Discoveries in Public Health
Publication of the Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria. (All rights reserved © 2022)

Volume 1 June, 2022 - pp 39-46

An Assessment of Human and Physical Resources in Selected National Health Insurance Scheme Accredited Health Facilities in Ibadan, Nigeria

[1]**David Adewole** and [2]**Temitope Ilori**
[1]Department of Health Policy and Management, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.
[2]Family Medicine Unit, Department of Community Medicine, College of Medicine, University of Ibadan, Nigeria
Corresponding Author Email: ayodadewole@yahoo.com

Keywords:
Healthcare,
Health facility,
National Health Insurance Scheme,
Human Resources,
physical infrastructure.

Abstract

Poor or inadequate resources have been attributed to inequality of access to, and dissatisfaction with available healthcare services. The National Health Insurance Scheme (NHIS) of Nigeria was established in the year 2005. However, current population coverage is presently low at less than five percent of the total population. In addition to this, population health indices in almost all the selected areas of the health sector and the United Nations health-related development goals are very poor. Previous national surveys in the public health sector indicated poorly equipped healthcare facilities. This study aimed to assess the present human and material resources as a proxy for quality of care under the NHIS in these facilities. Findings will enable stakeholders to know the degree of need for the infrastructure in the affected health facilities. This could serve as an impetus to address the deficits in the infrastructure's facility, not only in the study area but also in the health system of the country and other similar settings. This study was descriptive and cross-sectional in design. NHIS accredited facilities were selected, one in each of the eleven Local Government Areas within Ibadan metropolis. Data were collected on the state of human and physical infrastructures such as the source of electric power supply, toilet facility, and source of water supply. These were documented as appropriate. Most of the facilities had dilapidated physical infrastructure, sourced water from unsafe sources, and had electricity supply from many sources. Human health resources were inadequate when compared with the facilities' workload. Inadequate physical and human health resources are major factors that weakened the health system. A weakened health system can be a hindrance to the achievement of the SDGs. Appropriate steps should be taken to address the deficits.

Une évaluation des ressources humaines et physiques dans certains établissements de santé convenus par le NHIS à Ibadan, au Nigeria.

Résumé

Des ressources insuffisantes ou inadéquates ont été attribuées à l'inégalité d'accès aux services de santé disponibles et à l'insatisfaction à leur égard. Le NHIS du Nigéria a été créé en 2005. Cependant, la couverture actuelle de la population est actuellement faible, à moins de 5 % de la population totale. En plus de cela, les indices de santé de la population dans presque tous les domaines sélectionnés du secteur de la santé et ainsi que les objectifs de développement liés à la santé des Nations Unies sont très faibles. Les enquêtes nationales précédentes dans le secteur de la santé publique ont indiqué des établissements de santé mal équipés. Cette étude visait à évaluer les ressources humaines et matérielles actuelles comme indicateur de la qualité des soins dans le cadre du NHIS dans ces établissements. Les résultats permettront aux parties prenantes de connaître le degré de besoin d'infrastructure dans les établissements de santé touchés. Cela pourrait servir d'impulsion pour remédier aux déficits de l'infrastructure, non seulement dans la zone d'étude, mais aussi dans le système de santé du pays et d'autres contextes similaires. Cette étude était de conception descriptive et transversale. Des installations accréditées par le NHIS ont été sélectionnées, une dans chacune des onze zones de gouvernement local

de la métropole d'Ibadan. Des données ont été recueillies sur l'état des infrastructures humaines et physiques telles que la source du courant électrique, les toilettes et la source d'approvisionnement d'eau ont été documentées, comme cela se doit. Les observations ont été documentées ; la plupart des installations avaient une infrastructure physique délabrée, on se sert d'eau à partir de sources risquées et le courant électrique s'est généré par de nombreuses sources. Les ressources humaines étaient insuffisantes en nombre par rapport au taux de travail des établissements. Des ressources humaines et physiques insuffisants est un facteur majeur qui affaiblit le système de santé. Un système de santé affaibli pourrait constituer un obstacle à la réalisation des SDG's. Des mesures appropriées doivent être prises pour combler les déficits.

Mots clés :
Soins de santé, établissement de santé, le NHIS, infrastructure humaine, infrastructure physique

Introduction

The concept of social health insurance is one of the strategies to minimise inequality of access to quality healthcare. In this respect, it is well suited for any contextual environment, but most needed in poor developing nations where the majority of the people are financially incapable of funding personal healthcare costs most of the time (1). Poor or inadequate facility infrastructure; an inadequate supply of skilled, motivated health workforce, lack of basic equipment, and non-availability of items such as drugs and other consumables, have been cited as; major contributory factors of inequality of access to healthcare, influencing healthcare facility bypassing phenomenon (2-4), and substantially responsible for morbidity and mortality in many developing countries (5). Poorly resourced healthcare facilities could result in loss of trust of healthcare consumers in social insurance schemes and thus, non-compliance by refusal to pay premiums, and ultimately, a failure of the schemes (6, 7). The NHIS was established in 2005 to correct the poor population health indices in Nigeria. Since inception, the NHIS has performed poorly, with less than ten percent of the total population of Nigeria covered (8). To the best of the researchers' knowledge, many of the previous studies on the NHIS (4, 9) have focused on other areas except the status of human and physical resources of accredited facilities under the scheme. This study aimed to fill this gap, and therefore, assessed the quality of care using physical infrastructure and human resource capacities as proxy for quality of care at selected NHIS accredited health facilities. Findings will contribute to efforts to strengthen the NHIS and facilitate the achievement of health-related SDGs.

Materials and Methods

Study area

The setting of the study was Ibadan, Oyo State located in the southwest geo-political zone of Nigeria. Ibadan has an estimated population of 2,559,853 (45.9% of the state population), and at a 2.7% annual growth rate. The population of the city is estimated at 3.5 million people. The city is located 128 kilometres inland northeast of Lagos (former capital of Nigeria) and 530 kilometres southwest of Abuja, the Federal Capital. It is located on coordinates 7°23'47″N 3°55'0″E (10). The city has 11 LGAs, of which five are in the inner core area while six were in the peripheral and outer ring of the city The inner core LGAs consist predominantly of old areas which are mainly unplanned, high density slum areas with less access to basic social infrastructure, while the six-outer ring LGAs consist of more planned areas with better housing and social infrastructure. The inhabitants are mainly Yorubas, though other ethnic nationalities within and outside of Nigeria form part of the population (11). Predominant professions include civil servants, business persons, artisans and farmers. Christianity, Islam and traditional religions are the major faiths adopted. Ibadan is home to many higher institutions of learning, notable among them is the University of Ibadan (UI). Established in 1948, it is the first tertiary institution in Nigeria.

As at the time of the study, there were a total of 1,237 healthcare providers in Oyo State (12) out of which only 227 (18.4%) were accredited by the NHIS to provide services to its enrollees. Of these accredited healthcare providers, 192 (84.6%) are within the city of Ibadan. Health problems in the city are similar to those common in Nigeria (Table 2) (13).

An adapted Donabedian Quality of Care (14) Conceptual Framework (structure, process and outcome) was used as a guide to map out healthcare facilities' resources, and the influence these can have on the perceived quality of care with service delivery in the chosen facilities. These findings can assist in improving the quality of service delivery and health outcomes under the NHIS.

Study design

This study is descriptive and cross-sectional in design.

Research personnel

Research Assistants (RAs) were carefully selected for the study by the authors. Eligibility criteria for a RA were considered and outlined. This was also strictly adhered to. An individual RA had a graduate degree in public health, and experience in data collection. RAs were re-trained in

communication skills, attention to detail, critical thinking, ability to maintain quality, personal safety in the field, including prevention of physical assaults, food and personal hygiene as well as technical skills including statistical and graphical analysis of data. The training also included ability to maintain quality, planning and scheduling of appointments with study participants, interviewing techniques and data collection and analysis, as well as challenges and how to overcome them. RAs were trained on basic principles of research ethics with an emphasis on confidentiality of shared information, benevolence, benefits, and risks among others. Training was conducted by the authors. A standardized criteria for assessment of health facility infrastructure and equipment was developed. Pre-test of this tool was done in facilities that were not mapped out for the study. Necessary corrections were made thereafter to ensure uniformity in assessment across all RAs. The authors were also actively involved in the data collection. All these, including the presence of the authors during the fieldwork contributed to an objective data collection on areas of interest and therefore the maintenance of standard among the RAs.

Health facility selection

Only NHIS accredited secondary healthcare facilities were selected for the study. Primary Health Care facilities were not accredited to provide healthcare services under the NHIS, and therefore were not selected (for the study). Also, the only tertiary health facility in the study area, the University College Hospital, Ibadan, was not selected. This is because it has a far better physical and human resources capacity and thus would skew the data.

Therefore, the only category of health care facilities selected is the secondary, from both public and private (private non-for-profit/faith-based and private for profit).

Sampling strategy

A list of all the NHIS accredited facilities in the 11 LGAs of Ibadan was obtained from the NHIS, Oyo State Office in Ibadan. These facilities consisted of both the public and the private sectors. Those from the private sector were selected from the faith-based and the non-faith-based. There are three (3) faith-based health facilities in three of the eleven LGAs, one faith-based facility in a LGA. These three facilities were purposely selected for fair representation of the faith-based facilities in the study group. Of the eight (8) remaining LGAs, [one (1) facility in each LGA] was selected; this makes it 8 facilities selected across 8 LGAs. The annual average number of enrollees receiving care at the NHIS accredited facilities in all the 11 health facilities (across the 11 LGAs) was determined. Following this, the number of enrollees receiving care in each of the facilities across the 11 LGAs was also determined. Then, the facility with the highest number of enrollees in each of the eight (8) LGAs was selected into the study. Therefore, made 11 (8 non-faith-based and 3 faith-based) facilities were selected across 11 LGAs in the study.

Data sources

Information about availability and functionality (or non-availability, non-functionality) of machines and equipment, drugs and other consumables, human health resources were obtained from managers of health facilities and appropriate individuals such as designated desk officers, heads of units or departments and sections in the selected health facilities. With the aid of a checklist, verification of claims made about these items and human resources were carried out by physical assessment. Specifically, data were collected on the following;

- Waiting area
- Availability and functionality of diagnostic and therapeutic equipment
- Availability of drugs and other consumables
- Availability and functionality of support mechanisms/services in the selected facilities e.g. power generators, ambulances, water supply, functional and clean toilets/bathrooms, conducive sitting areas, pharmacies/drug stores
- Human health resources

Data analysis plan

Availability, source and functionality of physical infrastructures such as the source of electric power supply, toilet facility, and source of water supply were documented as appropriate. The same was done for health facility buildings, types, and the number of health human resources in each of the facilities. The colour codes, green and amber, connote the presence and non-presence of a factor of interest. When green colour-code appears under a factor of interest, it means that such a factor is present. When the colour code is amber, it means that such a factor of interest is not present.

Ethical approval

Ethical approval was sought and obtained from the Oyo State Ethical Research Board, Reference No. AD 13/479/595. This approval was obtained in line with the guidance provided in the Declaration of Helsinki at the 64th World Medical Association General Assembly in Brazil in 2013 (15).

Results

Tables 1 and 2 depict availability of infrastructural facility at the study sites. Many of the facilities had multiple sources of power supply. All 11 (100.0%) of the facilities visited claimed to receive electricity power supply from the National grid, and at least, one standby electric power generation plant in addition. Only a few, 4 (36.4%) claimed to have either a solar power source or an inverter electric unit in addition to the National grid and power generating sets. All the facilities claimed to have a ventilated improved latrine. Sources of water were many; while almost all, 10(90.9%) claimed to have bore-holes, only 1(9.1%) had a pipe-borne water supply, and 2(18.2%) had a covered well in addition to bore-hole water. All 11(100.0%) had a perimeter fence. Almost all the facilities did not record appreciable challenge in physical infrastructure, except a particular public health facility that had problems with all the areas of physical infrastructural facility that were assessed (roof, ceiling, wall, perimeter fence, facility floor, plumbing and drainage system).

Table 1: Status of physical infrastructure by study site – a

Facility infrastructure	Chrisbo Hosp	Doctor's Polyclinic	Imm. Hosp	Jericho Clinic	Lad Hosp	Lafia Hosp	Police Clinic	St Dom. Hospital	St Marelo Hosp	St Mary's	Teju Specialist
Source of power supply											
National Grid											
Solar											
Generator											
Inverter											
Toilet facility											
Improved											
Source of water											
Covered Well											
Piped Water											
Bore hole											
Fenced											
Leaking roof											
Floppy ceiling											

Table 2: Status of physical infrastructure by study site - b

Status of facility infrastructure	Chrisbo Hosp	Doctor's Polyclinic	Imm. Hosp	Jericho Clinic	Lad Hosp	Lafia Hosp	Police Clinic	St Dom. Hospital	St Marelo Hosp	St Mary's	Teju Specialist
Dilapidated/fallen wall											
Pot-holed floors											
Faded paint											
Leaking/burst Plumbing											
Blocked/leaking drainage											
Bed capacity											
	15	10	15	30	21	36	52	64	16	177	22

Table 3: Distribution of health manpower by health facility at study sites

Facility Personnel	Chrisbo	Doctors' Polyclinic	Immaculate	Jericho	Lad	Lafia	Police Hospital	St Dominic	St Marelo	St Mary	Teju Hospital
Doctor											
	6	2	3	24	7	6	11	6	4	15	6
Pharmacists											
	1	0	0	9	0	4	1	0	3	3	1
Nurse											
	8	5	2	63	13	18	7	22	14	60	22
Admin Staff											
	2	0	2	2	4	8	7	1	2	18	15
Lab Staff											
	0	0	3	4	4	1	6	4	2	10	6
Medical Record officer											
	1	0	0	15	3	3	6	1	3	12	7
Driver											
	1	1	1	1	1	2	4	1	1	3	3
Security Personnel											
	2	0	3	5	2	2	6	4	4	5	6

Table 3 shows the distribution of health manpower at study sites. Across all the study sites, nurses appeared to be in the highest proportion, followed by physicians and administrative staff. The number of doctors in some of the facilities was quite few. The number of pharmacists in some of the facilities was generally low while others did not have. It should be noted that some of the facilities did not have laboratory staff and medical records' officers. The facilities all had at least one driver, which may be suggestive of having an ambulance.

Discussion

Studies have shown the role played by the availability of medical equipment, consumables and other supplies in health facilities as a factor of perceived quality of care. Research have shown that bypassing phenomenon is common among healthcare consumers in the quest for quality healthcare (3, 16-18). It is also instructive to note the negative effect of this phenomenon on health outcomes, including an inverse association with the utilization of healthcare services (19, 20), and likelihood of increased mortality (5).

A WHO report asserts that in the absence of clean water, power supply, drugs and basic medical equipment and other supplies, healthcare workers' performance is usually less than optimal even if they are motivated. Therefore, provision of good infrastructure and supply of essential items in health facilities will enhance a health workforce that is available to deliver necessary care, coupled competent with technical knowledge, skills and behaviour. An adequate supply of functional equipment and other items can also ensure a responsive and productive health workforce needed to strengthen the health system in Nigeria and in similar other countries (21).

This study revealed the poor state of facility infrastructure including the need to obtain electricity power supply from many sources. This is adduced to the unreliable government national electricity grid which compels health facilities to have more than one source of power supply. It should also be noted that only one (1 = 9.1%) of the facilities claimed to have a water supply from government's pipe-borne water. This invariably implies that over-head cost in the process of service delivery in health facilities is more likely to be unnecessarily higher than when these infrastructure is provided through the public sector. The implication of this is not trivial; it could mean that healthcare providers make less profit and therefore difficult for them to stay in business. It could also imply that, in order for the healthcare providers to stay in business, less than optimum quality of care is provided to consumers. This development is obviously a counter-productive stance to the objectives of the scheme. It should also be noted that healthcare personnel in many of the health facilities were deficient in number.

Quite a number of these facilities made use of informally trained individuals who serve as health workers. The employment of less qualified health personnel as a supplement to well-trained health personnel has been widely reported as a form of task shifting in developing countries (22). However, this has to be done under close supportive supervision by qualified health personnel, otherwise the damages would be more than the intended benefits.

Appropriate authorities and stakeholders should work hand-in-hand to strengthen the health system in Nigeria. This can be addressed by better funding of the health system and with a vital mechanism for accountability, investment in physical infrastructural facilities such as health facility buildings, medical equipment, drugs and other necessary consumables. To establish and maintain this, appropriate individuals should be trained in equipment maintenance procedures. This is in order to ensure equipment lasts to the specification of the manufacturer, and to avoid the issue of medical errors and their negative consequences. Other essentials are water and electricity supply. Currently, electricity power supply in the country has been very poor, the government must as a matter of urgency address this. The same goes for water supply. The role of an adequate and sustainable supply of potable water for hospital infection control purposes (23) cannot be overemphasized and should be treated as essential. Otherwise, while healthcare facilities should play their role in the restoration, maintenance and promotion of health, they could turn out to become foci of nosocomial infection and epidemics (24, 25).

Carrin (6) strongly argued that poor or inadequate facility infrastructure; inadequate supply of skilled, motivated health workforce, lack of basic equipment, and non-availability of items such as drugs and laboratory consumables is a recipe for failure of health insurance schemes. According to the same source, such situations could result in low trust of healthcare consumers in social insurance schemes and thus, non-compliance by refusal to pay premiums (6). This is also supported by findings of a recent literature review on the role of trust in health care systems in Sub-Saharan Africa (7). Non-availability, non-functional and inadequate equipment and physical infrastructure in health facilities have been cited as a major factor in type III delay in the process of care delivery. According to Thaddues and Maine (1994) in a literature review on maternal mortality in developing countries, shortages of qualified staff, essential drugs and other supplies contribute to maternal deaths especially in developing countries (26). The position of (26) was corroborated in an earlier study by (27) on maternal death in Ile-Ife, Nigeria whereby lack of, or inadequate provision of supplies is a major factor of delay in managing obstetric emergencies and therefore a major contributory factor to maternal deaths (27). Similar findings were reported in recent studies by (28) and (29) which indicated that a dearth of necessary health facility resources could serve as an obstacle of access to health care among members of health insurance scheme (30). Poor human and infrastructural status in healthcare facilities have been associated with low level of trust and satisfaction with healthcare services (31), a less likelihood of continuity with care, with a resultant tendency to patronize lower quality alternative healthcare service providers (32, 33), and a consequent worsening of health outcomes (33).

Recently, the Federal Government implemented the Basic Health Care Provision Fund, (BHCPF), a World Bank funded project (34). The BHCPF has in its package, facility infrastructure development of Primary Health Care (PHC) facilities including provisions for the purchase, repair and replacement of medical equipment. This is a promising development and should be strengthened. Likewise, human resources for health especially in the health insurance industry should be one of the major points in repositioning the scheme for optimum performance and for it to realise the objectives for which it was established. Nigeria has an inadequate number of healthcare workers in almost all the cadres to meet the country's needs ((35, 36). It is one of the countries with a critical shortage of healthcare providers, defined by fewer than 2.28 doctors, nurses and midwives per 1000 population and failing to reach a target of 80% of deliveries being attended to by a skilled birth attendant (21). Investment in personnel development including appropriate regular wages and non-pecuniary incentives should be made available to attract, retain, and motivate health personnel for enhanced productivity (37). The findings of this study could be made more robust with inclusion of more healthcare facilities, coupled with an assessment of the status of drugs and laboratory facilities. Also, because of the nature of the data available, the discussion is mainly descriptive. This study accepts this as limitations. This study revealed that the majority of the NHIS accredited healthcare facilities in the study area had inadequate number of human resources as well as dilapidated physical infrastructure. Inadequate healthcare facility resources is a cause of mistrust in healthcare system and dissatisfaction with services rendered. These can influence a rejection of social policies such as a social health insurance scheme. It is recommended that stakeholders, especially the NHIS, should prioritise addressing these defects in order to strengthen the scheme for improved performance, and an ultimate better population health status. In order to strengthen the health system for improved performance in Nigeria, one of the areas to be addressed is the structural aspect of the health system.

Acknowledgement

All participating healthcare facilities are appreciated for their cooperation.

References

1. Chuma, J., Mulupi, S., and McIntyre, D. (2013). Providing financial protection and funding health service benefits for the informal sector: Evidence from Sub-Sahara Africa. RESYST Working Paper 2. Disponible en ligne sur: http://resyst. lshtm. ac. uk/sites/resyst. lshtm. ac. uk/files/docs/reseources/WP2_financialpro tection. pdf, dernière visite le 4 Septembre
2. Peters, D.H., Garg, A., Bloom, G., Walker, D.G., Brieger, W.R., Rahman, M.H. (2008). Poverty and access to health care in developing countries. Ann N Y Acad Sci. 1136:161-71.
3. Adewole, D.A., Reid, S., Oni, T., Adebowale, A.S. (2022). Geospatial distribution and bypassing health facilities among National Health Insurance Scheme enrollees: implications for universal health coverage in Nigeria. International Health. May;14 (3):260-70.
4. Oladimeji, A.O., Adewole, D.A., and Adeniji, F. (2021). The bypassing of healthcare facilities among National Health Insurance Scheme Enrollees in Ibadan, Nigeria. International Health, 13(3):291-6.
5. Karra, M., Fink, G., and Canning D (2016). Facility distance and child mortality: a multi-country study of health facility access, service utilization, and child health outcomes. *International journal of epidemiology*.
6. Carrin, G. (2002). Social health insurance in developing countries: a continuing challenge. International Social Security Review, 55(2):57-69.
7. Østergaard, L.R. (2015). Trust matters: a narrative literature review of the role of trust in health care systems in Sub-Saharan Africa. Global Public Health, 10(9):1046-59.
8. Adewole, D.A. (2018). Understanding the concept of health insurance: An innovative social marketing tool. *J Public Health Afr.*, 9(1):739.
9. Onoka, C., Onwujekwe, O., Uzochukwu, B., and Ezumah, N. (2013). Promoting universal financial protection: constraints and enabling factors in scaling-up coverage with social health insurance in Nigeria. *Health Res Policy Syst*, 11:20.
10. National Demographic and Health Survey [Internet]. 2013.
11. Lloyd, P.C., Awe, B., and Mabogunje, A.L. (1967). The city of Ibadan: At the University Press.
12. Federal Ministry of Health N. A Directory of Health Facilities in Nigeria, 2011. Abuja.
13. Centres for Disease Control and Prevention. Global Health-Nigeria 2017 [cited 2017 9 March 2017]. Available from: https://www.cdc.gov/globalhealth/countries/nigeria/.
14. Morestin, F., Bicaba, A., de Dieu Sermé, J., and Fournier P. (2010). Evaluating quality of obstetric care in low-resource settings: Building on the literature to design tailor-made evaluation instruments-an illustration in Burkina Faso. BMC Health Services Research, 10(1):20.
15. World Medical Association. Declaration of Helsinki 2013: Ethical Principles for Medical Research Involving Human Subjects [cited 28 February 2017]. Available from: http://www.health.uct.ac.za/fhs/research/humanethics/links.
16. Akin, J.S., Hutchinson, P. (1999). Health-care facility choice and the phenomenon of bypassing. Health Policy and Planning, 14(2):135-51.
17. Sanders, S.R., Erickson, L.D., Call, V.R., McKnight, M.L., and Hedges, D.W. (2015). Rural health care bypass behavior: how community and spatial characteristics affect primary health care selection. *J Rural Health*. 2015;31(2):146-56.
18. Yao, J., and Agadjanian, V. (2018). Bypassing health facilities in rural Mozambique: spatial, institutional, and individual determinants. BMC Health Serv Res. 18(1):018-3834.
19. Tanou, M., and Kamiya, Y. (2019). Assessing the impact of geographical access to health facilities on maternal healthcare utilization: evidence from the Burkina Faso demographic and health survey 2010. BMC Public Health, 19(1):838.
20. Wong, K.L.M., Benova, L., and Campbell, O.M.R. (2017). A look back on how far to walk: Systematic review and meta-analysis of physical access to skilled care for childbirth in Sub-Saharan Africa. PLoS One, 12(9):e0184432.
21. World Health Organization. (2006). The World Health Report 2006 - Working together for health. Geneva, Switzerland.
22. Akinyemi, R.O., Owolabi, M.O., Adebayo, P.B., Akinyemi, J.O., Otubogun, F.M., Uvere E, *et al*. (2015). Task-shifting training improves stroke knowledge among Nigerian non-neurologist health workers. *Journal of the Neurological Sciences*, 359(1-2):112-6.

23. Adewole, D.A., Bello, S., Olowookere, S.A., and Olarewaju, S. (2016). Healthcare workers' awareness and perception of infection prevention and control policies and practices amidst viral haemorrhagic fever epidemics in Nigeria: A qualitative study. *Canadian Journal of Infection Control*, 31(4).
24. Barna, Z., Antmann, K., Pászti, J., Bánfi, R., Kádár, M., Szax, A., *et al*. (2014). Infection control by point-of-use water filtration in an intensive care unit–a Hungarian case study. *Journal of Water and Health*, 12(4):858-67.
25. Barna, Z., Kádár, M., Kálmán, E., Szax, A.S., Vargha, M. (2016). Prevalence of Legionella in premise plumbing in Hungary. *Water Research*, 90:71-8.
26. Thaddeus, S., Maine, D. (1994). Too far to walk: maternal mortality in context. Social Science & Medicine, 38(8):1091-110.
27. Okonofua, F.E., Abejide, A., and Makanjuola, R.A. (1992). Maternal mortality in Ile-Ife, Nigeria: a study of risk factors. Studies in Family Planning, 23(5):319-24.
28. Ntoimo, L.F.C., Okonofua, F.E., Igboin, B., Ekwo, C., Imongan, W., and Yaya, S. (2019). Why rural women do not use primary health centres for pregnancy care: evidence from a qualitative study in Nigeria. BMC Pregnancy and Childbirth, 19(1):277-.
29. Okonofua, F., Ogu, R., Agholor, K., Okike, O., Abdus-Salam, R., Gana, M., *et al*. (2017). Qualitative assessment of women's satisfaction with maternal health care in referral hospitals in Nigeria. Reprod Health, 14(1):44.
30. Lagomarsino, G., Garabrant, A., Adyas, A., Muga, R., and Otoo N. (2012). Moving towards universal health coverage: health insurance reforms in nine developing countries in Africa and Asia. The Lancet, 380(9845):933-43.
31. Adewole, D.A., Reid, S., Oni, T., and Adebowale, A.S. (2022). Factors Influencing Satisfaction with Service Delivery among National Health Insurance Scheme Enrollees in Ibadan, Southwest Nigeria. *Journal of Patient Experience*, 9:23743735221074186-.
32. Ayede, A. (2012). Persistent mission home delivery in Ibadan: attractive role of traditional birth attendants. Annals of Ibadan Postgraduate Medicine, 10(2):22-7.
33. Bloom, G., Standing, H., Lucas, H., Bhuiya, A., Oladepo, O., and Peters, D.H. (2011). Making health markets work better for poor people: the case of informal providers. Health Policy Plan, 26 Suppl 1:i45-52.
34. World Bank. Basic Healthcare Provision Fund Project (HUWE PROJECT) 2018 [Available from: https://projects.worldbank.org/en/projects-operations/project-detail/P163969?lang=en.
35. Abimbola, S., Okoli, U., Olubajo, O., Abdullahi, M.J., and Pate, M.A. (2012). The midwives service scheme in Nigeria. PLoS medicine, 9(5):e1001211-e.
36. Abimbola, S., Olanipekun, T., Igbokwe, U., Negin, J., Jan, S., Martiniuk, A., *et al*. (2015). How decentralisation influences the retention of primary health care workers in rural Nigeria. Global Health Action, 8:26616-.
37. World Health Organization. Health Workforce Geneva, Switzerland: World Health Organization; 2020 [cited 2020 15.09.2020]. Available from: https://www.who.int/health-topics/health-workforce#tab=tab_1.

Publication of the Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.
Volume 1 June, 2022 - pp 39-46

Discoveries in Public Health