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**PUBLIC AND PRIVATE DELIVERY OF
PRIMARY HEALTH CARE SERVICES IN JAMAICA:**

**A COMPARISON OF QUALITY IN DIFFERENT
TYPES OF FACILITIES**

Running title: Measuring Quality in PHC Facilities

by

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INTRODUCTION:

Many Developing Countries have achieved substantial reductions in morbidity and mortality in the past twenty five years. These gains have been impressive and, to a certain extent, they have been accomplished through a network of primary health care (PHC) facilities which have increased infant and maternal survival and decreased the incidence of communicable diseases¹. For example, worldwide life expectancy that has increased from 46 years in 1960 to 62 in 1987 and IMR has decreased from 200/1,000 to 80/1,000 live births in just 35 years (1950-1985)². Recent advances in PHC have boosted immunization from only 30% in 1978 to over 70% of the world's children with an estimated 1.5 million lives being saved. As a result of these successes, Primary Health Care is available today to 61% of the world's population³.

One country which has made substantial use of primary health care is Jamaica. Infant Mortality Rate (IMR), for example, is 27.9/1,000 live births⁴. This has been achieved, in part, through a health care system which includes both public and private primary health care facilities. Despite these significant improvements, important problems exist. Maternal mortality (MMR), for example, is between 10.4 and 10.8 deaths per 10,000 live births⁴. By comparison, Malaysia which has a slightly higher IMR, has an MMR of only 5.9. This occurs despite the fact that 90% of Jamaican women report that they receive prenatal care⁵. With PHC so readily available in Jamaica, it would be useful to look closely at the quality of the care provided by the facilities. In other words, do the facilities diagnose, treat and refer individuals who use primary health care facilities as their first level of care?

From a clinical perspective, there are several components determining the quality of care. These can be divided into broad categories of infrastructure, staffing, medical equipment, medications and supplies, professional counseling, laboratory testing and other related health services. While this list is comprehensive and covers most aspects of health care, it does not estimate the relative importance or significance of each component in the primary health care clinic.

Experience from other countries suggests that it is important to determine which components are the most significant. In Viet Nam, for example, staffing is adequate but infrastructure and laboratory capacity vary widely and drugs costs in general are disproportionately high. PHC in China, on the other hand, is characterized by limited non-physician staffing and little time for professional counseling and advice^{4,6}. These findings

have prompted the Health Ministries to take specific steps to improve selected aspects of PHC and directed international foreign aid to target specific problems.

There are other features of PHC services that are more readily generalized between different countries. Private facilities, for example, may provide more expedient services. Better staffing and other measures of higher quality can be concentrated in urban rather than rural areas. Resources also tend to be concentrated in more advanced or higher level facilities. In this later example, doctors tend to concentrate where there are better staffed and equipped facilities and they in turn encourage or even demand more laboratory facilities, drugs, and even more equipment⁷. This last problem has the insidious effect of drawing resources away from lower level PHC facilities and transforming higher level facilities to secondary and tertiary care facilities. Ultimately, this undermines the concept of a widely disbursed PHC system, particularly to remote, poor rural populations⁸.

To evaluate PHC in Jamaica then, the questions will be: which specific components can be identified and targeted for improvement and what are the discrepancies in quality and service provided by rural versus urban, basic versus higher and public versus private PHC facilities⁹?

BACKGROUND:

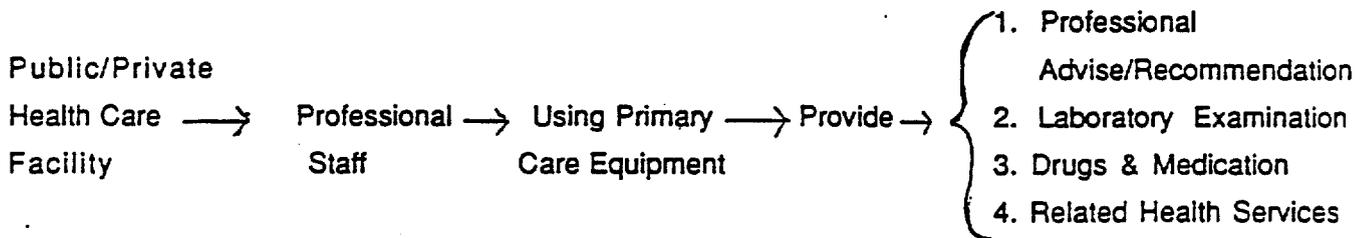
In order to evaluate the data and provide a context for the results, we propose four policy questions which address the quality of care provided in the Jamaican PHC facilities:

- A) What are overall measures of the quality in the Primary Health Care Clinics for Jamaica?
- B) Are there differences between public urban and rural facilities?
- C) What differences are observed between public and private PHC facilities?
- D) Do higher and lower level facilities provide different health services or different qualities of the same service?

To conceptualize quality of care in the context of this survey, it is helpful to first construct a framework for health care delivery in an "aggregate" Jamaican facility. We do this from the perspective of a patient visiting a "typical" facility:

When patients present themselves to the clinic, they first encounter the physical structure. Measurements of quality here will need to deal with issues regarding the infrastructure. The survey contains many questions which pertain to these issues including assessments of the plumbing and electrical functions, integrity of the floor and the roof, and function of telephones and refrigeration. Next, patients meet the health care (HC) staff. This measure needs to quantify the professional staffing that is actually available while, ideally, accounting for the level of training designated to various facilities. The survey contained information on staff assignment and whether or not they worked at their assigned post. Once inside the facility, the patient is evaluated by the professional staff using clinical equipment and medical supplies. Different types of equipment were measured in the survey and several indices quantify these measures. Supplies are also measured, and, overall these can be summarized into four categories: primary and sophisticated equipment plus basic and delivery supplies. Then, with a presumed diagnosis, the HC worker can order laboratory tests, prescribe drugs and provide professional advice or recommendations. Each of these quality measures can be summarized by an index and they are described in more detail below.

While it may not be always possible to measure every element of quality pertaining to this model, there are a very large number of determinants for each of the measures. This provides a detailed picture of a patient's visit to a PHC Clinic for medical care. This model can be conveniently diagrammed with the following scheme:



SITE, DATA AND METHODS:

Ninety percent of Jamaicans live within 10 miles of PHC facilities⁵. The facilities are distributed throughout the fourteen parishes of the semi-rural island nation. The Government of Jamaica, under the aegis of the World Bank conducted an extensive survey of the primary care facilities in 1990. The survey was conducted as part of the Jamaican Survey of Living Conditions (JSLC) which was designed to collect information on a variety of topics, including

primary health care facilities. Site visits were made to a total of 555 clinics: 366 public and 189 private facilities (these are listed in detail in table 1).

The questionnaires were exhaustive measuring a total of 574 variables concerned with the quality of the public facilities and 600 for the private clinics. The data collection is cross sectional, although it took three to four months to complete all of the surveys. Answers to the survey questions were recorded by staff members of the JSLC Group. The data itself was self-reported with the answers being determined by historic recall from health care staff working at each site.

The questions in the survey instrument generally have dichotomous "Yes/No" outcomes or consist of brief numerical scales with four or five ranked choices. As a result, the data is discreet in nature and results can be summarized across facility types. Many of the questions evaluate similar measurements of quality, for example, staffing looks at assignment, attendance and availability on the day of the survey and are therefor highly correlated.

Definitions of facility types are critical to this analysis and several definitions were considered. We chose to define urban facilities as those that were located in districts that had 50% or more of the households living in urban areas; the remaining clinics have more than half of the households in the countryside or periurban areas and are referenced as rural facilities. The Ministry of Health has another more functional division, categorizing primary clinics into five health center categories (I-V) plus maternity and poly-health centers. Type I and II facilities provide basic PHC while the others provide more advanced diagnostic and therapeutic outpatient care but not at a level of a secondary or tertiary center. We used this functional division to divide facilities into basic (78)% and higher (22%) level facilities (table 1). This distinction is critical to interpreting some of the results. For example, Type I and II facilities, are intended to be staffed by midwives and nurses whereas the higher level facilities are to have more physician staffing. Finally, we divide clinics into basic-level urban or rural and their higher-level rural or urban counterparts for the appropriate comparisons of quality and service (see Table 2).

To adequately summarize various parameters, indices are constructed for each element of the model that is diagrammed above. Each of these indices generates a composite score for separate facility types and provides a scalar range for various measures of quality. Preliminary analysis of the survey was performed which identified miscoded data, checked for multicollinearity and corrected for missing data. The clinics were then grouped into five

groups: public urban and rural, public basic and higher level, and private primary health care clinics.

A common operational problem of large data collections and one that occurred in this survey is the problem of missing data¹⁰. Conservative estimates equating no response with a negative answer were used when this happened unless noted otherwise. This results in under reporting of results and tends to minimize cross group variations. In the context that these issues arise, they are pointed out below in the text below.

RESULTS:

Of the 366 public primary health care facilities, survey data is available on 338 (92.3%). For the private facilities, a representative sample of 189 clinics was surveyed and 159 questionnaires are available for analysis. 77% of the public facilities can be described as rural; the remaining 23% of the public clinics are found in urban areas. There is a very similar division between basic-level facilities which comprise 78% of the clinics; the remaining 22% are higher-level government supported clinics (tables 1 and 2).

Using the four policy perspectives described above, various quality indices are analyzed for the following facility comparisons:

- urban compared to rural;
- basic as opposed to higher level;
- public and private; and
- basic urban vs. basic rural and higher urban vs. higher rural.

Not only are the results from this analysis framed in the policy perspectives posed above but also from an operational vantage which considers the policy options that are available which might improve the quality of care in the primary clinics.

Infrastructure

The physical condition can be summarized by aggregating measures of the roof, floor, electricity, plumbing (two measures), yard maintenance and security. With a total maximum score of seven, facilities were evaluated for one problem or less and two problems or less. Private facilities are clearly in better repair (87.4 and 96.2%) as compared to public facilities (44.3 and 66.6% respectively). Among the four types of public facilities basic level and rural facilities had fewer problems with the facility structure as compared to higher level or urban centers (see figure 1).

Staffing

Several measures are considered to assess staffing levels. There are three problems to consider: First, to obviate any sampling bias associated with estimates of staffing we used the most rigorous definition possible: we compared clinic staffing as a percentage of those actually working on the day of the survey, divided by those assigned (i.e., listed) on the clinic roster. A percentage of one hundred was used as the criteria to make comparisons between clinics. It is important to point out that the assigned staffing level is the number that should be available to a clinic in an idealized setting (as determined by the MOH). We also include another measure which compares those at the post but not necessarily working on the day of the survey, divided by those assigned (listed) on the clinic roster. These results are available in table 3. We anticipated and then observe that the first measure, working/assigned, in every case is lower than the value obtained using post/assigned and arguably underestimates staffing. We do this because it can be argued that the post/assigned overestimated functional staffing: if a patient arrived instead of the surveyor would there have been any staff to treat the patient?

Secondly, since staffing at various facilities cannot be directly compared, we looked at three groups: doctors nurses and midwives, and then made more suitable comparisons between facilities. Here we expect that physician staffing in basic facilities should be lower and that, ideally, there should not be any disparity between urban and rural facilities.

Finally, we had to consider the problem of missing data. We can do this in two ways: first we could chose to ignore unrecorded data and calculate percentages from the data that was available. The second option is to assign missing data a value of zero for staff working at the post. The first approach introduces the possibility of not being able to distinguish between groups or subgroups while the second approach will consistently bias the data downwards, and under report health care availability. A further problem with the second method is that we have already elected to use the most rigorous (and conservative) estimate of staffing when we chose to compare staff working/assigned on the day of the survey. Both approaches, however, were evaluated and since clear patterns did emerge between groups, we elected to use the first method and missing values are dropped (totals after dropping the missing values are included in table 4).

As we noted earlier, trained nurse practitioners and midwives are scheduled to staff basic public facilities. More advanced facilities, as well as private facilities, are staffed by doctors (by definition private clinics are run by physician-entrepreneurs)⁵. It should be noted that advanced public facilities are also staffed by midwives.

The results show that the index for facility staffing confirms our expectation that there are fewer physicians in basic clinics (23%) and that higher-level clinics have more physician staffing (39%). If the clinics are further subdivided by clinic subtype we observe that *rural* facilities (basic and higher) are more likely to have physicians working in the more remote rural locations - a somewhat counter-intuitive finding that is discussed further below.

The next observation is that, overall, public facilities are staffed more heavily by midwives confirming what is already known about government policy. Midwifery staffing is between 61 and 67% and distributed evenly over the various facility types. When this is subdivided, midwives are more often located in basic urban and higher rural facilities - a result that may be somewhat difficult to interpret clearly. If we combine midwives and nurse practitioners, treating them as a single category, we see that staffing is higher in basic level facilities (see table 4) as we might expect. There is a further (modest) tendency for staffing to be higher in urban versus rural facilities a result that is not as apparent in the broader categories.

Private staffing, not surprisingly, is characterized by a higher percentage of physicians (79%) and nurses (78%) than in the public sector. As mentioned above this should be true by construction for physician staffing in private clinics. For physician staffing the most appropriate comparison to the private sector is higher level public facilities and we see that staffing levels are much higher in the private sector: 78 to 39%.

If we use the more liberal standard of staff at the post/assignment, staffing at the basic level is 67% for physician staffing and 61% for higher level clinics. Rural staffing remains better - 66% - compared to 56% for urban clinics. Midwifery staffing, using this same index is 85% for urban and higher level facilities and 78% for rural and basic clinics.

Equipment

Several types of equipment are needed for various facility functions. We define four groups as follows:

<u>Primary Equip</u>	<u>Sophisticated Equip</u>	<u>Basic Supplies</u>	<u>Delivery E &S</u>
adult/baby scales	glucometer	syringes	linens
tape measures	microscope	needles	mucous extractors
sphygmomanometer	centrifuge	urine/stool container	Vit K/AgNO3
stethoscope	autoclave	uristix	diagnostic sets
thermometers		bandages and scissors	fetal stethoscope

While these lists are not exhaustive, they are representative of the essential equipment requirements for various clinic activities. Delivery equipment and supplies (as listed above) are indexed separately because, although all clinics do not perform deliveries, clinics need to support midwives doing either home deliveries or unexpected deliveries. For equipment, both the physical presence and functional status are measured to identify the operational and repair characteristics of equipment that was actually present at the time of the survey. These results are summarized in figure #2.

It is noteworthy that both public and private facilities are relatively poorly equipped when a presence of 80% of basic equipment is used as the criteria: 61% urban, 67% rural, 70% higher-level and 64% for basic. When we lower the standard to 60% there is a considerable improvement for basic equipment with urban facilities still slightly better than rural and higher (92%) better than basic (85%). By comparison 85% of the private facilities have 80% of the equipment and 97% have 60%. Many private clinics are "specialized" in the sense that they do not provide obstetric or pediatric care. If baby scales and tape measures are dropped from the list private clinics have 80% of the equipment; all of the private clinics have 60%.

More sophisticated equipment and by extension more sophisticated on-site laboratory facilities, really do not exist at this time in either the public or private sector. These results are also shown in figure #2.

In general, we see that not only are private facilities better equipped, the equipment that they have is in better repair. This observation is most pronounced for sophisticated equipment but also holds for basic equipment whether comparing private clinics to either urban or rural public clinics. However, when higher level public facilities are compared to private facilities there is very little difference in equipment or equipment repair between these two groups. This may be the most valid comparison since basic level facilities are not intended to provide advanced diagnostic techniques.

and Supplies

With regard to basic supplies, it is evident that private facilities are significantly better stocked at either a 75% or 50% criteria (see figure 4). Still using a 50% criteria, urban facilities (64%), compared to their rural counterparts (63%), are the same whereas 88% of higher level facilities have 50% of the indexed supplies versus only 58% of the basic clinics.

Delivery supplies are generally much lower in all facility types (see figure 4). Again urban and rural are about the same (23% and 18%) but there is a significant disparity between the basic facilities (14%) compared to the higher level facilities (41%).

When we looked at family planning supplies and contraceptives, the situation is dramatically different. Clearly, public PHC facilities are better equipped to provide family planning services (see table 5). It should be pointed out that the threshold here, as above is a 50% level, reflecting that family planning supplies might be substantially improved if a 75% or 90% threshold was attained.

Because of the way the indices are constructed it is possible that the consistent absence of either a piece of equipment or a specific supply would consistently lower an index for a facility type. To evaluate this, each index was disaggregated and the results are presented in the appendix. Generally all clinics had stethoscopes, sphygmomanometers, thermometers and adult scales. The indices were generally depressed if they were missing tape measures or infant scales. To be sure these are important but only in the context of clinics which intend to provide prenatal and postnatal care respectively. And where differences exist, it is clear that higher level facilities are better equipped than basic level facilities. These results are detailed fully in the appendix.

For sophisticated equipment basic and private facilities essentially had no microscopes or centrifuges but there was also a surprising paucity of autoclaves in these facilities. The higher level public facilities are best equipped in this regard.

Basic supplies demonstrated that urine and stool containers were the most frequently missing items in all facility types and again higher were better equipped than basic and private better than public in nearly every individual category.

Delivery supplies tended to be more available more consistently available in higher level and private facilities. Mucous extractors and linens were the most consistently absent items. A detailed version of the basic and delivery supplies is available in the appendix.

Drugs

The availability's of selected drugs are considered in a variety of different ways. Factors such as 1) presence at the time of survey 2) usual availability, 3) shipment of expired stock or 4) lack of availability for more than one week were measured. The most robust index is the availability of drugs on the day of the survey. If availability of 50% of the

drugs is used as the criteria the results showed that all of the clinics had about the same amount of drugs in stock for the patients. If instead of comparing Urban and Rural facilities we compare basic (30%) and higher (70%) level facilities, there is a clear cut disparity reflecting inadequate drug supplies at the basic clinics:

<u>Public</u>	Urban	43.6%	Basic level	30.0%
	Rural	39.2%	Higher level	70.0%
<u>Private</u>		47.8%		

Maternal Counseling/Diagnosis

An essential element of primary care is to identify women at risk for peripartum complications and low birth weight deliveries. To do this, women need to be counseled for risk factors and tested for clinical symptoms relating to anemia, preeclampsia/eclampsia and diabetes of pregnancy. We measured this by creating two indices which reflect essential, required elements of prenatal care. Below is a (partial) list of the measures used to construct the two indices:

Are the following items routinely discussed?

- diet/nutrition
- the importance of breast feeding
- ideal prenatal care schedule
- risk of smoking/alcohol/drug use
- dangers of high blood pressure
- individual risk factors in pregnancy
- review clinical warning signs
- emergency plans

And are the following clinical symptoms evaluated?

- check for weight gain
- check blood pressure
- check for oedema

In general, prenatal care is better provided with more detailed counseling and testing in the public sector than in private offices. Adequate counseling, which was represented by a total score of fifteen out of twenty important (and inexpensive interventions) was consistently provided by the public facilities - 54% urban, 49% rural - compared to 21.5% of private facilities. There was a slight disparity between basic level facilities which provided this counseling 53% of the time versus 41% in higher level clinics.

The public clinics were the same however, when it came to checking for clinical signs: over 80% of the public facilities, regardless of location or type, performed all of the basic clinical examinations for prenatal visits (such as checking for oedema or hypertension). Private facilities did this 60% of the time (figure 5).

Laboratory

Routine and more specific laboratory tests employed in prenatal care, however, showed a different pattern. The routine laboratory index determined whether 1) clinics tested for anemia (hemoglobin), glycosuria and proteinuria as well as 2) a more specialized laboratory index assessing facilities for ABO/Rh blood typing, parasite and sickle cell disease, and syphilis. Both public and private facilities appropriately performed routine urine and blood tests approximately 90 % of the time. Basic and rural level facilities performed as well as the higher and urban clinics in routinely doing these tests.

What is dramatically different is the shorter waiting period of the private facilities for the results of these laboratory tests. Only 22 % of the urban and 14% of the rural clinics were able to have the results from hemoglobin testing available within a few hours or days. Higher level facilities did not do much better - only 27% had results back in a few days or less (compared to basic facilities at 12%). Urine testing was good in all clinics with the public clinics having the results within this same time frame around 95% of the time for both basic and rural clinics and slightly less at 90% if the clinics were in the cities or higher level. Private sector clinics performed the most satisfactorily with about 85% of the facilities having the results in hours or days (see figure 6).

As might be anticipated waiting times for specialty laboratory tests were generally quite long in the public facilities. While private facilities had results available within hours or days 65% of the time, rural and basic clinics did this less than 6 % of the time and urban and higher level facilities accomplished this 16% of the time (figure 7).

DISCUSSION

Indices

Several scales or indices have been generated in this analysis. We conclude that the scales are useful and provide a numerical rank for specific health care facility characteristics. Should these continue to be used, the indices might also be valuable in a

number of different ways: they could be used in follow up studies or as part of a feedback and evaluation scheme to clinics. Higher level clinics, for example, might have a relatively good "drug scale" with no problems providing medications but will need to improve the physical condition of the facility or concentrate on equipping the clinic if it is to improve elements of its care. In this context the scales could be used to measure the effects of targeted interventions by the government. Further to this point, if the scales are a useful summary/measure to follow, they will make it possible for the government to evaluate a random sample of facilities or facility types and obviate the need to repeat the entire survey. One caveat to keep in mind is that the scales are only an indicator. If, for whatever reason, the objective in clinics focuses on only improving the index score, the index would no longer reflect the overall parameter it is designed to summarize.

Facilities

The facilities, overall, are in need of physical repair and better maintenance in the public sector. Basic construction as well as plumbing and electrical improvements are needed. These may directly relate to health care delivery, for example, as they relate to preventing infection and treating sepsis in the clinical setting. They may also be indirect determinants of utilization as they relate to attracting patients to facilities (increasing utilization) by presenting a more attractive, confidence inspiring facility. This latter point is important when viewed in the context of other studies (for example the Children's Defense Fund Study 1988) that have related the frequency of prenatal visits to successful pregnancy outcomes.

Professional Staffing

As a rule the clinics are understaffed. Although we do not know if assignments to various facilities is adequate, we make the assumption that this is a minimum ideal standard. In the basic level public clinics staffing ranges from 53 to 65% and physician staffing at higher level facilities ranges from 33 to 44%. Even if we use a more generous standard of staff at the post/assignment basic level staff at the basic level is 78% and physician staffing is 61% for higher level clinics. For private physician, who rely on per-capita reimbursement, it is not surprising to find that the percent working/ percent assignment ratio is higher - 79 % working and 89 % at the post/assignment.

These observations must be tempered by two facts. There is a significant amount of missing data for the physician measures and job descriptions for many of the midwives + nurses requires them to be off site visiting patients.

With this in mind, it is interesting to speculate on why more physicians on cadre lists are actually found working in rural facilities than, prima facie, in higher level facilities. A likely explanation might be that doctors do not need to be work in urban clinics because other locations, where they can offer their services, are available to them as compared to their opportunities in the countryside.

The combined index measuring the presence of either a nurse or a midwife in clinics seems to be the most appropriate assessment for staffing in basic facilities. This obviates the classification problem intrinsic to the survey (described above). However, one might still want to investigate why the numbers for basic facilities are only 53% in rural clinics and 65% for urban facilities. Higher centers, on the other hand, are likely staffed by a combination of nurse practitioners, midwives, and physicians and probably explains the decreased ratios seen in higher level clinics.

This highlights an important distinction that should be considered in evaluating any of the index values for staffing. Problems in staffing may not lie so much with government assignment levels but with actual daily staffing requirements. these requirements might either be lower or only require nurse level training. If this is true, and the bulk of the staffing in basic and rural facilities provided by midwives, it may be worthwhile to further evaluate midwifery staffing shortages in basic and rural areas. By symmetry, it would be useful to look separately at physician staffing shortages in urban and higher centers.

Medical Equipment...

The two indices of equipment, basic and sophisticated, are based on representative samples of what should be available in a primary care facility. From a clinical perspective, these can be considered essential elements health care workers need in order to provide elements of primary care service. These indices, therefore, set forth an idealized - albeit minimum - standard necessary for equipping clinics.

With this in mind, we observe that all clinics, regardless of level or location, are poorly equipped and there is little difference between public and private facilities. If the analysis is restricted to only primary equipment and basic supplies, for any index exceeding a criteria of 60% availability, we also observe under-equipped facilities. When a more rigorous standard of 80% was used, the results were significantly less optimal indicating that few clinics well equipped with the essential elements described by the two indices.

In equipping and supplying facilities, the results demonstrate that there is little difference between urban and rural facilities. This is not the case for basic versus higher level clinics, where the latter is consistently better for each index.

Of the equipment that was in place, the repair (of basic and sophisticated) was marginally better in the private setting. This perhaps reflects the differences in personal vs. public investment for these goods. A recommendation is that a more detailed analysis of the biomedical equipment repair and maintenance process should be done to optimize the selection and function of basic and sophisticated equipment.

and Supplies

When we turn our attention to supplies, there is a different picture that emerges. And although the list of supplies (like equipment, drugs and medications) measured in the survey is somewhat arbitrary, it is not hard to defend a position which claims that these supplies, at a minimum, should be in every primary clinic. The results show that private facilities are well supplied and public centers are under-supplied. When this is further broken down by facility type however, higher-level public facilities are the same as the private facilities.

Public facilities, on the other hand, are clearly better positioned to provide family planning services because of their superior supply of contraceptives measures.

If specific changes are warranted, it appears to be worthwhile to disaggregate the indices for a more precise picture of equipment and supplies. This clearly delineates which services are compromised by a dearth of equipment and supplies. Some generalizations can be made: as a rule facilities can screen for hypertension in pregnancy (sphygmomanometer and stethoscopes) and evaluate for infection

(thermometers, drawing blood) which are two of the most important causes of maternal death. Other equipment and supplies might be added for relatively little cost. Specifically, mucous extractors, linens, tape measures, silver nitrate and vitamin K could be used for deliveries or emergency care in clinics that did not do this routinely. Of particular concern is the lack of sterilizers or autoclaves. These are available at relatively low cost or even at a subsidized cost from international health agencies.

Overall we can specifically recommend that equipment and supplies for basic facilities needs to be targeted and, as resources allow, certain pieces of equipment and medical supplies would improve the situation significantly.

Drugs and Medications

This assessment is somewhat limited by the selection of drugs evaluated in the survey. In the future it might be even more useful to have a complete list of medications to analyze next to some of the common clinical conditions seen in a primary clinic. For example, antibiotic availability, oxytocin and Mg⁺⁺ availability, splints and volume expanders might all be useful medications or therapies when caring for pregnant women or treating trauma.

Even with the limited selection of drugs, however, drug supply appears to be comparable across facilities. Drugs were available just less than half the time but few if any expired drugs are either delivered to the clinic or had accumulated on the shelves. There is no real disparity between public and private clinics. The most striking finding, which is even more pronounced for drugs than supplies, is the paucity of medications available in basic clinics. In rural settings, one supposes that this problem is further compounded by distance involved in traveling to a chemist/pharmacist and the lack of transportation. If it is clinically feasible, with trained, available health care workers, it would be valuable to expand the inventory of medications in clinics located in more rural settings.

Overall, it would be worthwhile to consider measures which improve delivery of medication, contraceptives, delivery equipment and basic supplies to lower level facilities so that they are comparable to more advanced public and private clinics.

Professional Advise/Counseling

In general the professional staff report that basic clinical services are provided for pregnant mothers during prenatal visits. When a careful history is combined with the relevant clinical examination, women-at-risk should be identified in the antenatal period. The greatest deficiencies in advice and counseling, however, are in the area of "pre-natal health promotion". Although public clinics provide better service (which is consistent across facility types) this only occurred around half the time when using a criteria of 15 out of 20 points. Patients, for example, are not always advised of the need to return to the clinic on a regular basis nor counseled on how to identify danger signs or what to do in the case of an emergency. It might be possible to improve care by covering these topics during supervisor visits, health department reviews or staff in-service training.

Because this data is self reported data, it is important to point out that these results may be over-reported. The intuition here is that most health care workers know what they should be doing but may not necessarily do this with each patient. This, in part, may be explained by the availability heuristic - people are more likely to recall what comes to mind and, in this case they are not asked to recall. The question does not explicitly ask if they remember a time when they did *not* ask one of these questions but only if they routinely ask the questions¹¹. This limitation needs to be kept in mind, particularly when evaluating the degree of efficacy of primary health care programs.

These considerations notwithstanding the level of prenatal care provided in the rural and urban facilities was generally good - around 50% - and exceeded the capacity of the private sector - 21%. For diagnostic testing the picture is even better with more than 80% of all facilities, regardless of type performing essential elements of the clinical exam. Whether it was rural or urban, basic or advanced public clinics performed as well or better than their private counterparts and it is clear that perinatal services in Jamaica are best provided by the public primary health facilities.

Laboratory

Two issues are considered by the survey. First, we can conclude that the necessary laboratory evaluations are appropriately requested and obtained from patients regardless of the type of clinic they choose to visit. The only aspect of this service that

might need improvement is routine evaluation of the urine during prenatal visits which is currently at 88%.

By contrast, the delay in obtaining results of tests that are sent out, renders many of tests irrelevant, at best, and wasteful at worst. Some of this could be obviated if basic laboratory services were available at the clinics themselves. For example when the testing was disaggregated for those tests that are sent out (Hemoglobin) and those that are done on site (urine) we see that the waiting time is significantly less for on site testing. From a staffing perspective, there seems to be at least a small number of laboratory staff that are available and who can carry out the testing. And clearly, from the survey of equipment, the problem is that clinics lack rudimentary laboratory equipment to do tests (e.g., microscopes). One recommendation would be to supply higher level clinics with enough equipment to do some of the basic tests. A centrifuge and a microscope along with staining supplies would make it possible to do basic blood tests such as cell counts, sickle cell prep, parasite preparations. Another possibility is to provide simple technology at the health center level, for example, a glucometer to evaluate patients for gestational diabetes.

Related Services

While it is beyond the scope of this appraisal to explore each type of clinical care, it is apparent that immunizations are very adequately provided at the public clinics. The only exception might be rubella which is offered at health centers for women 17 to 35 years old. If there was a national interest in further reducing the teratogenicity of rubella, more vaccine is needed will be needed at the clinics. And with only 70% of the clinics having refrigeration it raises the potential problem of immunizing with ineffective vaccine. It might be worthwhile, therefor, to investigate the effectiveness of the current cold chain.

The family planning services, exclusive of minor surgical procedures appeared to be quite adequate and well provided by public facilities. Although IUD's and diaphragms were not commonly available, this may be an appropriate situation if complications from these cannot be treated.

It is of note that in the current system, particularly in view of the HIV pandemic, that most clinics do not offer STD services. By extension of the existing family planning services it might be possible to increase treatment of sexually transmitted diseases at a relatively low cost. The implications of HIV disease in pregnancy are enormous. As information becomes available on the problem in Jamaica this may be an important way

to maintain gains already made in maternal and child health. It is also likely that the National AIDS Prevention and Control Programme would have resources to contribute¹². Moreover, it can be anticipated that expansion into AIDS Prevention and Control will contribute to the further expansion of perinatal care.

CONCLUSIONS:

We reiterate our policy questions in summarizing the finding from this survey:

- A) What are the overall measures of the quality in the Primary Health Care Clinics for Jamaica?
- B) Are there differences between public urban and rural facilities?
- C) What differences are observed between public and private PHC facilities?
- D) Do higher and lower level facilities provide different health services or different qualities of the same service?

1. Useful indices are available which quantify various measures of quality for the primary health clinics in Jamaica. These measures relate to infrastructure, staffing, equipment/supplies, drugs, diagnosis and counseling, laboratory testing and related services such as immunization and family planning. These can be used to measure the current quality of facilities and in future follow up studies or interventions.

2. Public facilities provide better perinatal diagnosis and counseling, immunization and family planning than private facilities. They are, however, in relatively poor repair and inadequately staffed regardless of the type of public facility.

3. Private facilities do not provide these same three services as well as the public facilities. By contrast however, they are in better repair, better able to do laboratory testing and have more equipment and supplies than the public facilities. This effect, however, is less pronounced for higher level facilities than for the basic level clinics.

4. There are only a few disparities between urban and rural facilities and these might be differences that are anticipated: urban facilities have slightly better access to equipment, most supplies and drugs compared to rural facilities. We find, contrary to this pattern, that

rural facilities are better staffed by physicians while the urban facilities are better staffed with midwives.

5. Basic facilities are in better repair and better staffed with midwives than higher level facilities. They also offer prenatal laboratory testing as well as higher level facilities. Higher level facilities are better in several material categories including basic and sophisticated equipment, equipment repair, supplies, drugs and the time required for basic laboratory results to be analyzed. These results can be summarized by saying that for similar services, the basic facilities provide the majority of primary health services but have less materiel to use than the higher level clinics.

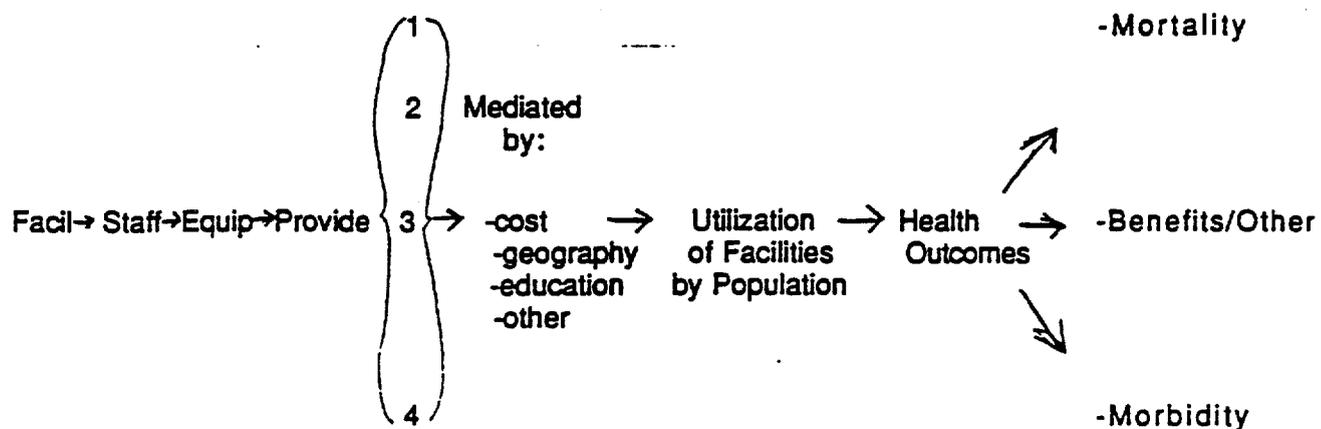
6. Higher level public facilities have a profile that is closest to private facilities. Even between these groups, however, some general patterns prevail: public facilities are better able to provide maternal and child care; private facilities are better staffed, have more equipment and able to do laboratory testing on a more timely basis.

7. Deficiencies in equipping or supplying all facility types can often be addressed by correcting a specific isolated problems (see Discussion). Maintenance and repair of medical equipment, which appears to better in private clinics, can be better evaluated if further information is gathered¹³.

8. Other, more specific, recommendations are made in the discussion and are based on theoretical application of medical principles contingent upon available resources.

As distinct from other reports in the developing world, we did not find marked differences between urban and rural and only modest disparities between basic and higher level facilities. Health care resources, therefor, appear to be evenly distributed to areas outside of major population centers and do not appear to be concentrated in higher level facilities. Private facilities are able to provide some elements of primary health care in Jamaica but public facilities remain the mainstay for perinatal care, immunizations and family planning.

In closing it is useful to return to the question of what the quality of primary care facilities represents in terms of better health care outcomes. To determine this, we should compare the above findings to specific health care outcomes in the Jamaican setting. If we did our model would be expanded as follows:



Model for this Presentation

Expanded Model which Includes Utilization/Health Outcomes

Future studies of primary health care in Jamaica will need to determine if the measures of quality are positively correlated with utilization and, where possible, health outcomes. Specific outcome data is already available for several elements of care including infant and maternal mortality. Future efforts, targeted towards improving various indices, may increase utilization and, ideally, this in turn could decrease mortality rates. With this model it is also possible to consider other mediating effects such as costs and education should these change as well. Clearly then, the long run value of this survey is relegated to the future when primary care is improved and health outcomes change

Despite some limitations in the data set at this time, several concrete recommendations to the local health authorities can be made which may improve care delivery in the primary health care clinics. These recommendations should be viewed in the total context of the health care budget and in relation to other health care priorities as judged by the government of Jamaica. By establishing these specific determinants of primary health care quality, it is possible to 1) make even more targeted interventions and 2) to try to predict what the impact of these interventions will have on primary health care in Jamaica.

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- 7 WHO , *Formulating Strategies for Health for All by the Year 2000*. World Health Organization, Geneva, 1979.
- 8 WHO, *Budget for the Eighth General Programme of Work 1990 - 1995* . World Health Organization, Geneva, 1987.
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- 14 Gertler, P., Rahman, O., Feifer, C., and Ashley, D., *High Risk Pregnancies and Maternal Health Services in Jamaica*, 1992, In press.

TABLES

TABLE 1

**Primary Health Care Facilities
1990 JSLC Group Survey**

		<u>Analyzed</u>	<u>%</u>	
<u>Public</u>	Total	338		
	Urban	78	23%	Total Surveyed = 366
	Rural	260	77%	Total No. of Public = 366
	Basic Level	263	78%	
	Higher Level	75	22%	
<u>Private</u>	Total	159		Total Surveyed = 189
				Sampled from an estimated Total No. of Private > 800

TABLE 2

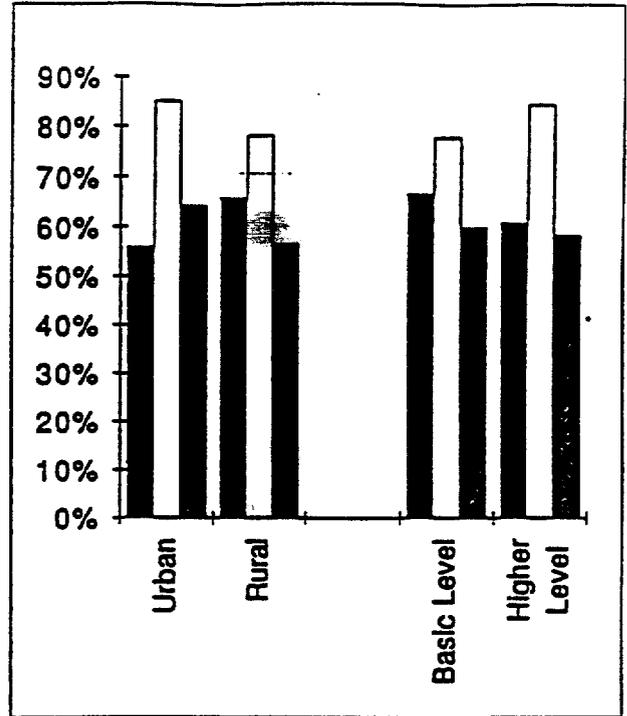
**Primary Health Care Facilities
Public Facilities by Type**

<u>Public Facilities</u>	<u>Totals</u>	<u>%</u>
Basic Urban	42	12%
Basic Rural	211	62%
Higher Urban	31	9%
Higher Rural	45	13%
Unclassified	9	3%
<u>Totals</u> Surveyed	366	100%
Analyzed	338	92%

TABLE 3

Staffing
% Clinics w/Staff at Post/Staff Assigned :

	<u>Physicians</u>	<u>Midwives</u>	<u>Nurses</u>
<u>Public</u>			
Urban	56%	85%	64%
Rural	66%	78%	57%
Basic Level	67%	78%	60%
Higher Level	61%	84%	58%



25

TABLE 4

Staffing in Primary Health Clinics
% Clinics with Staff Working / Staff Assigned = 1

	<u>Doctors</u>	<u>Midwives</u>	<u>Nurses</u>	<u>Midwives + Nurses</u>
<u>Public Facilities*</u>				
Urban	32% (41)	67% (67)	54% (33)	54% (76)
Rural	32% (97)	61% (225)	43% (83)	51% (235)
Basic Level	23% (66)	61% (215)	44% (61)	55% (227)
Higher Level	39% (66)	66% (70)	50% (58)	44% (75)
<u>Private Facilities*</u>	79% (158)	1 of 4	7.8% (106)	-
<u>Public by Subtype*</u>				
Basic Urban	17% (12)	75% (36)	50% (12)	65% (40)
Basic Rural	35% (54)	58% (179)	43% (49)	53% (187)
Higher Urban	33% (27)	57% (28)	57% (26)	42% (31)
Higher Rural	44% (39)	72% (42)	44% (32)	35% (44)
			Totals	Public (analyzed) 338
				Private (analyzed) 159

* Missing values = dropped
() = n after missing values dropped

TABLE 4

Staffing in Primary Health Clinics
% Clinics with Staff Working / Staff Assigned = 1

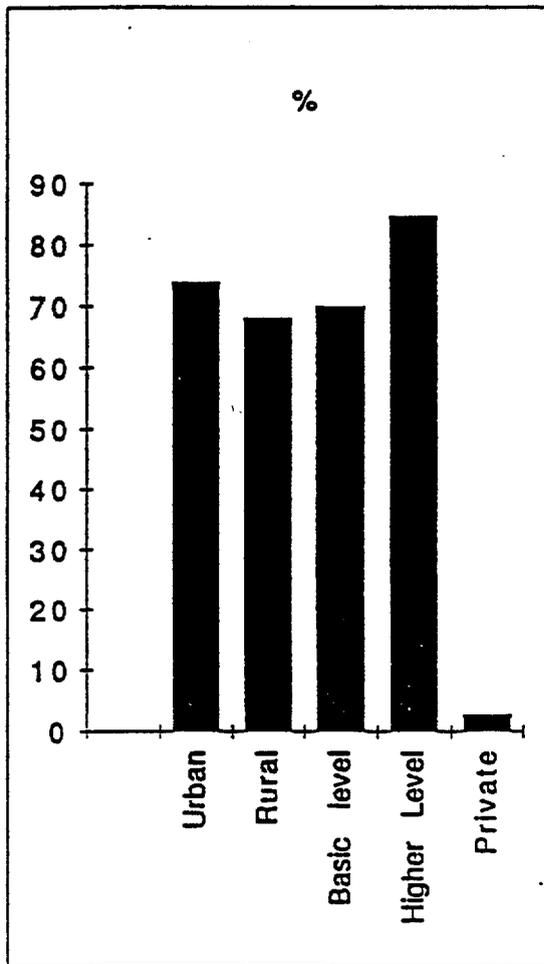
	<u>Doctors</u>	<u>Midwives</u>	<u>Nurses</u>	<u>Midwives + Nurses</u>
<u>Public Facilities*</u>				
Urban	17% (78)	58% (78)	28% (78)	53% (78)
Rural	12% (260)	52% (260)	14% (260)	47% (260)
Basic Level	6% (253)	52% (253)	11% (253)	49% (253)
Higher Level	34% (76)	60% (76)	38% (76)	44% (76)
<u>Private Facilities*</u>	78% (159)	.6% (159)	5.7% (159)	5.7% (159)
<u>Public by Subtype*</u>				
Basic Urban	5% (42)	64% (42)	14% (42)	62% (42)
Basic Rural	8% (211)	49% (211)	10% (211)	47% (211)
Higher Urban	29% (31)	52% (31)	48% (31)	42% (31)
Higher Rural	38% (45)	67% (45)	31% (45)	44% (45)
			Totals	Public (analyzed) 338 Private (analyzed) 159
* Missing values = 0 () = n				

TABLE 5

Supplies: Family Planning

% of Clinics with Half or More of F.P. Supplies Available

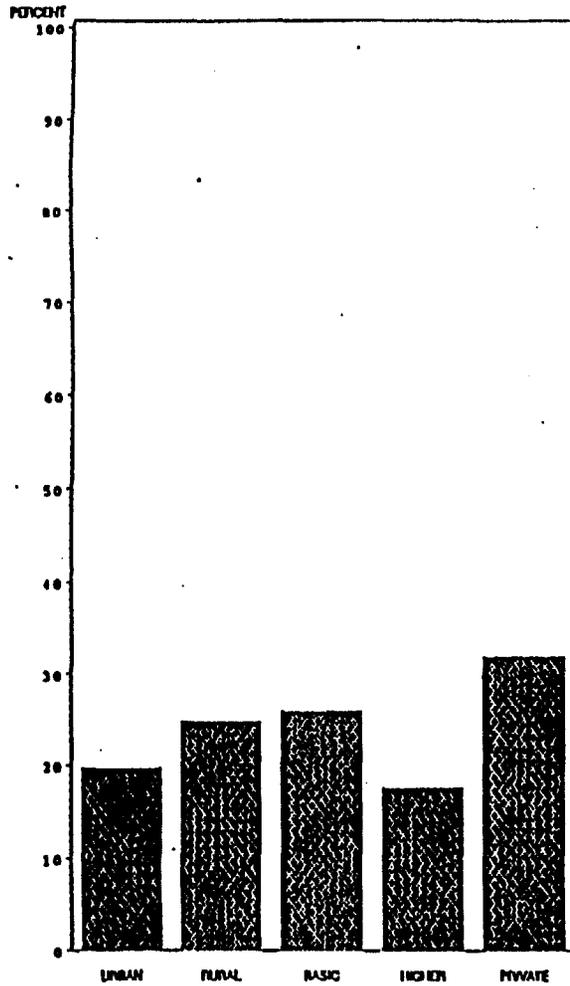
<u>Public</u>	<u>Clinic Type</u>	<u>%</u>
	Urban	74.00
	Rural	68.10
	Basic level	70.00
	Higher Level	84.90
<u>Private</u>	Private	2.80



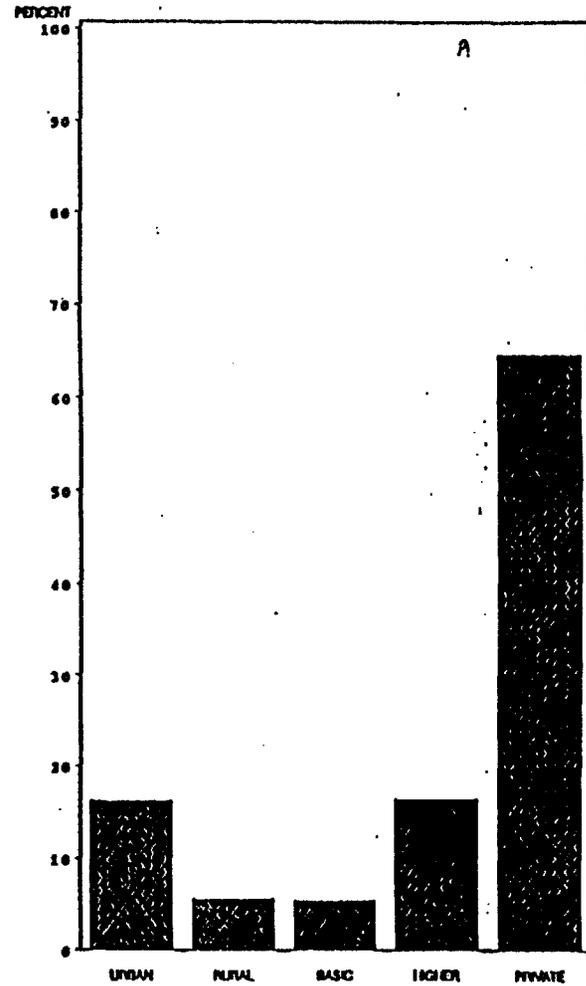
FIGURES

QUALITY OF SPECIALIZED LABORATORY TESTING

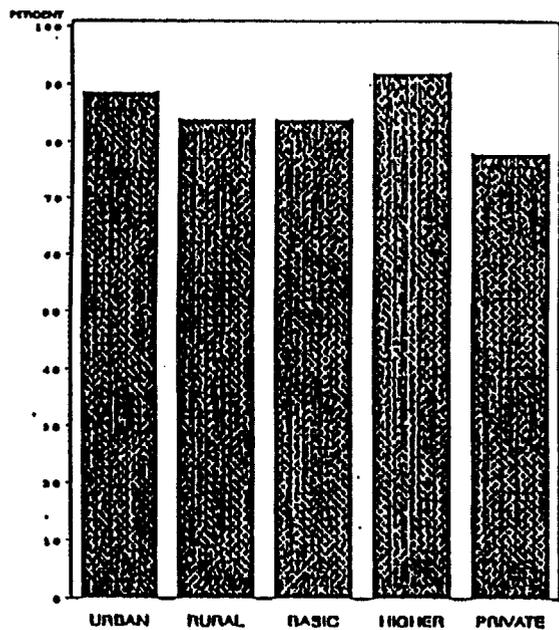
% OF CLINICS DOING 4 OF 8 SPECIAL TESTS



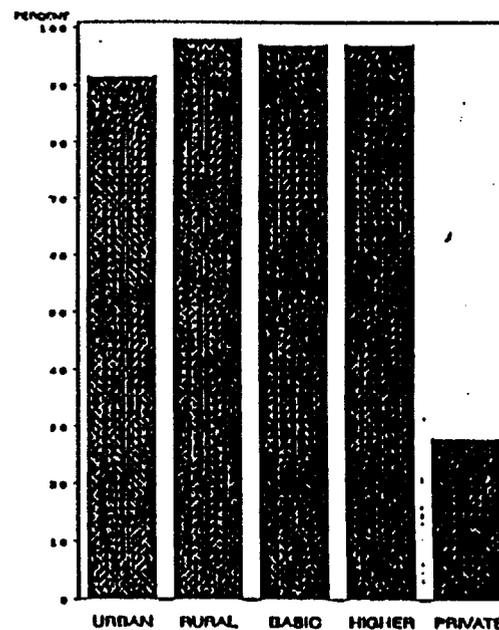
% TEST RESULTS AVAILABLE IN HOURS OR DAYS



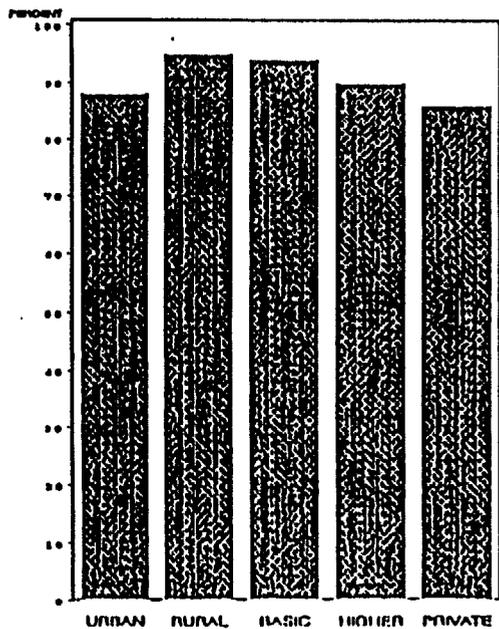
% OF CLINICS TESTING URINE



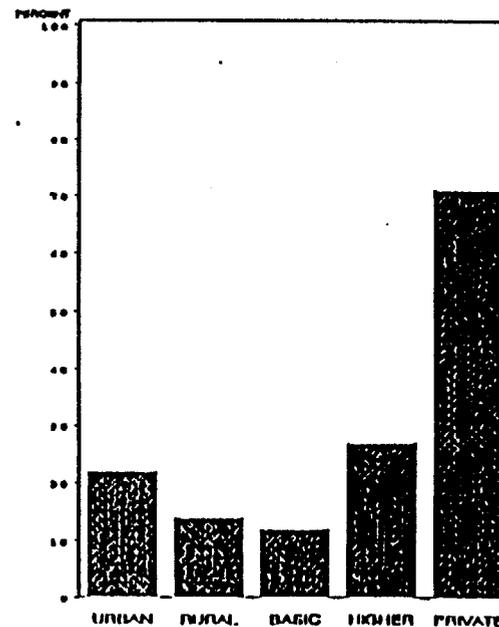
% OF CLINICS TESTING FOR HEMOGLOBIN



% TEST RESULTS AVAILABLE IN HOURS OR DAYS

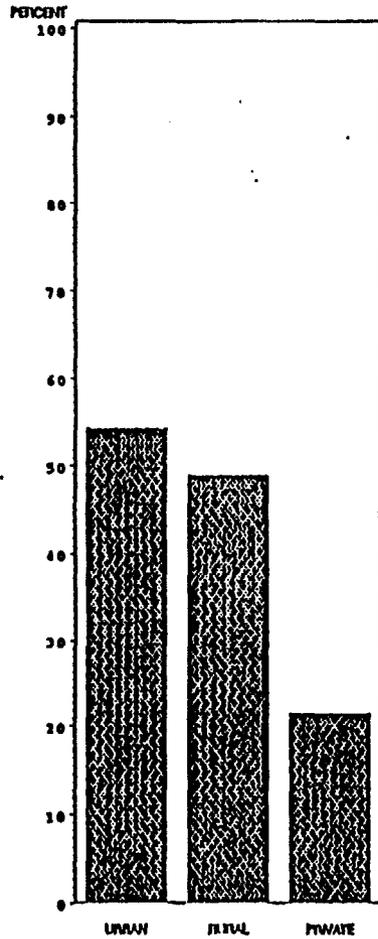


% TEST RESULTS AVAILABLE IN HOURS OR DAYS



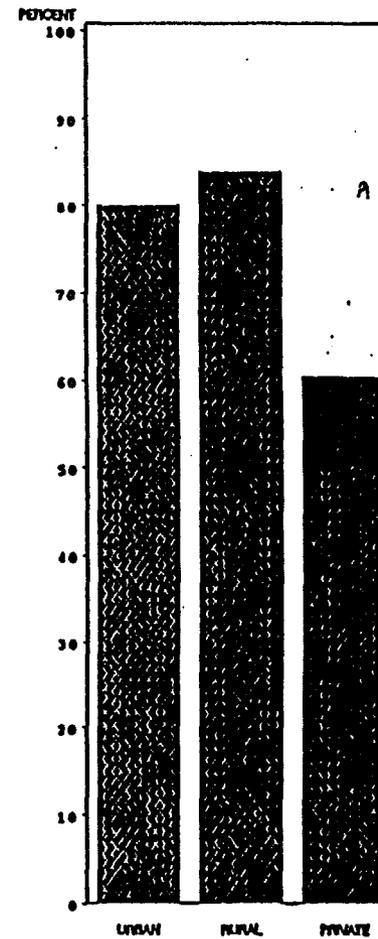
QUALITY OF PRENATAL CARE

MATERNAL COUNSELLING



% OF CLINICS OFFERING 15 OF 20 COUNSELLING SERVICES

MATERNAL DIAGNOSIS

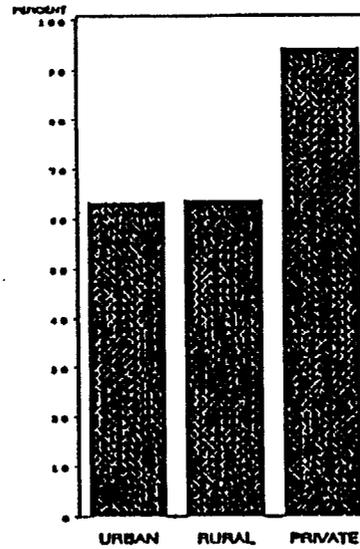


% OF CLINICS PERFORMING TESTS (7 OR MORE OUT OF 8)

82

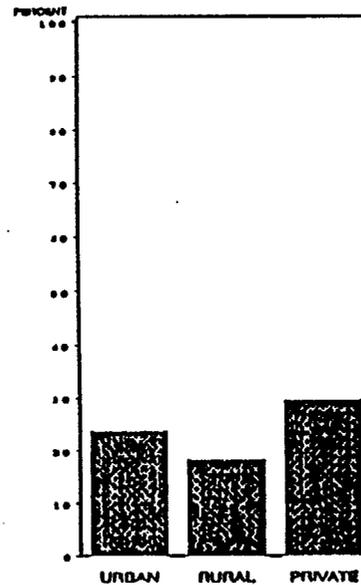
SUPPLY INDICES

FACILITIES WITH 50% BASIC SUPPLIES



60% SOPHISTICATED EQUIPMENT PRESENT & % WORKING

FACILITIES WITH 50% DELIVERY SUPPLIES

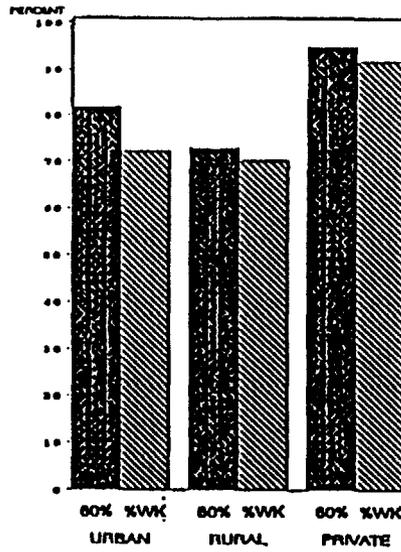


60% SOPHISTICATED EQUIPMENT PRESENT & % WORKING

23

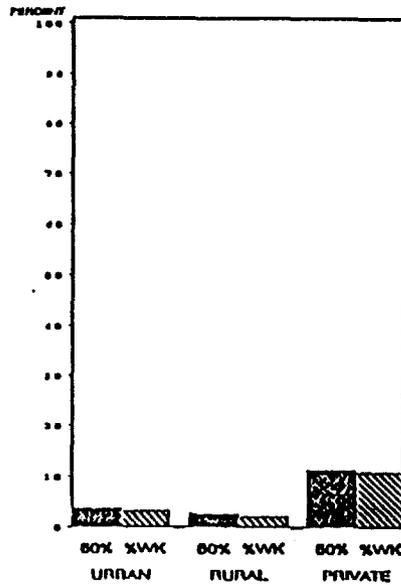
EQUIPMENT INDICES

BASIC EQUIPMENT & FUNCTION IN FACILITIES



80% PRIMARY EQUIPMENT PRESENT & % WORKING

SOPHISTICATED EQUIPMENT & FUNCTION IN FACILITIES

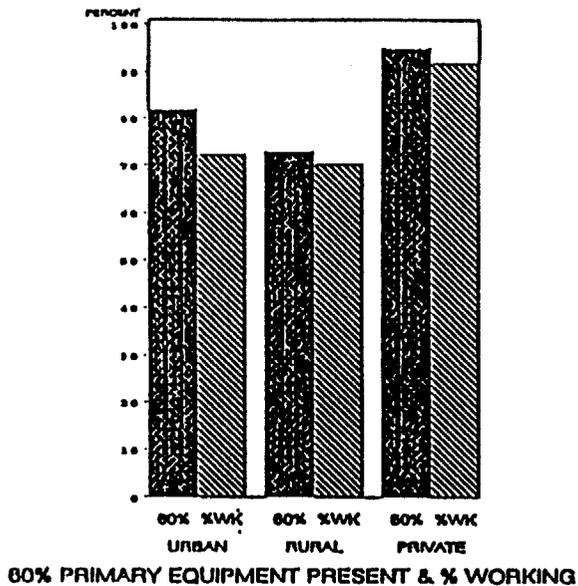


80% SOPHISTICATED EQUIPMENT PRESENT & % WORKING

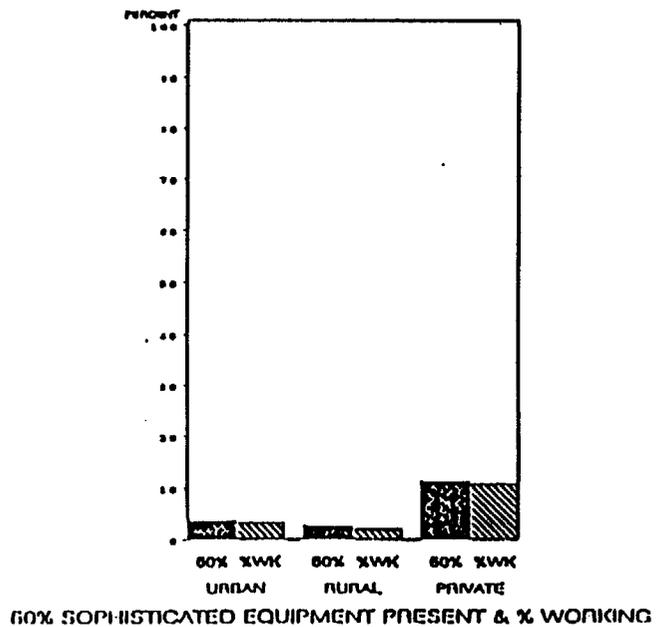
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EQUIPMENT INDICES

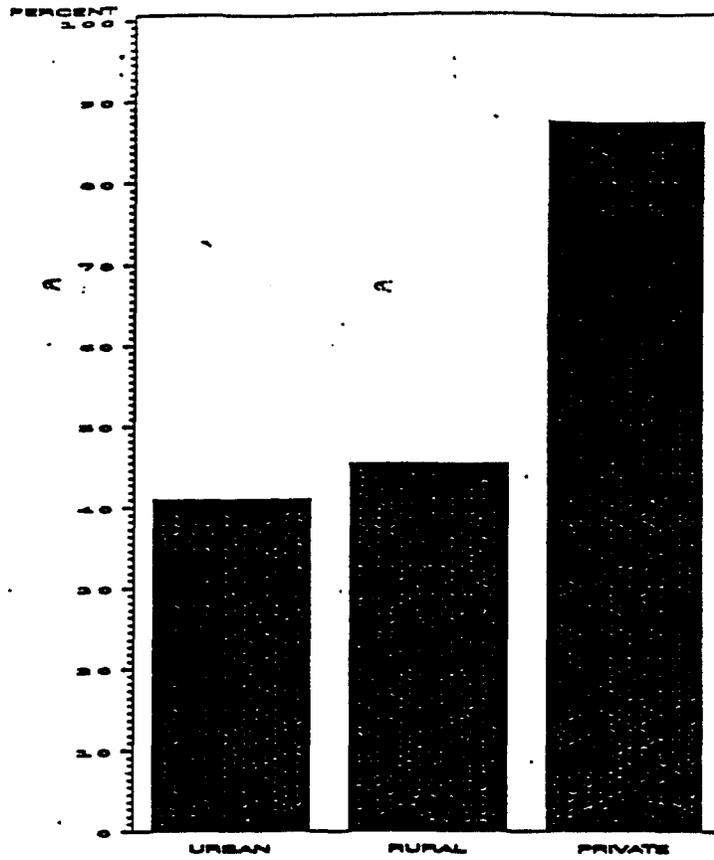
BASIC EQUIPMENT & FUNCTION IN FACILITIES



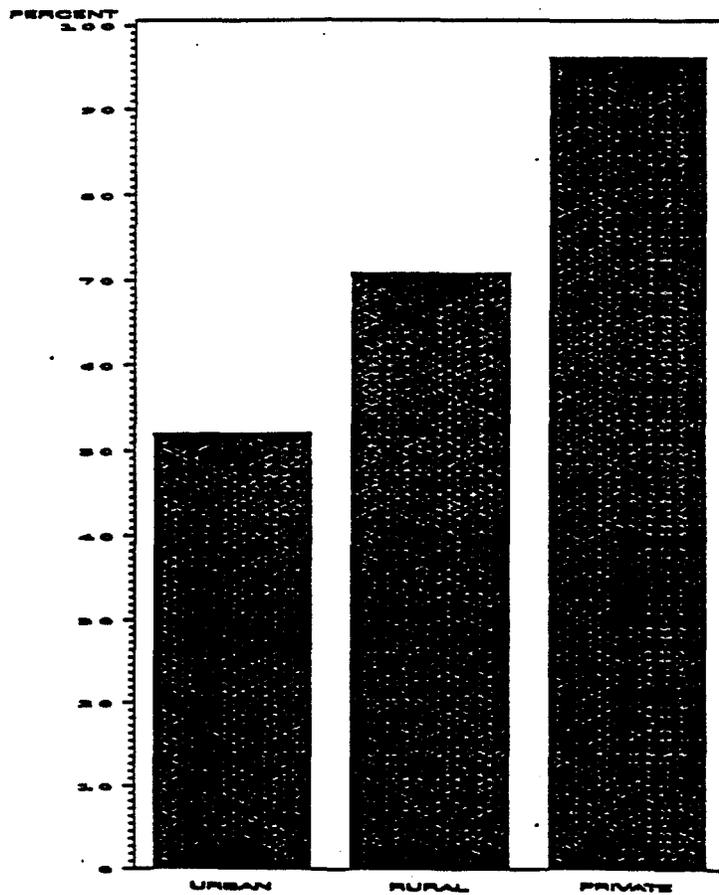
SOPHISTICATED EQUIPMENT & FUNCTION IN FACILITIES



QUALITY OF FACILITY INFRASTRUCTURE



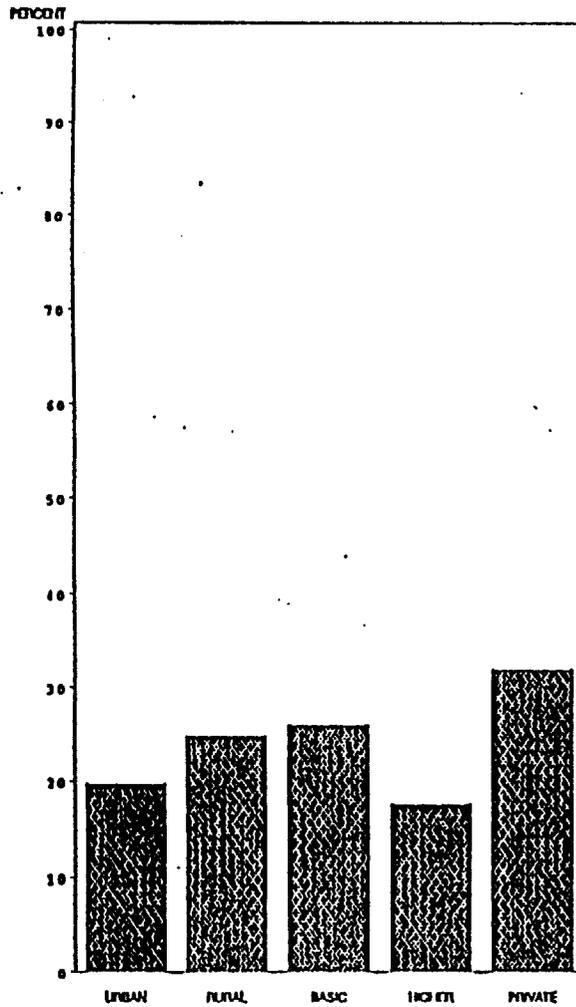
% OF FACILITIES WITH FEWER THAN ONE PROBLEM



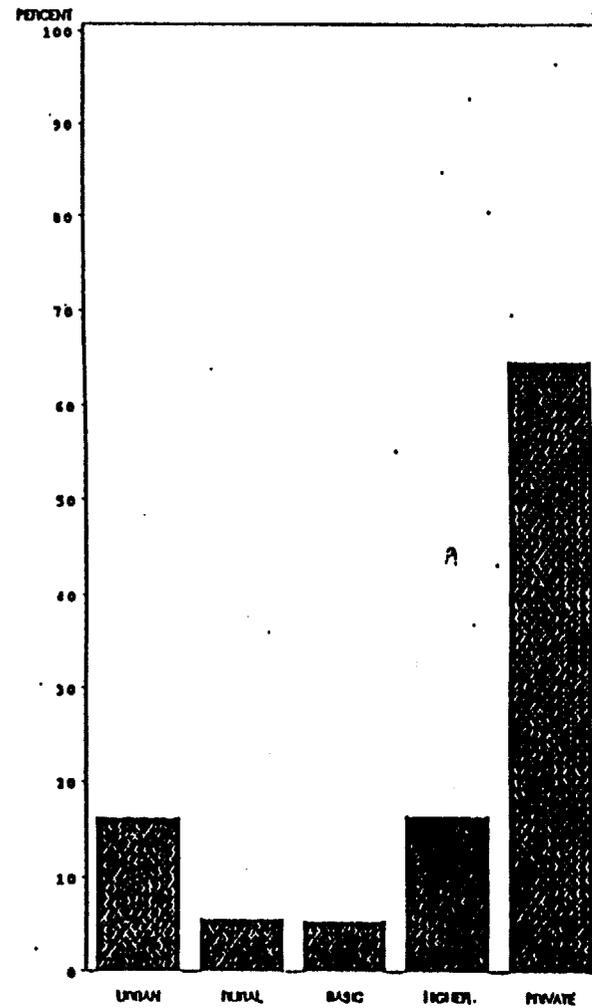
% OF FACILITIES WITH FEWER THAN TWO PROBLEMS

QUALITY OF SPECIALIZED LABORATORY TESTING

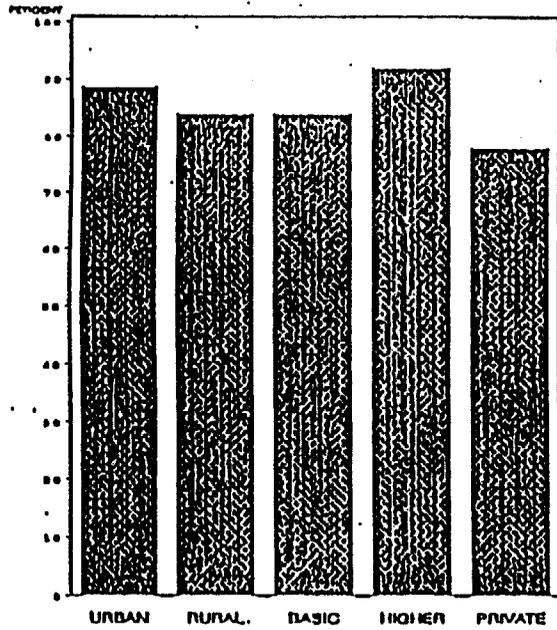
% OF CLINICS DOING 4 OF 8 SPECIAL TESTS



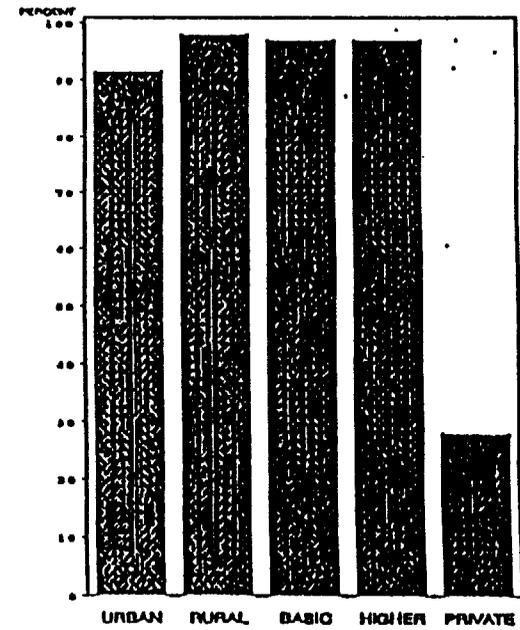
% TEST RESULTS AVAILABLE IN HOURS OR DAYS



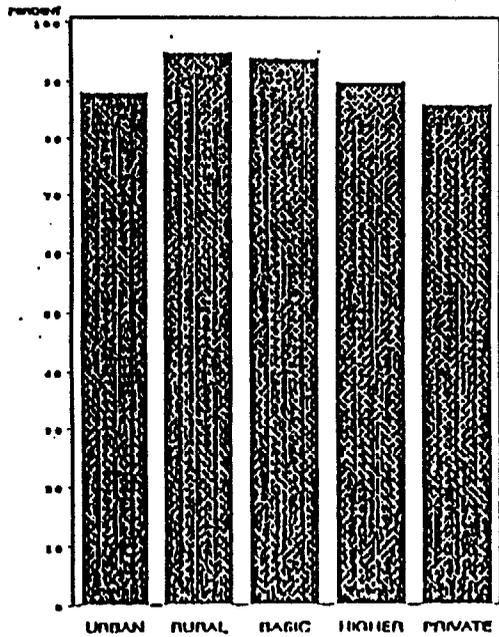
% OF CLINICS TESTING URINE



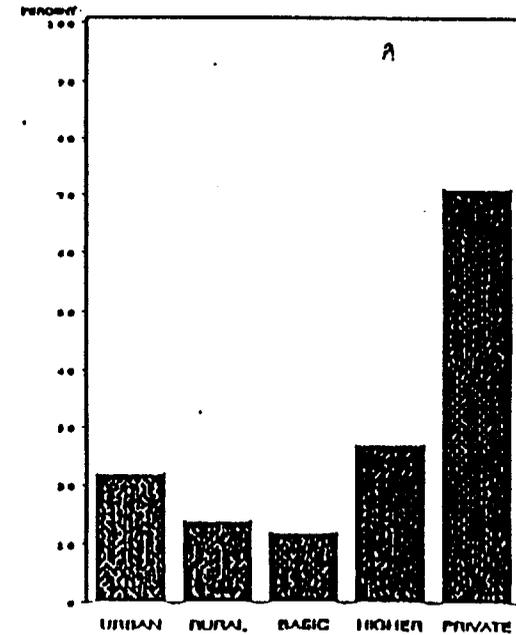
% OF CLINICS TESTING FOR HEMOGLOBIN



% TEST RESULTS AVAILABLE IN HOURS OR DAYS



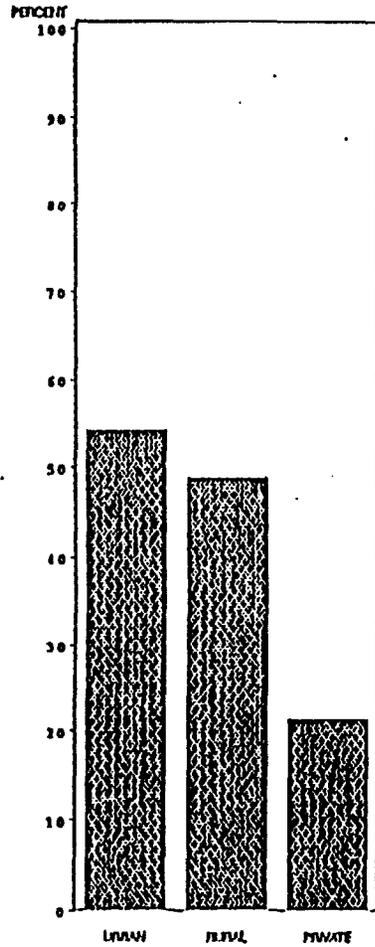
% TEST RESULTS AVAILABLE IN HOURS OR DAYS



38

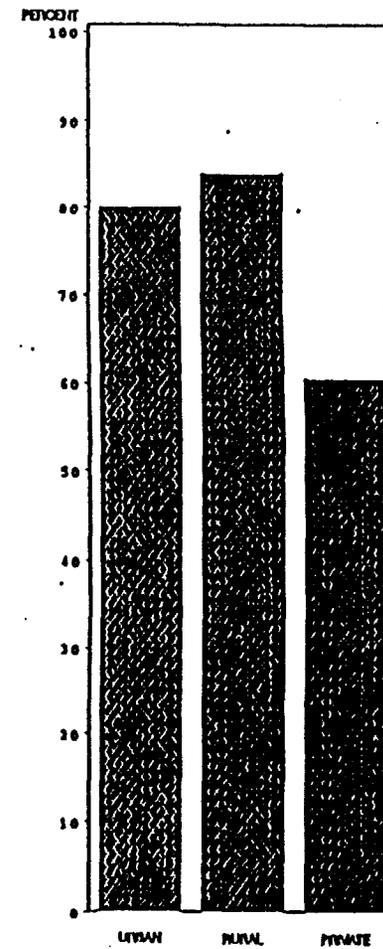
QUALITY OF PRENATAL CARE

MATERNAL COUNSELLING



% OF CLINICS OFFERING 15 OF 20 COUNSELLING SERVICES

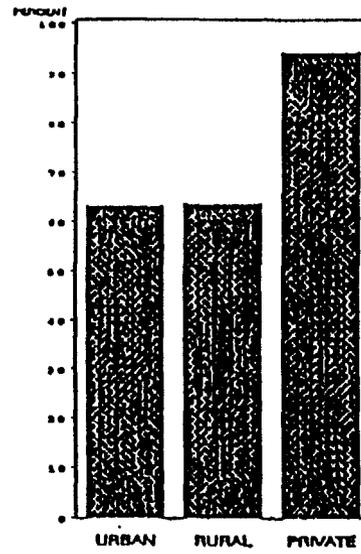
MATERNAL DIAGNOSIS



% OF CLINICS PERFORMING TESTS (7 OR MORE OUT OF 8)

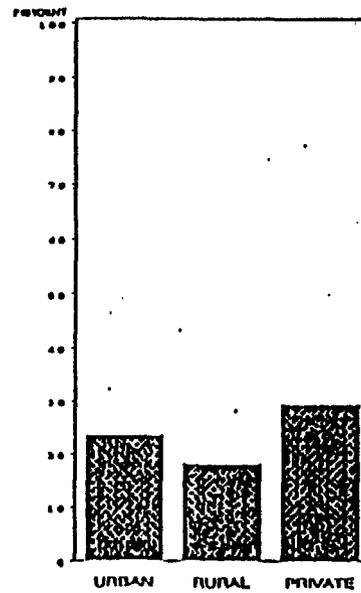
SUPPLY INDICES

FACILITIES WITH 50% BASIC SUPPLIES



80% SOPHISTICATED EQUIPMENT PRESENT & % WORKING

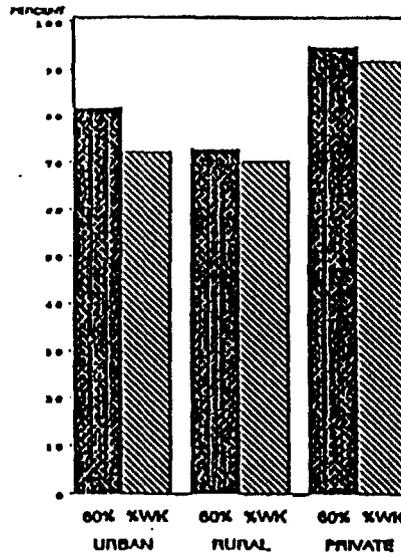
FACILITIES WITH 50% DELIVERY SUPPLIES



60% SOPHISTICATED EQUIPMENT PRESENT & % WORKING

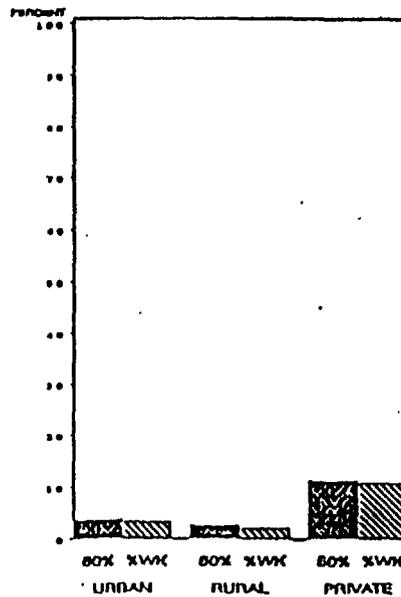
Figure 3
EQUIPMENT INDICES

BASIC EQUIPMENT & FUNCTION IN FACILITIES



80% PRIMARY EQUIPMENT PRESENT & % WORKING

SOPHISTICATED EQUIPMENT & FUNCTION IN FACILITIES

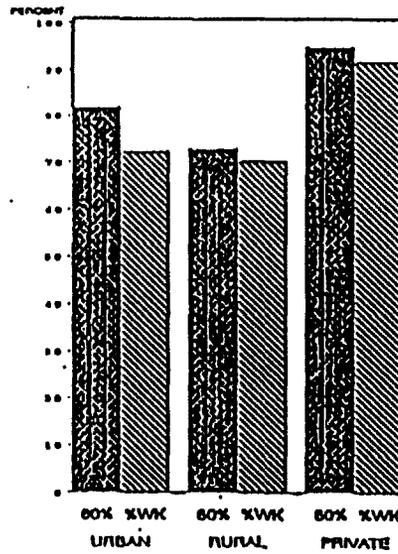


80% SOPHISTICATED EQUIPMENT PRESENT & % WORKING

11

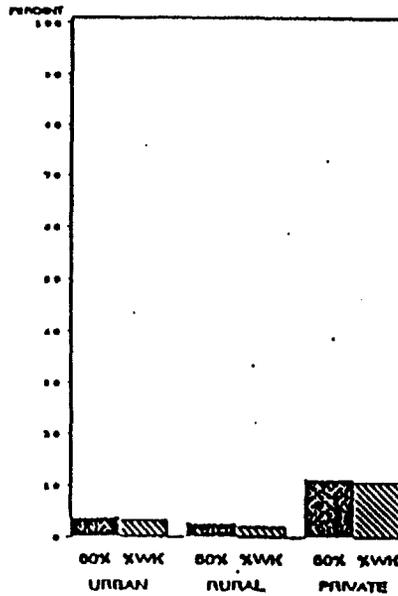
EQUIPMENT INDICES

BASIC EQUIPMENT & FUNCTION IN FACILITIES



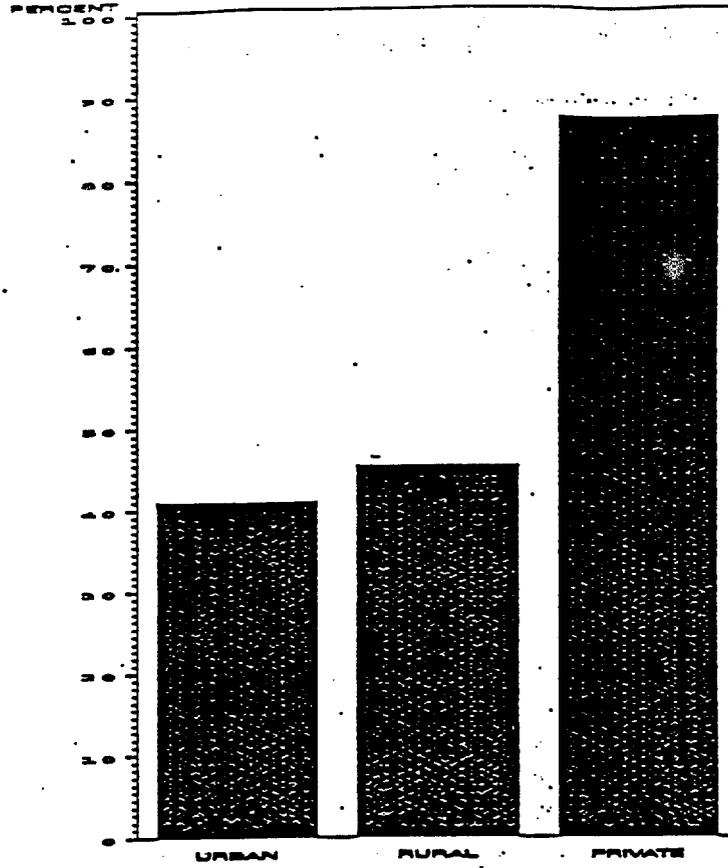
80% PRIMARY EQUIPMENT PRESENT & % WORKING

SOPHISTICATED EQUIPMENT & FUNCTION IN FACILITIES

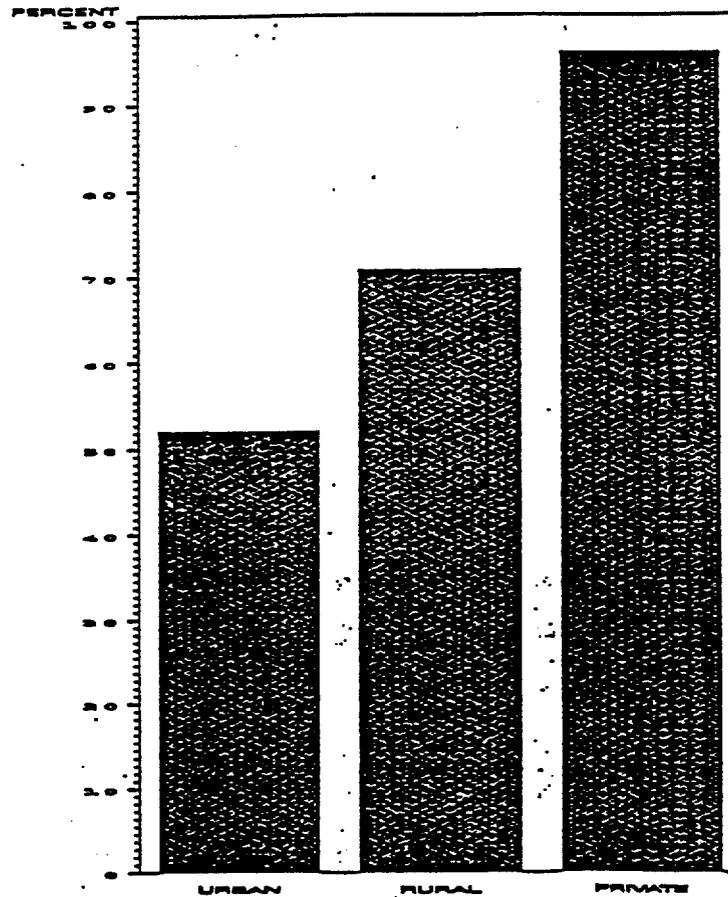


80% SOPHISTICATED EQUIPMENT PRESENT & % WORKING

QUALITY OF FACILITY INFRASTRUCTURE



% OF FACILITIES WITH FEWER THAN ONE PROBLEM



% OF FACILITIES WITH FEWER THAN TWO PROBLEMS