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Public-private partnership laboratory in health care delivery: experience from the University College Hospital, Ibadan, Nigeria

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Abstract
*Introduction:*In a bid to improve the quality and financing of health care delivery especially in the public sector, the public-private partnership (PPP) initiative was adopted in the Nigerian health sector. This study assessed the perception of University College Hospital (UCH) staff on PPP laboratory as well as the level of utilisation of the laboratory among UCH staff.
*Method:*This mixed-method study was cross-sectional in design. Data were collected using structured questionnaires and interviews with key informants from various departments and specialties in UCH. Quantitative data were analysed using descriptive statistics while qualitative data were analysed thematically. The perceived quality of the PPP laboratory was measured on a scale of 1 – 5, where 1 and 5 are rated as very poor and excellent, respectively.
*Result:*This study shows that 43.0% of UCH staff have never utilised the PPP laboratory. Those who utilised it did so mostly due to three major reasons: doctors' specifications (36.6%), emergency tests (31.8%) and tests not covered by NHIS (30.2%).Only 13.4% of the respondents used the PPP laboratory every time the need arose. The commonest reason for utilisation of the PPP laboratory was promptness of test results. Generally, respondents were more positive about their perception of UCH health managers' collaboration with private partners in the delivery of laboratory services. Confidence that laboratory tests were properly conducted has the highest rating from staff (rating=4.0), followed by mindfulness of PPP laboratory staff towards offering quality services in their operations (rating=3.90). The quality indicator with the lowest rating is the attitude/action of PPP laboratory staff (rating=3.4). Overall, respondents rated the PPP laboratory services as "satisfactory".
Conclusion: Despite the positive perception, the utilisation of the public-private partnership laboratory in UCH needs to be improved upon. This can be achieved through the reorientation and education of the staff, to see the public-private partnership laboratory as an initiative to support health care services and not a rival to the hospital-owned laboratory. The collaboration between the public and private sectors in other health services asides the laboratory in UCH is also recommended.

Keywords*: Public-private partnership, Perception of laboratory services, Utilisation of laboratory services*

Résumé
Contexte:: Dans le but d'améliorer la qualité et le financement de la prestation des soins de santé, en particulier dans le secteur public, l'initiative de partenariat public-privé (PPP) a été adoptée dans le secteur de la santé nigérian. Cette étude a évalué la perception du personnel de l'University College Hospital (UCH) sur le laboratoire PPP ainsi que le niveau d'utilisation du laboratoire parmi le personnel de l'UCH.
Méthode: Cette étude à méthode mixte était transversale dans sa conception. Les données ont été recueillies à l'aide de questionnaires structurés et d'entretiens avec des informateurs clés de divers départements et spécialités de l'UCH. Les données quantitatives ont été analysées à l'aide de statistiques descriptives tandis que les données qualitatives ont été analysées par thème. La qualité perçue du laboratoire PPP a été mesurée sur une échelle de 1 à 5, où 1 et 5 sont notés respectivement très médiocre et excellent.
Résultat: Cette étude montre que 43,0% du personnel de l'UCH n'a jamais utilisé le laboratoire PPP. Ceux qui l'ont utilisé l'ont fait principalement pour trois raisons principales: les spécifications des médecins (36,6%), les tests d'urgence (31,8%) et les tests non couverts par le NHIS (30,2%). Seuls 13,4% des répondants utilisent le laboratoire PPP à chaque fois que le besoin s'en fait sentir. La raison la plus courante d'utilisation du laboratoire PPP est la rapidité des

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résultats des tests. En général, les répondants étaient plus positifs quant à leur perception de la collaboration des responsables de la santé de l'UCH avec des partenaires privés dans la prestation de services de laboratoire. La confiance que les tests de laboratoire ont été correctement menés a la cote la plus élevée de la part du personnel (cote = 4,0), suivie de l'attention du personnel du laboratoire PPP à offrir des services de qualité dans leurs opérations (cote = 3,90). L'indicateur de qualité avec la note la plus basse est l'attitude / l'action du personnel du laboratoire PPP (note = 3,4). Dans l'ensemble, les répondants jugent les services de laboratoire PPP «satisfaisants». *Conclusion:* Malgré la perception positive, l'utilisation du laboratoire de partenariat public-privé dans l'UCH doit être améliorée. Ceci peut être réalisé par la réorientation et la formation du personnel, pour voir le laboratoire de partenariat public-privé comme une initiative pour soutenir les services de santé et non comme un rival du laboratoire appartenant à l'hôpital. La collaboration entre les secteurs public et privé dans d'autres services de santé en plus du laboratoire de l'UCH est également recommandée.

Mots clés: *Partenariat public-privé, Perception des services de laboratoire, Utilisation des services de laboratoire*

Introduction

Laboratories play a central role in public health, in disease control and surveillance, and in individual patient diagnosis and care, yet, millions of people still do not have access to reliable, basic, diagnostic laboratory services [1]. Clinical laboratory services are a critical, yet, often neglected component of essential health systems in resource-limited countries.

Public-private partnership (PPP) has been advocated as a means to improve equity, efficiency, accountability, quality, and accessibility of the health system [2]. PPP as a strategy, to meet the needs of the social sector, was proposed by World Health Organization (WHO) in 1997 and many developing as well as developed nations implemented PPPs in various social sectors like health, water and education [2].

The private sector has always played a significant role in the delivery of health services in developing countries and PPP is the approach under which services are delivered while the responsibility for providing the resources rests with the government. The governments in many developing countries also acknowledge they are facing difficulties in their attempt to meet the basic health needs of their populations. As a result, they rely on contracting out to private organisations as a strategy to meet the needs of underserved populations [3].

Each year in sub–Saharan Africa, approximately 12 million people die [4] and, for the majority of these individuals, the causes of death are largely uninvestigated [5]. These uninvestigated deaths are generally attributed to infectious diseases [5] but, in the absence of laboratory confirmation, the accuracy of these estimates remains uncertain. Quality laboratory testing is crucial to confirm clinical diagnoses, conduct accurate infectious disease surveillance, and direct public health care policy.

However, the current laboratory and health care infrastructures are insufficient to meet these needs and perhaps have been ignored. To date, the vast majority of financial resources from funding organisations have been focused on disease prevention and provision of care, whereas relatively little funding has been allocated to build laboratory capability [6,7]. Furthermore, because access to reliable diagnostic testing is severely limited or undervalued, misdiagnosis commonly occurs, resulting in inadequate treatment, increased mortality, and an inability to determine the true prevalence of diseases. Petti and colleagues [1] highlighted the need for increased investment in laboratory services to avoid compromising patient care; this can be achieved through PPP laboratories which present opportunities to hospitals and other providers of health services to access new sources of capital, expertise, and technology [8].

Background

In November 2012, the Management of the University College Hospital (UCH) Ibadan, in partnership with a commercial bank set up a PPP medical laboratory to the tune of 90 million Naira with the intention to provide an avenue for good clinical services and improved health care in the hospital. The PPP laboratory which is fully automated was designed to save time and stop human errors in the interpretation of results. The laboratory was to service core sections of the hospital like the emergency department, intensive care unit and the children's ward [9].

The PPP laboratory was created to facilitate emergency treatment. The laboratory is a solution to a long standing challenge of delayed results. Usually, it takes between four to five hours before results of blood samples collected at the regular (routine) laboratories are ready even if it is called an emergency sample. Whereas results of up to 108 blood samples would be ready at the PPP laboratory within one hour. Decisively, the management emphasized that the services at the PPP laboratory

will not be affected by industrial strikes as its staff included employees under the hospital's venture [9].

In a bid to ensure delivery of efficient laboratory services in UCH Ibadan, the hospital health managers established the PPP laboratory to support the regular (routine) laboratories [9]. It is therefore important for the health managers to know users' perception, perceived quality, and level of utilisation of the PPP health services. This study aims to determine the impact of PPP in UCH laboratory service delivery by exploring staff's perception, level of utilisation and perceived quality as users of this initiative.

Methods

Study design and setting

This mixed-method hospital-based study was cross-sectional in design. The study was conducted at the University College Hospital in Ibadan Nigeria.Semi-structured questionnaires were used to obtain primary data from the sample population for quantitative analysis, while key informant interviews (KII) were conducted to obtain data for qualitative analysis. Study population comprised of 172 medical and non–medical staff selected by simple random sampling from the hospital's nominal roll (as at 2nd May, 2014). The study population spread across all departmentsin the hospital.

Data collection and analysis

An interviewer-administered structured questionnaire covering utilisation and all aspects of perception including perceived quality of PPP laboratory in healthcare delivery was used for data collection. Eight participants were recruited purposively for key informants'interview.Interviews were conducted with the aid of a KII guide which contained probable questions covering specific objectives of the study on perception, utilisation and perceived quality of the PPP laboratory.

Perceived quality score in this study was described as the number of scores awarded by a respondent for each variable in Section D of the questionnaire to measure staff perceived quality of the UCH PPP laboratory. These variables are measured using a Likert scale of points 1 to 5, where 5 and 1 are the highest and lowest obtainable points respectively. Accordingly, the percentage perceived quality score (PPQS) for each variable was obtained through the summation of the total number of scores awarded for the variable divided by the total number of obtainable scores multiplied by 100.

Results

Majority of the respondents 127(73.8%) were female, with an age range of 20–59 years and mean age of 38.5±8.2 years. The socio demographic characteristics of the respondents are as shown in Table 1.

Table 1: Socio demographic characteristics of the respondents (N=172)

Variables	Frequency (n)	Percentage
Gender		
Male	45	26.2
Female	127	73.8
Age class		
20–29	21	12.2
30–39	77	44.8
40–49	54	31.4
50–59	20	11.6
Years of experience		
1–5	53	30.8
6–10	63	36.6
11–15	25	14.5
16–20	8	4.7
21–25	9	5.2
26–30	13	7.6
31–35	1	6
Educational qualification		
Secondary	13	7.6
OND	14	8.0
NCE	2	1.2
HND	34	19.8
Bachelor's degree	59	34.3
Master's degree	39	22.7
Others	11	6.4
Marital status		
Single	25	14.5
Married	143	83.1
Separated	1	6
Widow	3	1.8
Cadre		
Senior	143	83.1
Junior	29	16.9
Units		
Nursing	72	41.9
Doctors	23	13.4
Non–clinical Staff	77	44.8
Nature of appointment		
Permanent	160	93.0
Contract	12	7.0

Perception of UCH staff on PPP laboratory

Figure 1 below shows UCH staff perception on the PPP laboratory: a large proportion 149(86.6%) of the 172 respondents had positive perception

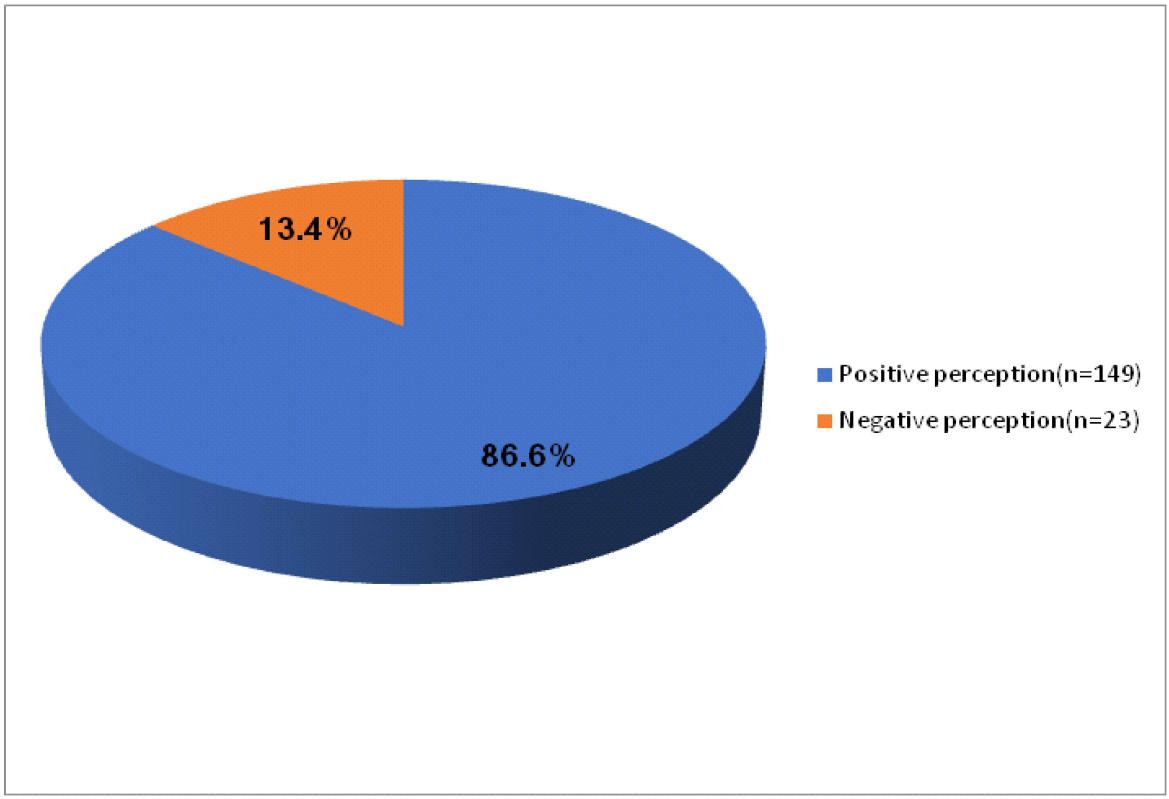

Fig 1: *Distribution of UCH staff perception of PPP laboratory*

The general perception about the PPP laboratory was positive. Some of the key informants believed the PPP laboratory was established to provide "support" services for the regular (routine) laboratories in UCH. One respondent termed the PPP initiative as a "mutual relationship" where the public partner provides the services and the private partner provides the funding. Some of the respondents were of the opinion that the establishment of PPP laboratory compelled laboratory personnel in routine laboratories to demonstrate more professionalism in their duties in a bid to meet up with the private sector standard, thus enhancing their competency towards achieving efficient laboratory healthcare service delivery.

One of the respondents stated:

"*This is what the PPP laboratory does to the government–based (routine) laboratories; it motivates the staff for efficiency and competency."*(KII 1, health manager)

However, one of the respondents had a contrary opinion that the PPP laboratory had a negative effect on the routine laboratories in the hospital:

"*The PPP laboratory generates more funds than the routine laboratories, thus the maintenance of routine laboratories is neglected by the health managers and special considerations are offered to the PPP laboratory"*(KII 4, staff member)

Utilisation of PPP laboratory by UCH staff

The rate of the utilisation of the PPP laboratory was low. The results as shown in Table 2 below show that 13.4% of respondents stated that they used the PPP laboratory every time, while 48.3% had used it only once and 43.0% have never utilised the services in the laboratory.

Reasons by UCH staff for utilisation of PPP laboratory

Table 3 below shows the various reasons why UCH staff utilise the PPP laboratory. The most reported reason for PPP laboratory utilisation by staff is promptness of result (56.4%). The next most reported reason is that the PPP laboratory provided access to the widest range of laboratory investigations within the hospital (43.6%). The least reasons for PPP laboratory utilisation by staff are the availability of money to pay for services (20.3%) and less efficiency in other UCH laboratories (27.3%).

Interview of the key informants supported the finding that utilisation of the PPP laboratory by

Table 2: Frequency of utilisation of PPP laboratory

Utilisation of PPP laboratory	Number of respondents (n)	Percentage (%)
Use PPP laboratory every time to do test	23	13.4
Use PPP laboratory only once in a while	83	48.3
Do not use PPP laboratory at all	74	43.0
Use PPP laboratory only for tests that are not covered by NHIS	52	30.2
Use PPP laboratory only when doctor specify the use	63	36.6
Use PPP laboratory in emergency case(s) only	55	32.0

Table 3: Reasons by UCH staff for utilisation of PPP laboratory (N=172)

Reason for utilisation	Number of respondents (n)	Percentage (%)
Use PPP laboratory because of promptness of test results	97	56.4
Use PPP laboratory because money to pay for services is available	35	20.3
Use PPP laboratory because other laboratories in UCH seems to be less efficient due to funding problem	47	27.3
Use PPP laboratory because of the reliability of test results	58	33.7
Use PPP laboratory because of doctor's request to use the laboratory	68	39.5
Use PPP laboratory because it is a one-stop laboratory where all investigations could be conducted	65	37.8
Use PPP laboratory because it provides access to the widest range of laboratory investigation in UCH	75	43.6
Use PPP laboratory because the sample collection methods are not stressful	62	36.0

staff was generally low.According to one of the respondents, this may be due to the fact that the PPP laboratory mainly focuses on service delivery rather than training thereby not making it the first choice of a large population of staff like resident doctors and interns. Also, since staff investigations might not be covered by the National Health Insurance Scheme (NHIS) at the PPP laboratory, the routine laboratory becomes a better option for investigations among staff.

> *"As the interest of the PPP laboratory is not in research and training but services only, it should be expected that temporary staff on postings like the resident doctors, interns and postgraduate students who are undergoing training in the routine laboratories will have their attention drawn away from the PPP laboratory; and this sole factor can influence their choice of laboratory to utilise within the hospital"*(KII 7, PPP laboratory staff)

> *"It should be expected that staff (as patients) will definitely patronize laboratories where their investigations which are covered by NHIS will be conducted"*(KII 7, PPP laboratory staff)

Perceived quality of the PPP laboratory among UCH staff

As Table 4 shows, the PPP laboratory is perceived to be of very good quality.Confidence that tests were properly conducted had the highest rating (4.0), followed by mindfulness of the staff in the PPP laboratory towards offering quality services in their operations (3.9).The quality subject that received the lowest rating as shown on the chart is attitude/action of PPP laboratory staff (3.4), followed by promptness of result in the PPP laboratory (3.6).

Respondents interviewed on perceived quality of PPP laboratory were of the opinion that promptness of results from the laboratory is a major advantage. Also the infrastructures at the PPP laboratory provide a conducive environment for users while providing integrated servicesin a friendly atmosphere. Table 5 below summarises quotes from respondents that justify these assertions.

Table 4: Perceived Quality of the Public-Private Partnership laboratory among University College Hospital staff

Quality indicators	Mean Score	% Score
Promptness of test results in PPP laboratory	3.6	71.3
Confident that test(s) was/were conducted properly in PPP laboratory	4.0	80.3
Overall technical competence of the PPP laboratory service providers	3.6	71.6
Availability of facilities in PPP laboratory	3.6	71.6
Quality of facilities in PPP laboratory	3.6	72.5
Availability of equipment in PPP laboratory	3.6	71.6
Quality of equipment in PPP laboratory	3.6	71.5
Overall infrastructure of PPP laboratory	3.5	70.6
Mindfulness of PPP laboratory staff towards offering quality services in their operations	3.9	78.8
Attitudes/actions of PPP laboratory staff	3.4	68.6

Table 5: Reasons for patronage of PPP laboratory by UCH staff

Theme	Quote
Promptness of results	"*the promptness of results in PPP laboratory is remarkable, public relation is excellent and waiting period is creditably low"*(KII5, staff member) *"Laboratory tests results are obtainable on time without delay*"(KII 6, staff member)
Infrastructure	*"Patients have a pleasing sample collection section and an entertaining waiting room to stay while awaiting test to be conducted and test results to be collected respectively"* (KII 6, staff member)
Centralisation of services	*"Services are centralized i.e. tests are conducted in a place unlike the routine laboratories where you move from a point to another"*(KII 6, staff member)
Attitude of staff	*"Attitude of staff towards patients and during service delivery is satisfactory"* (KII 6, staff member)

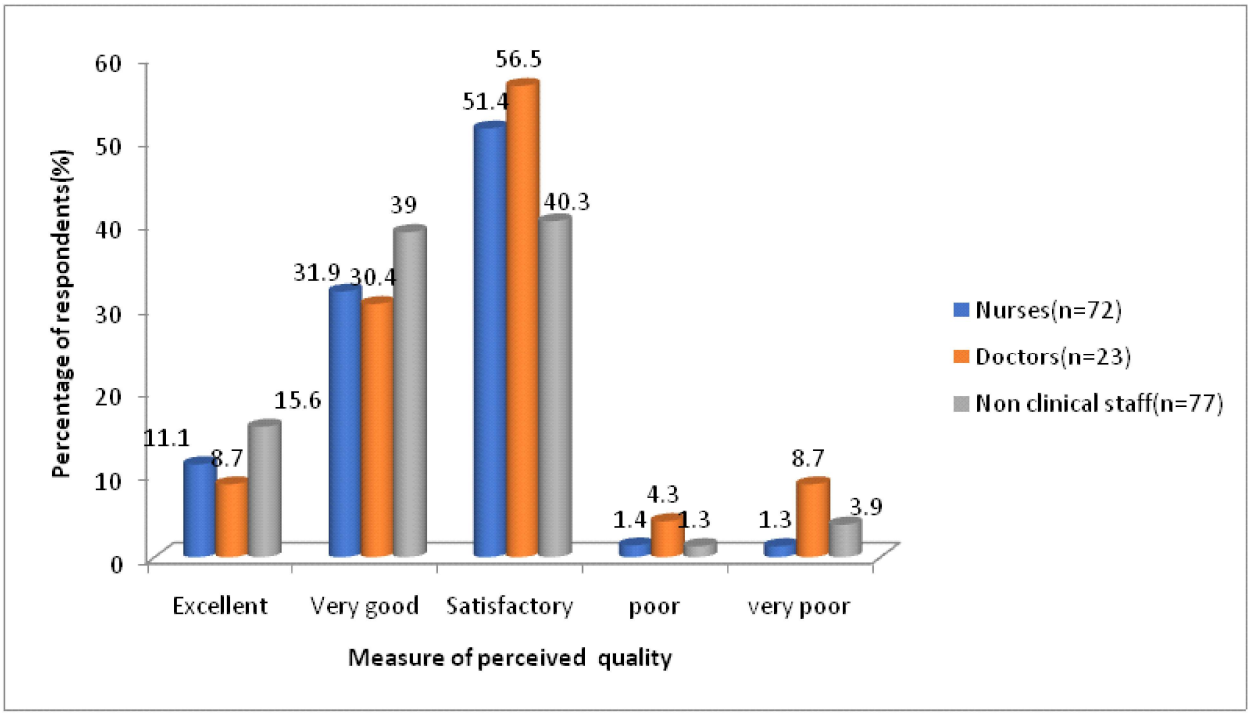

Fig.2: Overall ratings of staff on perceived quality of PPP laboratory

Respondents were asked to give an overall rating of PPP laboratory. The result is presented in Figure 2. The chart shows that a large number of the respondents in each specialty rated the PPP laboratory to be of 'satisfactory' quality among doctors (56.5%), nurses (51.4%) and non–clinical staff (40.3%).

Discussion

Previously, routine laboratories were plagued by many problems; some of the key informants interviewed identified these to include inadequate funding, ageing infrastructure/equipment, lack of laboratory information systems and maintenance culture. Other identified problems were unavailability of dependable power back–up, lengthy turnaround time and inadequacy of storage facilities, reagents, and consumables. Most of these problems have been identified in various literatures [1,10,11]. These shortcomings in public services are the rationale for PPP in many countries as reported by Monaghan and colleagues [8]. Also, the WHO annual report, "World Health 2000," noted that countries with healthcare systems that are efficient, accessible and cost-effective tend to exhibit a mix of public and private sector involvement. The report also cautions that failure to tap into the resources of the private sector will inhibit the ability of healthcare systems to adapt to the worldwide dual challenges of shrinking public funding and growth in demand for services.

The strength of the PPP laboratory in UCH includes the availability of reagents, consumables, equipment, a conducive environment, reliable electricity power back–up among others.According to respondents in the study, the PPP laboratory possesses equipment, good infrastructure, adequate reagents and consumables that are not available in the routine laboratories. These factors contribute majorly to the fast turn–around time (promptness of results) experienced in the laboratory.

The majority of the respondents stated that the promptness of results was their main reason for accessing the PPP laboratory. This is one of the purposes of the PPP, which is "to deliver a public service which does not exist or an existing public service which needs to be enhanced in terms of quality, efficiency or coverage area…" [12]. According to Osborne, this provides a more integrative service to the community.

Van der Molen [13] also reported that PPP would improve clients' satisfaction with services. This is evident in this study as respondents confirmed that services provided in the PPP laboratory were prompt and that the laboratory staff had good attitude while being mindful of providing quality services in their operations.

Another strength of the PPP laboratory as observed in this study wasits promotion of professionalism. Literature also suggests that the public sector can learn from the private sector in terms of efficiency, result orientation, flexibility and professionalism [14].

One major weakness identified was that the UCH PPP laboratory had no private staff working in the laboratory. Laboratory scientists were deployed from the routine laboratories in the hospital to the PPP laboratory on an annual rotational plan. This implies that the same set of laboratory scientists that work in the routine laboratories weredeployed to the PPP laboratory.

During industrial strike actions, the dependence of the PPP laboratory on staff from the hospital's routine laboratory may be a threat as the UCH staff may be compelled by their union leaders to withdraw their services thereby defeating the objective of the laboratory to render steadfastservices.Therefore, it is essential that the private partners in PPP have complete rights of hiring staff [15], sothat regular services of the laboratory, will not be interrupted.

Also noted was a sizable number of respondents who had never utilized the PPP laboratory. Re–orientation exercises and awareness creation should be implemented such that staffs' perception of PPP laboratory as a rival to the routine laboratories in the hospital changes, and people start to perceive it as a facility offering supportive services.

Although the study did not carry out a comparative analysis to determine if PPP services were better than the routine laboratories, however literature findings provide suchevidence [16]. This provides a strong rationale for the incorporation of public–private collaboration in more of the services provided by public health institutions.

In the healthcare sector, performance depicts the extent to which the delivery of healthcare services or health system activities achieves specific standards, benchmarks or targets [17]. In order to make PPP a sustainable common ground for both public and private players, it is essential to evaluate its processes. The framework proposed in this study used six key factors which include: promptness of result, users' confidence in test results produced, attitude(inter–personal relationship) of staff, technical competence of personnel, infrastructure, and quality of service. Beneficiaries of the UCH PPP laboratory viewed all services received by them in a positive

manner. All aspects of quality were given high ratings by the respondents. This agrees with the position of the WHO thatinvolvement of the private sector in health should be encouragedas this promotes efficiency and ensures good quality services [18].

However, despite an overall positive feedback from the respondents, some concerns require attention. For instance, low utilisation of PPP laboratory despite users' good perception and perceived high quality of the laboratory.Perceived quality is usually related with health service utilization [19] . Andaleeb highlighted that patients' perceptions of quality of care attract users to private facilities instead of public health services. Akin and Hutchinson [20] also explained a phenomenon likened to bypassing (when patients avoid a nearby health facility to go to other alternative facility, often private and costly) because of perceived low quality of free public facilities. However, findings from this study on the level of utilisation of PPP laboratory by UCH staff do not confirm these assertions. The most plausible reason for this is because PPP laboratory does not accept NHIS; thus, its utilisation among staff (as patients) is not likely to be as high as routine laboratory where health insurance is acceptable. Furthermore, as the interest of the PPP laboratory in UCH is not in research and training but services only, it should also be expected that temporary staff like the resident doctors, interns and postgraduate students who are on postings and undergoing training in the routine laboratories will have their attention drawn away from the PPP laboratory; and this sole factor can influence their choice of laboratory to utilise within the hospital for laboratory services when the need arises.

Limitations of the study

The major limitation of this research is social desirability bias where participants might give information based on what they believe is required. However, participants were reassured of confidentiality and that data obtained were strictly for research purposes.

Conclusion

There is a need for the hospital health managers to implement reorientation exercises and create more awareness for staff to perceive PPP laboratory as a facility to deliver efficient laboratory health services in the hospital while offering supportive services to the routine laboratories and not as a rival facility. Despite the positive perception, the utilisation of the public-private partnership laboratory in UCH by the staff is low. This was attributed to the out–of–pocket spending which is the only acceptable method of payment by patients for accessing health services in the laboratory. It may be impractical or unrealistic to totally discourage a PPP facility from running an out–of– pocket billing system. However, there is usually an increase in the utilisation of health services where health facilities assent or comply with schemes like the National Health Insurance Scheme. Accordingly, there migh tbe an increase in the utilisation of PPP laboratory if the hospital management and the private partners allow health insurance and some other forms of payment like the memorandum of understanding (MoU), payment deferment forms (PDF), letter of undertaken etc.

Also, more training and education for improvement on work environment, attitudes are required for the PPP laboratory staff. UCH health managers and the private partners should provide laboratory scientists withsponsorship for professional development, national and international seminars and conferences.

Future research should explore the perceived quality and utilisation of the public-private partnership laboratory in healthcare delivery among other users like patients of the University College Hospital, Ibadan. The feasibility and desirability of public-private partnerships in other hospital services should also be explored.

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