or essential medicines compare to other regions.

The baseline survey conducted by WHO in Tanzania in 2002, Mbeya and Kilimanjaro regions had availability of essential drugs of about 90% while Dar es Salaam and Mwanza regions had about 80%.[11] In the current assessment, Dar es Salaam region showed improvement and scored availability of key medicines at 86%, and Mwanza dropped further down to record availability of 70%. Mbeya and Kilimanjaro regions have also dropped to 85% and 82% respectively.

In another study conducted in Dodoma region in Tanzania, availability of essential medicines was found to be 84% and items which were commonly out of stock included Malaria Rapid Diagnostic Test (mRDT), Artemether Lumefantrine (ALu), Amoxycillin syrup and tablets.[19] Dodoma study proposed routine supervision by Council Health Management Team in order to improve availability of essential medicines at district level.

Availability of essential medicines to treat non-communicable diseases was relatively low across all regions. The average availability of Bendrofluazide, a diuretic agent was 22% while availability of Glibenclamide tablets, a medicine for diabetics, was at 48%. Availability of these products was also measured at rural and urban setting. The difference of availability of Bendrofluazide and Glibenclamide was statistically significant between rural and urban facilities. However, urban facilities were better equipped with non-communicable products compare to rural facilities. In a study conducted in Tanzania by Robertson *et al* in 2015, Glibenclamide availability ranged from 19% to 52% in studied health facilities.[20] The author concluded that the availability of key NCD medicines for management of diabetes and hypertension is sub-optimal with lower availability in dispensaries and health centres than in hospitals and lower availability in rural than urban health facilities. Our findings are consistent with previous studies which recorded availability of essential medicines to be suboptimal.

Availability was compared between private and public facilities and results showed no significant difference except for two types of medicines which showed better availability in public facilities than in private facilities.

Since Tanzania is faced with double epidemics of diseases, measures should be taken to improve availability of medicines to manage non-communicable diseases (NCDs) in both rural and urban settings. The current data show serious challenge in availability essential medicines to manage NCDs. Although availability of other medicines is encouraging, the current out of stock of almost 20% of essential drugs in health facilities is unacceptable and needs an immediate attention by the Ministry of Health, Community Development, Gender, Children and Elderly. Adequate financing for procurement of essential medicines and strategies to promote rational use of medicines are important interventions to address challenges of stock outs of medicines.

Availability of basic diagnostic tools was also measured across the regions, as well as by considering settings such as rural versus urban, and private versus public. Result indicates that essential diagnostics equipment were poorly available across the regions with no significant difference. However, across the regions, Timepiece and Patella Hammer showed very low availability of 11% and14% respectively. In Kilimanjaro region, Timepiece scored zero percent availability, the lowest in all study regions.

Similarly there was no significant difference on the availability of basic diagnostic equipment between rural and urban health facilities (Table 2B); however, rural facilities had much lower percentage of availability of Otoscope (11%), Torch (11%), Timepiece (12%) and Patella Hammer (9%). When private and public facilities were compared (Table 3B), results showed no significant difference on the availability of basic diagnostic equipment between the two, with the exception of the Timepiece (7%), Torch (13%) and Patella Hammer (10%). This is consistent with other studies which cited low availability of basic diagnostic equipment in Tanzania and within Africa region.[12; 13; 16] Lack of basic diagnostic equipment impairs quality of care and could lead to improper diagnosis and promote irrational use of medicines. Studies indicate that rural facilities are more affected than urban; similarly public facilities are more affected than private. An intervention to facilitate availability of essential diagnostic tools is inevitable. In a related study to determine the availability and quality of diagnostic services for malaria and other communicable diseases

in Tanga region of Tanzania, the result showed that sixteen (43%) of the study laboratories had five or fewer types of diagnostic equipment. Only seven laboratories (19%) had more than 11 types of diagnostic equipment. This study indicated that diagnostic services for malaria and other diseases were inadequate because of lack of diagnostic equipments, shortage of laboratory supplies and limited human resources.[21] In addition, Tanga study pointed out that appropriate policies to improve the availability and quality of diagnostic services is required. This study also justifies our findings of inadequate diagnostic equipments and services in health care facilities in Tanzania

Various recommendations to improve availability of essential medicines and basic diagnostic equipments in public sector are being proposed here such as; increase the budget for essential medicines and diagnostic equipments; formulate and enforce standard treatment guidelines (STGs) and essential medicines list (EML); procurement and distribution of medicines and basic diagnostic equipments based on EML; procurement of medicines by generic name; efficient transparent and accountable procurement and distribution system; use of robust IT systems; utilizing local supply options (such as prime vendors system); supportive legislations and regulations; better prescription practices; and regular monitoring and evaluation of the system including supportive supervision as well as  medicines and diagnostic equipment audit.[19; 21- 24]

***Limitations of this study:*** Though we managed to establish mean availability of essential medicines and diagnostic equipments in Tanzania, key essential medicines measured were 16 out of 500 lists of essential medicines in Tanzania. Also availability of 10 basic diagnostic equipments may not be an adequate representative sample of all available diagnostic equipments in health care facilities. However our findings are consistent with other studies conducted to determine medicines availability as well as diagnostic equipments.

## CONCLUSIONS

Our study findings indicate that availability of essential medicines and basic diagnostic equipment in Tanzania is sub-optimal. Strengthening the health sector availability of essential medicines and basic diagnostic equipment should be a long-term investment to improve quality of care in health care facilities. Increased allocation of funds on essential medicines and basic diagnostic equipments is of paramount importance. The data from present study can be used as a baseline to evaluate effectiveness and cost-effectiveness of health supply chain interventions being undertaken in Tanzania. These include Medical Stores Department transformations and holistic supply chain system review, as well as health supply chain system redesign.

**Conflict of Interests:** None

∗Fisher's exact test

**Table 1: Availability of essential medicines and diagnostic equipments in studied regions**

| No. | List of essential drugs/medicines | Part A :Availability of selected essential medicines across the four regions | | | | | |
|---|---|---|---|---|---|---|---|
| | | Regions | | | | | |
| | | Dar es Salaam (N=10) | Kilimanjaro (N=14) | Mbeya (N=20) | Mwanza (N=16) | Overall (N=60) | p-value* |
| 1. | Oral Rehydration Salts (ORS) Sachet | 80% (8) | 85%(11) | 85%(17) | 44% (7) | 72%(43) | 0.047 |
| 2. | Zinc Tabs | 90% (9) | 92% (12) | 90% (18) | 50% (8) | 78%(47) | 0.03 |
| 3. | Cotrimaxazole Tabs or suspension | 100% (10) | 93% (13) | 95%(19) | 75%(12) | 90%(54) | 0.20 |
| 4. | Amoxicilin Caps or Syrup | 80%(8) | 100% (14) | 100%(20) | 81%(13) | 92%(55) | 0.03 |
| 5. | Benzylipenicillin5MU inj | 100% (10) | 86% (12) | 100% (20) | 88%(14) | 93%(56) | 0.17 |
| 6. | (Artmether/Lumefantrine) dispersible | 100% (10) | 93% (13) | 95%(19) | 81%(13) | 92%(55) | 0.44 |
| 7. | (Artmether/Lumefantrine) Tabs | 100% (10) | 77% (11) | 100% (20) | 94%(15) | 93%(56) | 0.08 |
| 8. | Albendazole or Mebendazole tabs | 100% (10) | 100% (14) | 100% (20) | 56%(9) | 88%(53) | 0.001 |
| 9. | Antiseptic/disinfectant | 100% (10) | 79% (11) | 95%(19) | 94%(15) | 92%(55) | 0.34 |
| 10. | Bendrofluazide tablets | 20% (2) | 21% (3) | 20% (4) | 25%(4) | 22%(13) | 1.0 |
| 11. | Glibenclamide tabs | 70% (7) | 43%(6) | 55%(11) | 31%(5) | 48%(29) | 0.25 |
| 12. | Paracetamol or Acetylsalicylic acid tabs | 100% (10) | 100% (14) | 100%(20) | 94% (15) | 98%(59) | 0.67 |
| 13. | Ferrous Salt + Follic acid tabs | 90%(9) | 93% (13) | 70%(14) | 88%(14) | 83%(50) | 0.34 |
| 14. | Adrenaline inj | 70% (7) | 79% (11) | 85%(17) | 69%(11) | 77%(46) | 0.65 |
| 15. | Ophthalmic ointment or drops | 80%(8) | 79%(11) | 100%(20) | 69% (11) | 83%(50) | 0.36 |
| 16. | Vaccine DTP or Tetanus toxoid | 100% (10) | 86% (12) | 75%(15) | 75%(12) | 82%(49) | 0.32 |
| | Average % of Drug items available per region | 86% | 82% | 85% | 70% | 80% | |

| | List of basic diagnostic equipment | Part B: Consultation room with basic diagnostic equipment across the four regions | | | | | |
|---|---|---|---|---|---|---|---|
| | | Dar es Salaam (N=23) | Kilimanjaro (N=31) | Mbeya (N=57) | Mwanza (N=32) | Overall (N=143) | p-value* |
| 1. | Stethoscope | 70%(16) | 84%(26) | 72%(41) | 50%(16) | 69%(99) | 0.03 |
| 2. | Ostoscope | 35%(8) | 42%(13) | 11%(6) | 9%(3) | 21%(30) | <0.001 |
| 3. | Foetoscope | 39%(9) | 87%(27) | 32%(18) | 41%(13) | 47%(67) | <0.001 |
| 4. | Blood Pressure Machine | 48%(11) | 71%(22) | 53%(30) | 47%(15) | 55%(78) | 0.20 |
| 5. | Themometer | 70%(16) | 90%(28) | 61%(35) | 59%(19) | 69%(98) | 0.02 |
| 6. | Torch | 39%(9) | 16%(5) | 11%(6) | 13%(4) | 17%(24) | 0.02 |
| 7. | Timepiece | 22%(5) | 0%(0) | 16%(9) | 6%(2) | 11%(16) | 0.02 |
| 8. | Patella Hammer | 26%(6) | 10%(3) | 7%(4) | 22%(7) | 14%(20) | 0.06 |
| 9. | Tongue Dipressor | 30%(7) | 26%(8) | 14%(8) | 47%(15) | 27%(38) | 0.009 |
| 10. | Examination Gloves | 70%(16) | 68%(21) | 61%(35) | 66%(21) | 65%(93) | 0.89 |
| | Average % Consultation rooms with equip by region | 46% | 49% | 32% | 36% | 39% | |

**Table 2: Availability of essential medicines and diagnostic equipments by geographical settings in studied regions.**

| No. | List of essential drugs/medicines | Rural (N=25) | Urban (N=35) | Overall (N=60) | p-value* |
|---|---|---|---|---|---|
| | **Part A: Availability of selected essential medicines indicated by geographical settings** | | | | |
| | | **Geographical Settings** | | | **p-value*** |
| 1. | Oral Rehydration Salts (ORS) Sachet | 68% (17) | 74% (26) | 72% (43) | 0.594 |
| 2. | Zinc Tabs | 76% (19) | 80% (28) | 78% (47) | 0.711 |
| 3. | Cotrimaxazole Tabs or suspension | 88% (22) | 91% (32) | 90% (54) | 0.663 |
| 4. | Amoxicilin Caps or Syrup | 84% (21) | 97% (34) | 92% (55) | 0.069 |
| 5. | Benzylipenicillin5MU inj | 96% (24) | 91% (32) | 93% (56) | 0.484 |
| 6. | ALU (Artmether/Lumefantrine) dispersible | 88% (22) | 94% (33) | 92% (55) | 0.385 |
| 7. | ALU (Artmether/Lumefantrine) Any other Tabs | 84% (21) | 100% (35) | 93% (56) | 0.014 |
| 8. | Albendazole or Mebendazole tabs | 80% (20) | 94% (33) | 88% (53) | 0.233 |
| 9. | Antiseptic/disinfectant | 92% (23) | 91% (32) | 92% (55) | 0.937 |
| 10. | Bendrofluazide | 4% (1) | 34% (12) | 22% (13) | 0.005 |
| 11 | Glibenclamide tabs | 24% (6) | 66% (23) | 48% (29) | 0.001 |
| 12. | Paracetamol or Acetylsalicylic acid tabs | 96% (24) | 100% (35) | 98% (59) | 0.233 |
| 13. | Ferrous Salt + Follic acid tabs | 72% (18) | 91% (32) | 83% (50) | 0.046 |
| 14. | Adrenaline inj | 68% (17) | 83% (29) | 77% (46) | 0.180 |
| 15. | Ophthalmic ointment or drops | 76% (19) | 89% (31) | 83% (50) | 0.198 |
| 16. | Vaccine DTP or Tetanus toxoid | 72% (18) | 89% (31) | 82% (49) | 0.102 |
| | Average % of Drug items available | 73% | 85% | 80% | |

| No. | List of basic diagnostic equipment | Rural (N=57) | Urban (N=86) | Overall (N=143) | p-Value* |
|---|---|---|---|---|---|
| | **Part B:Consultation room with basic diagnostic equipment indicated by geographical settings** | | | | |
| 1. | Stethoscope | 53%(30) | 80%(69) | 69%(99) | 0.368 |
| 2. | Ostoscope | 11%(6) | 28%(24) | 21%(30) | 0.026 |
| 3. | Foetoscope | 46%(26) | 48%(41) | 47%(67) | 0.549 |
| 4. | Blood Pressure Machine | 49%(28) | 58%(50) | 55%(78) | 0.17 |
| 5. | Themometer | 65%(37) | 71%(61) | 69%(98) | 0.268 |
| 6. | Torch | 11%(6) | 21%(18) | 17%(24) | 0.586 |
| 7. | Timepiece | 12%(7) | 10%(9) | 11%(16) | 0.913 |
| 8. | Patella Hammer | 9%(5) | 17%(15) | 14%(20) | 0.329 |
| 9. | Tongue Dipressor | 23%(13) | 29%(25) | 27%(38) | 0.336 |
| 10. | Examination Gloves | 54%(31) | 72%(62) | 65%(93) | 0.116 |
| | Average % Consultation room with equipment | 33% | 43% | 39% | |

∗ Fisher's exact test

**Table 3: Availability of essential medicines and diagnostic equipment by facility ownership in studied regions.**

| | Part A : Availability of selected essential medicines indicated by facility ownership | | | |
|---|---|---|---|---|
| | **List of essential drugs/medicines** | **Facility Ownership settings** | | | |
| | | **Private (N=13)** | **Public (N=47)** | **Overall (N=60)** | **p-Value*** |
| 1. | Oral Rehydration Salts (ORS) Sachet | 92% (12) | 66% (31) | 72% (43) | 0.062 |
| 2. | Zinc Tabs | 85% (11) | 77% (36) | 78% (47) | 0.534 |
| 3. | Cotrimaxazole Tabs or suspension | 100% (13) | 87% (41) | 90% (54) | 0.174 |
| 4. | Amoxicillin Caps or Syrup | 92% (12) | 91% (43) | 92% (55) | 0.925 |
| 5. | Benzylipenicillin5MU inj | 92% (12) | 94% (44) | 93% (56) | 0.867 |
| 6. | ALU (Artmether/Lumefantrine) dispersible | 77% (10) | 96% (45) | 92% (55) | 0.03 |
| 7. | ALU (Artmether/Lumefantrine) Any other Tabs | 92% (12) | 94% (44) | 93% (56) | 0.867 |
| 8. | Albendazole or Mebendazole tabs | 92% (12) | 87% (41) | 88% (53) | 0.142 |
| 9. | Antiseptic/disinfectant | 92% (12) | 91% (43) | 92% (55) | 0.925 |
| 10. | Bendrofluazide | 23% (3) | 21% (10) | 22% (13) | 0.889 |
| 11. | Glibenclamide tabs | 54% (7) | 47% (22) | 48% (29) | 0.653 |
| 12. | Paracetamol or Acetylsalicylic acid tabs | 100% (13) | 98% (46) | 98% (59) | 0.596 |
| 13. | Ferrous Salt + Follic acid tabs | 54% (7) | 91% (43) | 83% (50) | 0.001 |
| 14. | Adrenaline inj | 77% (10) | 77% (36) | 77% (46) | 0.98 |
| 15. | Ophthalmic ointment or drops | 85% (11) | 83% (39) | 83% (50) | 0.889 |
| 16. | Vaccine DTP or Tetanus toxoid | 54% (7) | 89% (42) | 82% (49) | 0.003 |
| | Average % of Drug items available | 79% | 81% | 80% | |

| | Part B: Consultation rooms with basic diagnostic equipment indicated by facility ownership | | | |
|---|---|---|---|---|
| | **List of basic diagnostic equipment** | **Private (N=38)** | **Public (N=105)** | **Overall (N=143)** | **p-Value*** |
| 1. | Stethoscope | 47%(18) | 77%(81) | 69%(99) | 0.731 |
| 2. | Ostoscope | 18%(7) | 22%(23) | 21%(30) | 0.669 |
| 3. | Foetoscope | 29%(11) | 53%(56) | 47%(67) | 0.549 |
| 4. | Blood Pressure Machine | 37%(14) | 61%(64) | 55%(78) | 0.905 |
| 5. | Themometer | 58%(22) | 72%(76) | 69%(98) | 0.474 |
| 6. | Torch | 26%(10) | 13%(14) | 17%(24) | 0.084 |
| 7. | Timepiece | 24%(9) | 7%(7) | 11%(16) | 0.006 |
| 8. | Patella Hammer | 26%(10) | 10%(10) | 14%(20) | 0.011 |
| 9. | Tongue Dipressor | 21%(8) | 29%(30) | 27%(38) | 0.227 |
| 10. | Examination Gloves | 39%(15) | 74%(78) | 65%(93) | 0.507 |
| | Average % Consultation room with equipment | 33% | 42% | 39% | |

* Fisher's exact test

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