Original Article

Public–private partnerships in Nigerian teaching hospitals: Potential and challenges

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Abstract

Background: Public–private partnership (PPP) has become a popular model used by public sector organizations that are usually under-funded by their respective governments to render services in fulfillment of their egalitarian responsibilities and goals. Lately, the health sector has been a recipient of such initiatives and the trend is growing. However, the successful delivery of services to patients is sometimes hampered because of difficulties encountered in both the development and interpretation of clauses contained in agreements including Memoranda of Understanding between the parties. The anticipated outcomes and impact often remain elusive due to the tensions encountered during implementation.

Aim and Objective: The aim of this study was to determine the current operational status as well as explore potential benefits and challenges of the use of the PPP model in radiology departments of selected teaching hospitals within three South-Western States of Nigeria (Lagos, Ogun, and Oyo). It is hoped that the study findings would provide useful data needed for improvement of the PPP model as it is being currently practiced.

Materials and Methods: This was a qualitative study in which 138 closed- and open-ended questionnaires were administered to all cadres of staff in radiology departments of the selected hospitals teaching hospitals within three South-Western States of Nigeria (Lagos, Ogun, and Oyo).

Results: There was a 100% response from the participants. The age range of the participants was 25–65 years. Study findings showed that almost all radiological equipment can be acquired through PPP. There was improved service delivery and residency training with PPP. Jurisdictional conflict was the greatest challenge.

Conclusion: PPP is a viable option that should be encouraged by government for the purchase of equipment in hospitals.

Keywords: Nigeria, public–private partnership, radiology, teaching hospitals

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INTRODUCTION

Public–private partnership (PPP) may be defined as "a long-term contract between a private party and a government entity, for providing public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance."[1-9] There are now reforms initiated in support for PPP by the Federal Ministry of Health.[10] Despite its advantages, PPPs have some challenges which include poor definition of the scope of PPPs, staff roles, and chain of command.[11-13]

The aim of this study was to determine the current operational status as well as explore potential benefits and challenges of the use of the PPP model in radiology departments. There is paucity of data on PPP utilization by radiology departments in Nigeria, and thus, it is hoped that the study findings would provide useful data needed for improvement of the PPP model as it is being currently practiced.

MATERIALS AND METHODS

This was a descriptive, cross-sectional qualitative study carried out between December 2017 and February 2018 in four Teaching Hospitals in three of the South West States, namely, Lagos, Ogun, and Oyo. Two of the institutions are federal owned while two are state owned the teaching hospitals are major tertiary health facilities, which cater for patients referred from primary and secondary government health-care facilities as well as private hospitals within the same state and the neighboring towns.

South West, Nigeria is one of the six geopolitical zones in the country consisting of Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti states. These geopolitical zones are based on geographical, cultural, ethnic, and historical similarities. The dominant ethnic group is the Yorubas.

A total of 138 consecutive consenting respondents were recruited into the study from the public and private stakeholders in four radiology departments. The respondents included consultant radiologists, radiology resident doctors-junior and senior, radiographers, nurses, private managers, engineers, and administrators.

Self-administered questionnaires in hardcopies with closed- and open-ended questions were used to collect data from participants at the four selected teaching hospitals namely:

- Lagos State University Teaching Hospital, Ikeja, Lagos State
- Lagos University Teaching Hospital, Idi-Araba, Lagos State
- Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State
- University College Hospital, Ibadan, Oyo State.

The items in the questionnaire were generated by the researchers, and covered demographic characteristics of the respondents, knowledge about the PPP, equipment acquired through partnership, leadership of the PPP venture, service delivery, residency training, causes of conflict, and resolution styles. Staffing, feedback mechanisms, and recommendations for a mutually beneficial PPP were also evaluated.

A sliding scale response (poor, satisfactory, good, and very good) was elicited for graded qualitative responses.

Data analysis

The data obtained from these questionnaires were entered into a computer spreadsheet, Microsoft Excel and analyzed using Statistical Package for Social Sciences version 20.0 (SSPS Inc. Chicago, IL, USA). The results were expressed in simple descriptive terms such as frequency, percentages, and presented in the form of tables and charts.

Ethical consideration

Permissions for the study were obtained from the four sites. Participation in the study was voluntary and subject confidentiality was ensured.

RESULTS

Sociodemographic characteristics of respondents

There were 138 respondents (100% response rate) with the age range of 23–65 years and there was a 1:1.2 male:female ratio. Over half 94 (70.3%) of the respondents were 40 years and below. Only 4 (2.9%) were above 60 years. The resident doctors were most frequent (43.5%) among respondents, followed by radiographers who constituted 29.7% [Table 1].

Duration of existing public–private partnership and radiological equipment

The various equipment acquired through PPP included Static X-ray machine, Digital X-ray machine, mammography machine, fluoroscopy unit, ultrasound scan machine, computed tomography (CT) scan machine, and magnetic resonance imaging (MRI) scan machine [Table 2]. Each hospital had up to five equipment purchased under the PPP arrangement.

The PPP in the various radiology departments had been in existence for 5–11 years. None of the hospitals had a positron emission tomography (PET) scanner and only

one had a MRI machine that was functioning at the time of survey [Table 2].

Following equipment breakdowns, the average down time for equipment repairs was between a few days to 4 weeks in 3 (75%) of the hospitals, and >6 months in one (25%).

The private partners also provided alternate power supply such as generators, inverters, and uninterruptible power supply (UPS) machines for the equipment purchased under the scheme [Table 2].

Forms of public–private partnership contract

All the institutions (100%) had the contractual form of PPP in which the private entity provides the radiological equipment with relevant other accessories and assumes substantial financial, technical, and operational risk in the project.

Table 1: Sociodemographic characteristics of respondents (*n*=138)

	Frequency (%)
Age (years)	
21-30	21 (15.2)
31-40	76 (55.1)
41-50	26 (18.8)
51-60	11 (8.0)
61-70	4 (2.9)
Gender	
Male	64 (46.4)
Female	74 (53.6)
Occupation category	
Civil servants	100 (72.5)
Private partners	38 (27.5)
Designation	
Consultants	12 (8.7)
Radiology resident	60 (43.5)
Radiographers	41 (29.7)
Nurses	11 (8.0)
Managers	7 (5.1)
Administrators	4 (2.9)
Engineers	3 (2.2)

Table 2: Public-private partnership and radiological equipment (*n*=4)

Parameter	*n* (%)
Duration of PPP (years)	
<5	0 (0.0)
5-10	3 (75.0)
11-20	1 (25.0)
#Equipment acquired under PPP	
Static X-ray machine	4 (100.0)
Fluoroscopy machine	2 (50.0)
USS machine	4 (100.0)
CT scan machine	4 (100.0)
MR scan machine	1 (25.0)
Digital X-ray machine	4 (100.0)
Mammography machine	4 (100.0)
PET scan	0 (0.0)
Average down time for repairs/maintenance	
2 days-4 weeks	3 (75.0)
≥6 months	1 (25.0)

#Multiple response. CT – Computed tomography; MR – Magnetic resonance; PET – Positron emission tomography; USS – Ultrasound scan; PPP – Public-private partnership

Staffing

Only one of the institutions recruited additional clinical staff namely consultants, radiographers, and nurses after commencement of PPP. The shortage of public nursing staff was observed in the CT and fluoroscopy suite of one of the teaching hospitals which staff recruitment by the private partner helped to overcome.

Perception of the role of primary managers of public–private partnership and recommendation by respondents

Almost half (46.4%) of the respondents believed that the private partner manager was in charge of operations in their institution, while 53.6% of the respondents reported that the operations were jointly run by both parties to the PPP scheme.

While 17.4% of respondents were of the opinion that only the head of radiology department should be the operational head in the PPP, 20.3% opined that the private partner should head the PPP operations. A much larger percentage of respondents (62.3%) believed that both the head of radiology department and the private partner manager should jointly be in charge of PPP operations rather than either of the party alone since PPP is a joint venture [Figure 1].

Perception of respondents on service provision

Almost two-thirds (64.5%) of respondents reported good/very good service provision and delivery under the PPP scheme. The turnaround time for the availability of radiological reports after conclusion of the study was

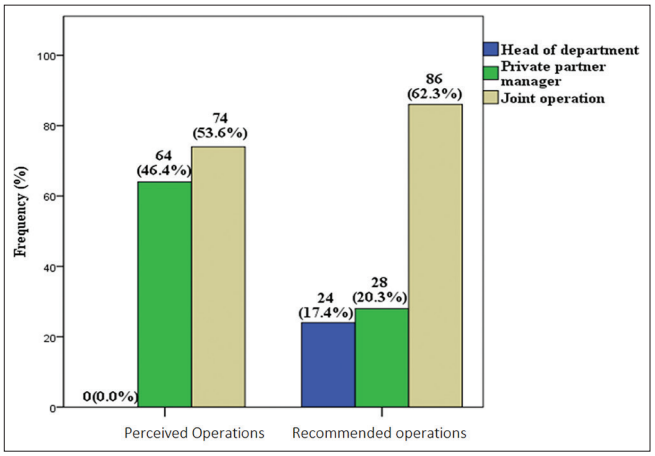

Figure 1: Perceived and recommended operations pattern for public–private partnership

also reported to be good/very good in 56.5%. A third of respondents thought this outcome was just satisfactory. However, the accuracy of the generated radiology reports was deemed good/very good in 86.9% of cases [Table 3]. The image quality of mammography was reported as suboptimal in one of the hospitals, because the staff had no proper training on the PPP machine installed.

Impact of public–private partnership on residency training in radiology/workload

All respondents (72) to this question, being the consultants and resident doctors, agreed to the positive impact of PPP of training of radiologists in the four hospitals.

Thirty-three (45.8%) of respondents (consultants and resident doctors) reported that the impact of PPP arrangement on residency training was good, 24 (33.3%) indicated that impact was satisfactory while 15 (20.8%) noted a very good impact [Figure 2]. Presumed benefits reported by all the four institutions (100%), were that the availability of imaging equipment resulted in increased workload which allowed frequent and improved hands-on training. Conversely, the increased workload resulting in decreased self-study time and sometimes inability of residents to attend clinico-radiological meetings were considered negative effects on residency training.

Public–private partnership/conflict/conflict resolution

Jurisdictional roles and overlap of staff functions remain the greatest cause of conflict (90.5%). Other causes of conflict are general noninclusion of public staff in decision-making (72.5%), change in government (65%), no reduction in cost of radiological examination for staff working on the PPP equipment (72.5%), and lack of incentives such as training (72.5%). The last two are presumed to be due to a higher focus on recouping from the PPP investment rather than staff welfare.

Dialogue remains the most widely used style of conflict resolution in the PPP scheme of the teaching hospitals under study [Table 4].

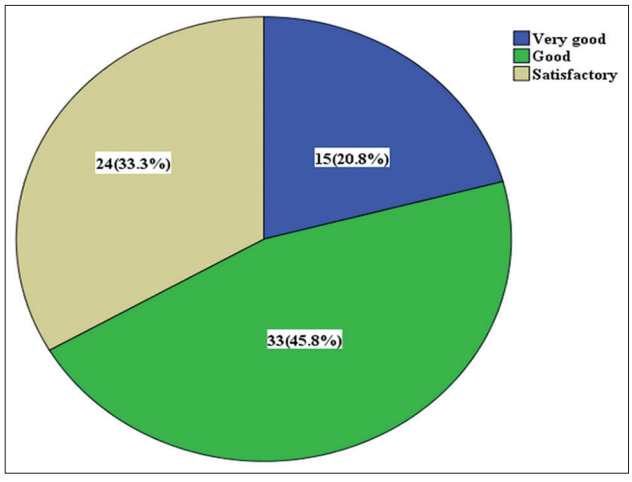

Figure 2: A pie chart showing the impact of public–private partnership on residency training

Feedback mechanism

In the four institutions, there were no structured regular meetings between the public and private sector. Cases were attended to as they emerge. One (25%) of the institutions had complaints phone lines in a conspicuous site but suggestion and complaints boxes were not seen in all four radiology units.

DISCUSSION

The PPP plays an important role in bringing private sector competition to public infrastructure monopolies, it also encourages merging of resources from both sectors to better serve the needs of the public.

This study revealed that in the provision of radiological equipment, the PPP scheme is at least 10-years-old in South West Nigeria and almost all types of equipment can be sourced and acquired through this arrangement. However, the MRI equipment is not readily sourced by PPP presumably due to its high cost. The PET scan machine

Table 3: Perception of respondents on service provision (*n*=138)

Parameter/grading	Frequency (%)
Service provision and delivery	
Very good	35 (25.4)
Good	54 (39.1)
Satisfactory	46 (33.3)
Poor	3 (2.2)
TAT for reports	
Very good	26 (18.8)
Good	52 (37.7)
Satisfactory	46 (33.3)
Poor	14 (10.1)
Accuracy of diagnostic reports	
Very good	62 (44.9)
Good	58 (42.0)
Satisfactory	18 (13.0)
Poor	0 (0.0)

TAT – Turnaround time

Table 4: Conflict resolution styles in public-private partnership (*n*=138)

Resolution styles in PPP	*n* (%)
Dialogue	97 (70.3)
Dialogue and negotiation	23 (18.1)
Collaboration	9 (6.3)
Mediation	5 (3.6)
Arbitration	0 (0.0)
Litigation	0 (0.0)

PPP – Public-private partnership

was not available in the four hospitals. Considering that PET scan machine is not available in any institution in the country, possible reasons for its nonpurchase by PPP may be the high cost as well as the high technical expertise required for its operations.

The PPP in the four institutions were of the contractual type which is in keeping with the study of Idris *et al*. and Okon *et al*.[9,14] Their study of PPP in developing economies noted that most of the public hospitals opt for this type of PPP since the driving force is usually inadequate government funding. The contractual PPP allows the private entity to solely provide the radiological equipment and relevant accessories enabling commencement of prompt services to the public.

In three of the four institutions, the operation of the PPP equipment and reporting of the generated images were done solely by the public sector staff. One of these three departments reported inadequate workforce resulting in a situation where the CT and fluoroscopy suites had no nurse in attendance. This finding is in contradiction to the workings of a PPP as noted by Taylor who recommended in their study that PPPs in the health sector must be designed in such a way to harness the skill, competence, and efficiency of the private and public partners.[15]

In contrast, in the fourth institution, additional private professional staff were recruited to support the public sector staff to ensure more efficiency and compensate for public sector workforce shortage in some units. The authors support the notion that private PPP partners should be encouraged to employ qualified staff to complement the government workers whenever there is understaffing.

Apart from staff shortage, another presumed reason why private partners in PPP are increasingly providing staff as a part of the scheme is to avoid total shutdown of operations whenever the public sector staff go on industrial strike, which is quite often in Nigeria. Frequent strikes may delay recoupment of investment by the private partner but the public sector staff unions assume that private staff who work during their industrial strikes may reduce the impact of their industrial and trade disputes with the government, hence prolonging the dispute. The authors note that this practice may lead to workplace conflict between the staff from both sectors who may have different commitment levels to the PPP scheme. In addition, the private sector staff may be perceived by public sector staff, to be informants for the private partner.

The "turn-around time" in this study refers to how long it takes an imaging to be performed from when a request is received; or the time it takes for an image report to be available after study completion; as well as the time lapse before repair or service of the radiological equipment. All three parameters were deemed to be generally satisfactory by most respondents. This finding is in agreement with the findings of Okafor,[16] who stated that the major goal of the PPP model is health empowerment through improved operations and expanded access to public health services and facilities by the masses. One presumed reason for the short turnaround time in this study may be the availability of onsite resident biomedical engineers, as seen in three of the institutions. A short turnaround time ensures provision of uninterrupted services thereby fulfilling a major objective of the PPP which is not only to provide prompt services but also to boost the morale and confidence of patients in public hospitals. Nevertheless, poor maintenance of equipment, long downtimes after machine breakdown and unavailability of consumables were some challenges reported in one of the institutions. This is an unacceptable practice in PPP as reinforced by Idris *et al*.,[14] who stated that PPP should offer a new and dynamic approach to managing risks in the delivery of equipment infrastructure and services. Inability to effect timely repairs on faulty equipment should attract the termination or the nonrenewal of such PPP contract.

The availability of radiological equipment in the studied hospitals was reported to have improved the training, teaching, and competencies of the resident doctors who previously had to go on external postings for hands-on experience. Prior to PPP, resident doctors may just have theoretical knowledge of the more advanced imaging modalities with its attendant deficiencies for future clinical practice. This study shows that the PPP scheme has been able to address one of the major challenges mitigating against proper training and teaching of resident doctors which is underfunding by the government.

However, even though the availability of equipment allows for more hands-on training, the focus of the PPP private partner remains profit making and this tends to increase workload which may encroach on teaching and study time of the resident doctors as noted from the responses. The private partner may want to drive the public partner to provide service to as many patients as possible to recoup investments faster. Clinical research may also suffer as patients with teachable clinical cases who do not have funds may be denied imaging. Presumably in an attempt to save costs and start recoupment of investments quickly, proper training on the use of the PPP machine was skipped by one

of the PPP private partners in one of the institutions and necessary software to ensure maximum utilization was also not installed. This act resulted in suboptimal mammograms which may negatively affect image interpretation, leading to poor reports being generated, thus eroding client confidence. The authors recommend that proper machine installation and training protocols must be adhered to in PPPs to avoid this scenario.

Despite its reported benefits, PPPs have some additional challenges which include poor definition of jurisdictional scope of duties, staff roles and chain of command. To minimize these problems, Obozuwa[12] clearly stated that acceptable terms of a PPP agreement must include a preamble, the interpretation and definition of clauses for purposes of the identification of the parties and the responsibilities and clarity of the transaction. Behfar *et al*.,[13] also noted that one of the causes of conflict in health-care industry is ambiguity and conflict over roles and confusion over leadership, due to inability of either of the PPP party to honor and uphold agreements as promised. Since there is sometimes lack of trust among the parties in the agreement, it is recommended that there is strict adherence to the terms and conditions of the agreement. This is also consistent with findings in the study by Irabor,[11] who opined that contractual obligations are sacrosanct in the PPP arrangement and lawyers must place greater emphasis on this as they compile the Memorandum of Understanding (MOU) for PPPs. Dahiru[17] also noted that the drafting of the PPP contract management plan should be precluded by regular meetings between the government ministry, department/agency, and the private party to raise salient issues and proactively provide early resolution measures. Both parties should also be involved in joint decision-making.

Efforts should continually be made to address all issues identified as contributing to conflict of interest in the radiology departments with PPP equipment. Egboh and Chukwuemeka[4] concluded that PPP projects work more efficiently and successfully once gray areas of conflict are effectively taken care of and if the work force has a positive attitude. There must also be improved team cohesion to maximize the gains of multidisciplinary teamwork.

The provision of uninterrupted power supply has been reported as a major challenge to uninterrupted operations in many radiological imaging facilities but this was overcome in the four PPP schemes through the provision of an alternate power supply namely UPS and Solar energy. This was integrated into the PPP schemes from the onset and will ensure recoupment of resources at the projected time. This is in agreement with the study by Idris *et al*.[14] who reported that alternative power supply is "sine qua non" for uninterrupted power supply necessary for optimal functioning of a radiology department in a developing country. This practice however creates an additional overhead cost for the private partner who integrates it into cost of service to the clients resulting in higher cost of services and this may conflict with governments' policy of affordable health service delivery to its citizens.

The government on the other hand should create an enabling environment for the PPP to succeed by ensuring harmonization of state and federal government health policies. This was well discussed in the paper by Irabor[11] who noted that frequent changes in government polices is one of the major drawbacks to the success of the PPP arrangement in Nigeria.

Inadequate understanding of government health-care delivery policies by the private partners and poor business acumen on the side of the public partners in the PPP setting was noted by Obozuwa,[12] Asogwa and Odoziobodo.[2] This characteristic combination from both sectors may be responsible for inconsistent goals in the partnership. This is because the public sector focuses on efficient delivery of services to the populace with or without profit while the private sector operator is profit driven under any circumstance. The private partner must be made to understand that teaching hospitals are training grounds for health professionals as well as being centers for service provision; nevertheless, both functions cannot be compromised by profit making. Hence, the PPP equipment should primarily be used to meet the needs of the teaching hospital and not for profit alone. Prices should also be regulated so as not to exploit patients who provide a steady stream of income for the PPP. This requirement was also highlighted by Irabor[11] who noted that contractual obligations must be sacrosanct to check excesses of both parties in the PPP.

A feedback mechanism should be put in place for the PPP scheme and study respondents recommended provision of suggestion boxes, dedicated phone lines, and E-mail addresses from where complaints could be recorded. These should be accessible or placed in a conspicuous place for ease of use by patients, relatives and staff. The use of feedback questionnaire and patient survey forms should also be encouraged. In addition, monthly/quarterly meetings should hold for regular verbal interactions among the public and private parties, in areas of challenges and constraints. Solutions should also be proffered, adopted, and implemented in specific time frame.

CONCLUSION

PPP is a viable option to provide imaging equipment for uninterrupted and quality patient care in public hospitals as well as adequate training of specialists.

Recommendations

1. There must be training and retraining of staff to ensure proper use and maximum utilization of the applications available in the radiological equipment. This will invariably improve patient care and reduce equipment breakdown
2. There must be a well spelt out legal framework binding on both parties to reduce conflicts
3. Government should enact appropriate consumer protection laws to prevent encroachment on consumer rights through arbitrary pricing of radiological services provided in the PPP
4. The government should encourage establishment of more PPPs and strengthen existing ones in public hospitals across the country. Some tax waivers may be introduced to reduce startup costs to encourage teaching, research and also to improve service delivery
5. MOU must cater for the welfare of the public sector staff in the PPP
6. A sustained drive for training of biomedical engineers should be launched in our universities and polytechnics to ensure adequate availability of local workforce for equipment maintenance and repairs to reduce downtime of machines
7. PPP agreements should include segments/sections that ensure proactive resolution of conflicts that may arise during the partnership.

Limitations to the study

1. There are six states and seven teaching hospitals within the Southwest Geopolitical Zone of Nigeria; the sample size was drawn from three states in this study. The study should be conducted in other parts of the country to make general conclusions
2. The sliding scale response used in the questionnaire for some items is subjective.

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Conflicts of interest

There are no conflicts of interest.

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