

Quality and comparison of antenatal care in public and private providers in the United Republic of Tanzania

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Objective To compare the quality of public and private first-tier antenatal care services in Dar es Salaam, United Republic of Tanzania, using defined criteria.

Methods Structural attributes of quality were assessed through a checklist, and process attributes, including interpersonal and technical aspects, through observation and exit interviews. A total of 16 health care providers, and 166 women in the public and 188 in the private sector, were selected by systematic random sampling for inclusion in the study. Quality was measured against national standards, and an overall score calculated for the different aspects to permit comparison.

Findings The results showed that both public and private providers were reasonably good with regard to the structural and interpersonal aspects of quality of care. However, both were poor when it came to technical aspects of quality. For example, guidelines for dispensing prophylactic drugs against anaemia or malaria were not respected, and diagnostic examinations for the assessment of gestation, anaemia, malaria or urine infection were frequently not performed. In all aspects, private providers were significantly better than public ones.

Conclusion Approaches to improving quality of care should emerge progressively as a result of regular quality assessments. Changes should be introduced using an incremental approach addressing few improvements at a time, while ensuring participation in, and ownership of, every aspect of the strategy by health personnel, health planners and managers and also the community.

Keywords Prenatal care/standards/economics/organization and administration; Quality assurance, Health care; Quality of health care; Delivery of health care; Health personnel/standards; Urban health services; Public sector; Private sector; Socioeconomic factors; Comparative study; United Republic of Tanzania (*source: MeSH, NLM*).

Mots clés Soins prénatals/normes/économie/organisation et administration; Garantie qualité soins; Qualité soins; Délivrance soins; Personnel sanitaire/normes; Services santé milieu urbain; Secteur public; Secteur privé; Facteurs économiques; Etude comparative; République-Unie de Tanzanie (*source: MeSH, INSERM*).

Palabras clave Atención prenatal/normas/economía/organización y administración; Garantía de la calidad de atención de salud; Calidad de la atención de salud; Prestación de atención de salud; Personal de salud/normas; Servicios urbanos de salud; Sector público; Sector privado; Factores socioeconómicos; Estudio comparativo; República Unida de Tanzania (*fuentes: DeCS, BIREME*).

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Introduction

In recent years, many developing countries have been actively seeking to improve the outputs and outcomes of their health care delivery system by engaging in a process of reform. Important elements of health sector reform in the United Republic of Tanzania have been the promotion of the private sector and improvements in the quality of care delivered by both private and public providers (1). Private services can clearly fill gaps when public services are inadequate, but there is a need to assess the quality of the care that they are providing as there is often concern about their performance (2–4).

One study in Dar es Salaam in the early 1990s (5) judged that the quality of curative outpatient care offered by governmental and private providers was low. Private facilities as a whole performed better than government ones, but many of them carried out practices that did not fulfil the norms

established by the government. Subsequently, substantial efforts were made to improve the quality of care in the public sector through the Dar es Salaam Urban Health Project; for example by upgrading the equipment of first-tier facilities, making drugs regularly available, and training health workers.

Quality can be assessed from the point of view of the users (perceived quality) or by using technical standards (quality defined by professionals). Donabedian (6–8) was one of the first to reflect upon quality, to operationalize the term, and to offer a framework for its definition based on three major attributes: structure, process, and outcome. “Structure” refers to the attributes of the settings where health care occurs (material, human and financial resources, and organizational structure); “process” denotes what is actually done in giving and receiving care; and “outcome” indicates the effects of care on the health status of patients and populations (morbidity and

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mortality levels). Most studies assessing quality of care have looked at curative services and at structural aspects and process attributes (9–11), at client satisfaction (12, 13), or at the relation between curative and preventive services (14).

The present study, carried out in Dar es Salaam in 1999, compared the quality of antenatal care offered by public and private providers at the first-tier level.

Methods

Study area and sampling

Dar es Salaam is the largest city in the United Republic of Tanzania and at the time of the study, in 1999, had around 2.5 million inhabitants. Private profit-making health services have been operating in Dar es Salaam since the early 1990s, and in 1999 there were more than 500 private clinics and hospitals, ranging from small clinics to referral hospitals offering relatively high-technology services such as ultrasonography. In the government regulations a distinction is made between private profit-making and voluntary sectors. Delineation between these categories is, however, difficult (5), and so this paper makes no further distinction between these different types of private providers.

Selection of the health facilities to be included in the study was based on the Tanzanian Health Management Information System. Selected providers had to satisfy the following criteria: offer mother and child health care (MCH) services; be first-tier facilities (district and referral hospitals of both private and public sectors were excluded); and have a minimum of ten daily attendances. Based on these criteria, 18 facilities in the public and 19 in the private sector qualified for inclusion. From these, eight were initially randomly chosen for each sector. Data were collected over two days, and all pregnant women attending were included. One public first-tier service was excluded since no woman attended it during the data-collection days. For the private sector, an additional provider was included in the sample because the attendance rate was low at one of the other private providers. The sample thus consisted of seven public-service and nine private-sector providers. A total of 166 women who attended the public facilities were interviewed and observed, and 188 who attended private ones.

Operational definition of quality of care, data collection and analysis

This study used a definition of quality of care based on the framework provided by Donabedian (7, 8). Since outcome is a consequence of care rather than a component of quality of care (15), it was not further assessed. The main focus was therefore on process attributes of quality, particularly provider-client interaction. Interpersonal conduct and technical aspects were considered separately. The definition of adequate or good quality was based on local standards (16, 17). Benchmarks formulated for inputs, laboratory examination and prophylactic and treatment approaches during antenatal care were critically reviewed and transposed into measurable elements each describing an attribute. As carried out in a similar study on structural aspects of quality of care (18), individual elements were weighted based on a professional judgement on what can be considered as a good medical or behavioural standard. Points were then allocated to these characteristics, which in turn allowed calculation of an overall score for each of the attributes.

Structural attributes of quality were assessed using a checklist based on various characteristics (Table 1). The process dimension was measured through observation of the patient-provider interaction, considering interpersonal and technical aspects separately. Judgement of interpersonal quality was based on the accommodation provided for the women, privacy during the consultation, and the interaction between the client and provider. Technical aspects of process attributes were assessed by observing history taking, physical examination, diagnostic approach, prescription of prophylactic treatments, and provision of health education.

A socioeconomic ranking was constructed with the help of a points system. A score was assigned to the household to which the women belonged. The composite revenue score was based on the housing situation of the woman's household: the number of rooms available and the level of crowding; the construction of the house; the availability of basic infrastructure (water, electricity); and ownership of means of transportation and household goods (refrigerator, television, radio). Scores between 0 and 3 were assigned for each of these characteristics and a total score between 0 and 30 was assigned to each woman's household.

Data was collected over the period June–August 1999 by two female fieldworkers. Data were entered and analysed using EpiInfo 6.04 software (Centers for Disease Control and Prevention, Atlanta, GA, USA). Logical checks helped to ensure the accuracy of data entry. Differences between the public and private sectors in the overall scores were compared using the Kruskal–Wallis test, a non-parametric test for independent samples.

Results

Obstetrical and socioeconomic characteristics of women attending antenatal care services

The median age of the study women was 25 years, 9% being under 18 years of age, and 8% over 33 years of age. For 31% of the women it was their first pregnancy. For 12% of women the observation and exit interview were performed during their first visit to a health service, and for 17% during the second visit. The remaining women were attending for their third or a further visit. No significant differences in the obstetrical characteristics were found between women attending public or private providers.

Socioeconomic conditions of a household may well influence health-seeking behaviour (19, 20). The results indicated that the use of antenatal care services by a pregnant woman was related to the socioeconomic status of her household: women living in worse conditions consulted private health services less often and relied more often on governmental health service than those living in better circumstances. Women attending public sector facilities had a median socioeconomic score of 11 (range, 5–25) (see Fig. 1). Women who attended consultations in the private sector had a median score of 13 (range 7–26) out of a maximum of 31 points. Differences were significant ($H = 20.6$; $P < 0.001$).

Fees charged for antenatal care

Iron(II) sulfate and folic acid (FeFo) for anaemia prophylaxis were provided free to 72% of the women attending governmental services. In the private sector only 12% of women received FeFo free. If available, chloroquine was distributed without charge by public services, while 93% of

Table 1. Attributes used for the assessment of quality of care used in the present study

Attributes of quality	Categories and elements assessed
Structural attributes^a	
General infrastructure	Toilets with water; waiting area; privacy of examination room; water to wash hands (3 points each)
Basic diagnostic equipment available	Sphygmomanometer; microscope; gloves; stethoscope; laboratory; haemoglobin measurement; uristix for the detection of glucose and protein in the urine; patellar hammer (3 points each)
Maintenance of facility	Cleanliness of toilets and facility; maintenance of floors and walls; cleanliness of toilets; maintenance of floors and wall (3 points each)
Drugs available	Iron(II) sulfate and folic acid; chloroquine; methyl dopa; furosemide; metronidazole; mebendazole; paracetamol; acetylsalicylic acid; cotrimoxazole; penicillin vials; tetanus toxoid vaccination; vitamin A capsules (2 points each)
Process of care	
Interpersonal aspects^b	
Making women comfortable	Seat offered (2 points)
Health worker–woman interaction	Interest (2 points); non-interruption of woman's speech (1 point); politeness (2 points), asking about woman's concerns (2 points)
Privacy	Door closed during consultation (1 point)
Explaining procedures to the women	Explaining before examination; explaining of diagnosis; explaining use of prophylactic drugs (2 points each)
Technical aspect^c	
Assessing the history of women	Any history (3 points); history for malaria (2 points); urinary tract infection (2 points)
Diagnostic approach	Blood pressure measurement (3 points); checking haemoglobin (3 points); urine for albumin (2 points); urine for infection (2 points)
Provision of prophylactic drugs	Iron(II) sulfate and folic acid; chloroquine (3 points each)
Physical examination	Checking eyes (2 points); legs for oedema (3 points); weight (2 points); fetal heart (3 points)
Providing health education	General health education; health education for nutrition; health education prevention of malaria (2 points each)

^a Maximum, 72 points.

^b Maximum, 16 points.

^c Maximum, 39 points.

women using private services had to pay for it. In the private sector all the women had to pay for registration and laboratory examinations, while in the public services, 79% of women attending had to pay for registration and 88% for diagnostic services. Pregnant women using private services not only had to pay more often than in the public sector, but the median charge per consultation was about six times higher (910 Tanzanian shillings (US\$ 1.3)) than in the public sector (140 Tanzanian shillings (US\$ 0.2)).

Structural attributes of quality

The physical infrastructure of all first-tier public and private facilities was reasonably good (Table 2). Maintenance was generally better in private facilities. Regarding basic diagnostic tools, equipment was clearly better in the private sector. The median overall score for structural attributes of quality, out of a maximum of 72, was 51 (range 35–54) for the public and 64 (range 56–72) for the private sector. These differences were significant ($H = 11.2$; $P < 0.001$) (Fig. 2).

Process attributes of care: interpersonal aspects

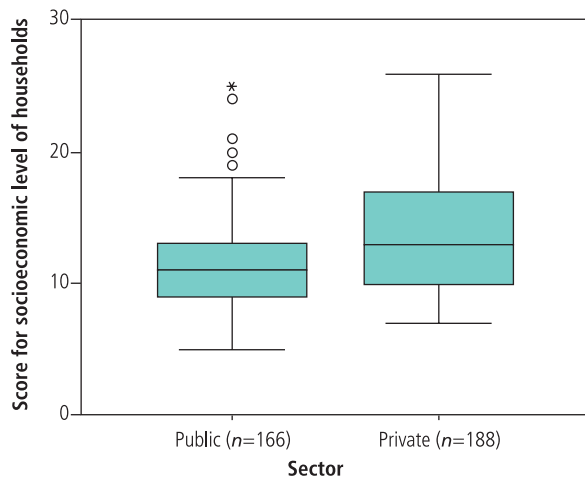
In all consultation rooms in both public and private facilities there were seats available, and these were offered to 89% of the women attending public facilities and to 93% in private ones (Table 3). Privacy of the consultation (i.e., the door of the examination room being closed) was observed in 81% of

consultations in the public sector and in 99% in the private sector. Women were invited to talk about their medical concerns in 71% of consultations in public facilities and 81% in private ones. Diagnoses of anaemia, malaria, or other pregnancy-related conditions were made for 54% of women both in the private and in the public sector. In general, interpersonal aspects of quality were good, especially in relation to welcoming the patient and providing privacy for the consultation. The median summary score for interpersonal aspects was higher for the private sector, where it was 13 (range 4–16) whereas for the public sector it was 11 (range 5–16), out of a maximum of 16. This difference was significant ($H = 13.4$; $P < 0.001$) (Fig. 3).

Process attributes: technical aspects

The general history of the pregnant women was taken in 35% of all consultations in the public sector and in 49% in the private sector (Table 4). Questions about recent malaria episodes, urinary tract infections, or signs of anaemia were hardly ever asked by the health personnel. The frequency of carrying out specific physical examinations revealed a heterogeneous picture. Some of the examinations were done very regularly (weighing, auscultation of the fetal heart, and palpation of the fundus). Others were done less regularly, for example haemoglobin measurement and looking for clinical signs of anaemia by checking for pale mucous membranes or

Fig. 1. Socioeconomic household scores of women attending first-tier private and public antenatal care services



Box shows the limits of the 25% and 75% percentile. Horizontal line within box shows the median value. Bars indicate the low- and high-end of the 95% distribution limits; open circles indicate outliers (cases with values 1.5–3 box lengths from the upper or lower edge of the box) and asterisks indicate extremes (cases with values > 3 box lengths from upper or lower edge of the box).

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conjunctiva. The median score for technical aspects of quality of care was 18 (range 5–28) in the public sector and 21 (range 10–33) in the private sector out of a maximum of 39. The differences were significant ($H = 62.5$; $P < 0.001$) (Fig. 4). Although quality was somewhat better in the private sector, the overall performance was considered weak in both sectors. For example, routine prophylaxis for well-known pregnancy-related risk factors such as malaria or anaemia was only prescribed in a small proportion of consultations, and albumin checks were made in less than half of the consultations.

Qualifications of the personnel and consultation time

The training levels of the personnel working in the antenatal care services in the public and the private sector differed, with those working in the latter having higher qualifications. In the public sector nearly all consultations (88%) were performed by an MCH auxiliary (who has two years' training) and virtually none by a doctor. In the private sector 10% of consultations were carried out by a doctor or an assistant medical officer, 60% by a midwife or nurse, and only 30% by an MCH auxiliary. There was a clear relation between the qualifications of the staff and the quality of the service provided. The more highly trained personnel performed better in the technical aspects of quality, with the doctors and medical assistants carrying out investigations more often, such as checking the urine or controlling for oedema (results not shown).

In general, consultation times were short. One-fifth of the consultations lasted less than 4 min, one-half less than 6 min, and 81% less than 10 min. There was a relation between consultation time and the qualifications of the personnel; medical doctors and assistant medical doctors spent an average of 14 min on a consultation, twice as long as midwives, nurses and MCH auxiliaries. On the other hand, there was no relation between the duration of the consultation and the number of women going to a particular provider each day.

Table 2. Structural attributes of quality of public and private providers

Attribute	% with attribute		Significance level
	Public (n=7)	Private (n=9)	
Physical infrastructure			
Toilets with water to flush	29	35	NS ^a
Waiting places for all the women	43	78	NS
Privacy of examination room	100	100	NS
Water to wash hands	29	56	NS
Maintenance			
Cleanliness of toilets	57	100	NS
Cleanliness of facility	100	100	NS
Maintenance of floors	71	67	NS
Maintenance of walls	86	100	NS
Basic diagnostic equipment			
Sphygmomanometer	86	100	NS
Microscopes	71	100	NS
Gloves	86	100	NS
Stethoscope	100	100	NS
Laboratory	71	100	NS
Haemoglobin measurement	86	100	NS
Uristix for the detection of glucose and protein in the urine	29	100	$\chi^2=9.35$; $P=0.005$
Drugs			
Iron(II) sulfate/folic acid	86	89	NS
Chloroquine	86	89	NS
Methyldopa	0	67	$\chi^2=7.47$; $P=0.01$
Furosemide	0	89	$\chi^2=12.44$; $P=0.001$
Metronidazole	86	100	NS
Meibendazole	86	100	NS
Acetylsalicylic Acid	86	100	NS
Paracetamol	86	100	NS
Cotrimoxazole	86	89	NS
Penicillin vials	86	100	NS
Tetanus toxoid vaccine	100	89	NS
Vitamin A capsules	71	89	NS

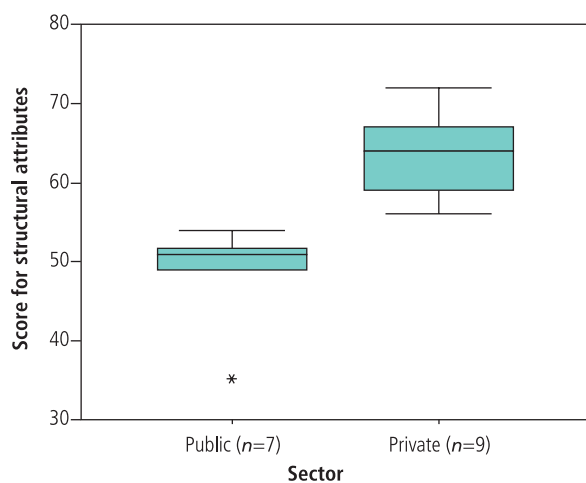
^a NS = not significant.

Discussion

The present study indicated that the women visiting private facilities for antenatal care were socioeconomically better off than those using public ones and that they generally paid more for the services. Some women attending public services reported that usually they had to pay for all services, including prophylaxis and blood pressure measurements, but that on the day of the interview services were free. This indicates that the presence of interviewers introduced a bias and that the estimates in the public sector for the cost study were too low. A similar observation was made in Uganda (21). However, even if the cost of public services was underestimated, the cost of attending private antenatal care facilities is still higher.

The study showed that structural attributes of quality were generally satisfactory, and that they had improved in public facilities considerably since the early 1990s as a result of rehabilitation and a better availability of drugs. Both private and public facilities provided a reasonably good quality of care in terms of interpersonal aspects. The assessment of the quality of first-tier antenatal care services, based on Tanzanian national standards, has shown that neither public nor private providers are offering an adequate quality of care from the technical point

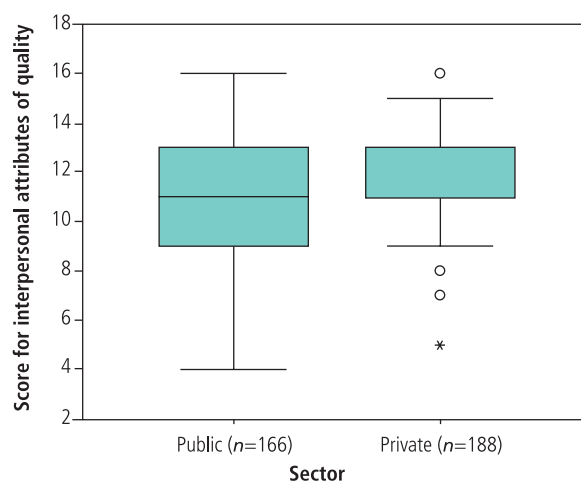
Fig. 2. Comparison of scores for structural attributes of quality of care between public and private providers



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Fig. 3. Comparison of scores for interpersonal aspects of quality of care between public and private providers



See legend to Fig. 1 for an explanation of symbols

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Table 3. Process attributes of quality of care in public and private providers: interpersonal aspects

	% with attribute:		Significance level
	Public (n=166)	Private (n=188)	
Making a woman comfortable			
Seat offered	89	93	NS
Health worker–woman interaction			
Interest	93	95	NS
Non-interruption of woman's speech	70	87	$\chi^2=15.11; P<0.001$
Politeness	98	98	NS
Concerns of woman asked about	71	81	$\chi^2=5.09; P=0.02$
Privacy			
Door closed during consultation	81	99	$\chi^2=36.65; P<0.001$
Explaining procedures to the women			
Explaining before examination	89	99	$\chi^2=19.7; P<0.001$
Explaining diagnosis	55	54	NS
Explaining about prophylactic drugs	91	94	NS

of view, although private providers are performing better. Instructions given in official guidelines, for example concerning the dispensing of prophylactic drugs against anaemia or malaria, were not respected or diagnostic examinations were frequently not carried out. It is possible, however, that the process dimensions of quality of care were affected partially by measurement bias. Although observations by fieldworkers were made as discretely as possible and staff did not know in advance that the fieldworkers would visit, their presence possibly influenced the behaviour of health workers. For example, women might have been treated more courteously than usual. If so, general judgements on interpersonal and technical quality would be higher than under normal conditions. However, there is no reason to believe that this bias would alter the conclusions of the study with regard to

process attributes of quality, nor the comparisons between the private and public sector.

Various authors have formulated concern about the quality of care provided by the private sector, and low quality treatment practices have been reported for various diseases (22, 23). This study pointed out that private providers for antenatal care were significantly better than public ones with regard to all attributes of quality under investigation. This is in line with other studies which have showed that private services can deliver adequate services in family planning or treatment of sexually transmitted diseases (24, 25).

There has been rapid growth in the private sector since new legislation on individual medical practice was introduced at the beginning of the 1990s. As a result, public providers increasingly have to compete for patients by offering services of adequate quality. Today, private health facilities account for more than 85% of health facilities in the city, and provide curative care for a majority of the population (20). Regulating and improving quality of care in the private sector presents an additional challenge in an already complex and difficult endeavour. Legislation on minimum standards is needed, as well as adequate public supervision to ensure its enforcement (26). However, such measures need to be accompanied by education and information campaigns to make sure that all those working in the private sector understand the minimum standards required. Education of clients about what minimum standards they should expect in return for the fees they pay could also play a role in influencing the private sector.

Quality of care is closely linked to the quality of the health services personnel. The study showed that the quality of performance was linked to the training level of the personnel (see also 9, 10). The fact that in the private sector staff were better qualified was one reason why quality was judged to be better in this sector. However, most first-tier services will continue to be provided by less well-qualified staff, particularly in the public sector. The reasons why health workers perform badly need to be investigated, and ways found to improve their performance. It needs to be established whether the problem is lack of knowledge, or whether workers are not able to translate knowledge into appropriate practices.

Table 4. Process attributes of quality of care in public and private providers: technical aspects

	% with attribute		Significance level
	Public (n=166)	Private (n=188)	
History			
Any history	35	49	$\chi^2=7.07; P=0.007$
Malaria	7	21	$\chi^2=14.49; P<0.001$
Urinary tract infection	2	14	$\chi^2=13.9; P=0.0001$
Diagnostics			
Haemoglobin measurement	28	77	$\chi^2=64.75; P<0.001$
Blood pressure measurement	76	99	$\chi^2=46.34; P<0.001$
Albumin in urine	1	40	$\chi^2=79.4; P<0.001$
Urinary tract infection	1	11	$\chi^2=14.54; p<0.001$
Prophylactic drugs			
Iron(II) sulfate/ folic acid	52	38	$\chi^2=10.76; P=0.001$
Chloroquine	8	7	NS
Physical examination			
Signs of anaemia checked	62	89	$\chi^2=38.47; P<0.001$
Oedema of legs checked	73	94	$\chi^2=17.91; P<0.001$
Weight of mother taken	99	99	NS
Fetal heart beat auscultation	99	99	NS
Health education			
General health education	84	28	$\chi^2=114.10; P<0.001$
Health education for malaria	6	11	NS
Health education for nutrition	31	42	$\chi^2=4.84; P=0.03$

Approaches to improving quality of care should be based on regular quality assessments and additional operational research activities. The following are important components of such strategies (27): using an incremental approach introducing a few issues at a time and revisiting them regularly; and ensuring participation, choice, and ownership of every aspect of the strategy, while at the same time providing vision and direction. The latter component implies involving health staff at all levels of the health care system, as well as the community, through an active dialogue and sharing of decision making. The ultimate goal should then be “to create an environment of watchful concern that motivates everybody to perform better” (6). ■

Résumé

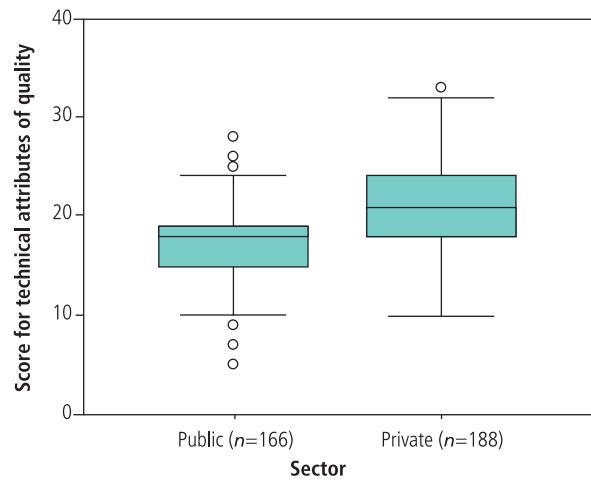
Qualité des soins prénatals : comparaison du rôle et des performances des prestataires publics et privés dans une zone urbaine de Tanzanie

Objectif Comparer au moyen de critères établis la qualité des services prénatals de premier niveau assurés par les secteurs public et privé dans l'agglomération de Dar-es-Salaam, en République-Unie de Tanzanie.

Méthodes On a évalué les caractéristiques structurelles au moyen d'une liste de contrôle, et les caractéristiques de fonctionnement, qui englobent les aspects interpersonnels et techniques, par l'observation et en interrogeant les femmes à leur sortie des services. L'étude, effectuée par sondage aléatoire systématique, a porté sur 16 prestataires au total et sur 166 femmes dans le secteur public et 188 dans le secteur privé. On a comparé la qualité aux normes nationales et calculé un score global pour les différents aspects afin de faire des comparaisons.

Résultats Les résultats montrent que, dans le public comme dans le privé, la qualité des soins est assez bonne en ce qui concerne les

Fig. 4. Comparison of scores for technical aspects of quality of care between public and private providers



See legend to Fig. 1 for an explanation of symbols

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Conflicts of interest: none declared.

Resumen

Comparación de la calidad de la atención prenatal entre proveedores públicos y privados en la República Unida de Tanzania

Objetivo Comparar la calidad de los servicios públicos y privados de atención prenatal de primer nivel en Dar es Salaam, República Unida de Tanzania, usando criterios previamente definidos.

Métodos Los parámetros estructurales definitorios de la calidad se evaluaron mediante una lista de verificación, y los relativos al proceso, incluidos los aspectos interpersonales y técnicos, mediante observación y entrevistas a la salida. Se seleccionó para el estudio, mediante muestreo aleatorio sistemático, a un total de 16 proveedores de atención sanitaria y a 166 mujeres en el sector público y 188 en el privado. La calidad se determinó por referencia a la norma nacional, obteniéndose una puntuación general para los diferentes aspectos con fines comparativos.

Resultados Los resultados indican que los proveedores de los servicios, tanto públicos como privados, actuaron de forma razonablemente satisfactoria en lo que atañe a los aspectos

estructurales e interpersonales de la calidad de la atención. Sin embargo, unos y otros mostraron un nivel insuficiente por lo que se refiere a los aspectos técnicos de la calidad. Por ejemplo, no se respetaron las directrices elaboradas para dispensar medicamentos profilácticos contra la anemia o el paludismo, y con frecuencia no se realizaron exámenes diagnósticos de evaluación del embarazo, la anemia, el paludismo o las infecciones urinarias. En todos los aspectos, los proveedores privados fueron significativamente mejores que los públicos.

Conclusión Las medidas de mejora de la calidad de la atención deben ser el resultado progresivo de evaluaciones regulares de la calidad. Los cambios se deben introducir aplicando un enfoque gradual que aborde pocas mejoras a la vez, sin dejar de asegurar la participación, y también la adhesión, del personal de salud y los planificadores y gerentes sanitarios, así como de la comunidad, en todos los aspectos de la estrategia.

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