# Assessment of the Capacity of Patent and Proprietary Medicine Vendors to Provide Contraceptive Services to Adolescents in Kaduna State, Nigeria

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#### Abstract

The contraceptive Prevalence Rate among adolescents has remained extremely low in Kaduna State due to limited access to health facilities with youth-friendly services. Patent and Proprietary Medicine Vendors (PPMV) are the most widespread health facilities and the first point of access for family planning commodities in Nigeria. Providing contraceptive services to adolescents requires specific sets of skills and an environment that are youth friendly. This study examines the capacity of PPMV to offer contraceptive services to adolescents. The study used a cross-sectional descriptive design. We interviewed 462 PPMV selected from urban and sub-urban Local Government Areas (LGA) of Kaduna State using a multistage random sampling technique. Data analysis was based on percentages conducted with SPSS software, version 20. Findings from the assessment show that PPMV are a mix of professionals and lay providers. 43.1% possess a qualification in Nursing, midwifery, or community health, and 18.8% have received specific training on contraceptive services. 91.6% are dispensing contraceptives that are suitable for adolescents, and 97.4% are willing to acquire additional training to provide adolescent-friendly contraceptive services for both the married and unmarried. The study equally shows that most PPMVs have private space (70.1%) for confidential counselling and operate seven days a week (86.6%) and twelve or more hours a day (83.3%). Pharmacists Council of Nigeria should consider expanding the scope of contraceptive services that PPMV can provide based on their training.

Keywords: Adolescents, Contraceptive, Drug Stores, Family planning, PPMV, Youth-friendly services.

## Introduction

Nigeria is the 10<sup>th</sup> most populous country in the world and number one in Africa. Its health indices are poor; persistently low contraceptive prevalence rate, especially among adolescents [1, 2], maternal and infant mortality at 814 per 100,000 and 65 per 1000 live birth, respectively [3, 4], and fertility rate of 5.6 [5].

Adolescents engage in sexual activities and are often at risk of unwanted pregnancy, unsafe abortion, and HIV and AIDS [6, 7]. Nigeria has a high rate of unintended pregnancy linked to early marriage, poor access to health information and services, sexual exploitation, and abuse, among others [8]. Consequently, many adolescents have resorted to abortion, which in many instances are unsafe. Adolescents in and out of school consider teenage/unwanted pregnancy and abortion as major health challenges that they are confronted with and for which many visit health facilities or youthfriendly centres for information and services [6].

Adolescents encounter both supply and demand-related barriers to using health facilities. For example, on the demand side, adolescents are shy, afraid, lack the ability to pay, and have limited awareness and knowledge of services and service delivery points. The supply-side issues include lack of privacy and confidentiality, distant location of health facility,

Received: 21.03.2022 Accepted: 08.05.2022 Published on: 30.07.2022 Corresponding Author: murtala2021@gmail.com poor attitude, and competency of providers [5]. Addressing these barriers would require application at service delivery points the essential components of youth-friendly services that include confidentiality, respectful treatment, integrated services, culturally appropriate care, easy access to care, free or low-cost services, reproductive and sexual health care, services for young men, and promoting parent-child communication [9].

The private sector is an important source of reproductive health services in poorer nations. It accounts for about 38% of access in sub-Saharan Africa, but its contribution may be much higher in some individual countries [10]. Patent and Medicine Vendors Proprietary (PPMV), otherwise referred to as drug shops or chemists, is an important component of the private health sector it offers family planning drugs and services across several developing countries and in most cases, are making an impact on the healthcare delivery system. They are often the first and, in most cases, the only point of primary healthcare services in poor nations [11]. Countries such as Nigeria, Tanzania, Uganda, Ghana, Nepal, Kenya, and a host of others have thriving family planning services among PPMV even though the relevant laws in these countries allow for sales of only limited forms of contraceptives [12-14]. In Nigeria, PPMV account for 72% of private facilities stocking contraceptives or offering FP services [15], and it is estimated that over 60% of women who use contraceptives have received it from a PPMV [16]. [16] summarized the evidence in the literature on the reasons why clients prefer obtaining family planning methods from PPMV, including the absence of formalities and timewasting at PPMV prior to being attended, the proximity of the facility to their homes, and the perception that clients will pay more at a health facility [17].

PPMV in Nigeria is regulated by the Pharmacists Council of Nigeria (PCN) based on the provision of Act 91 of 1992 (now Act CAP 17 LFN 2004). The Law allows PPMV to offer

over the counter (OTC) drugs and excludes them from dispensing prescriptive drugs. Therefore, PPMV are restricted by regulation to provide barrier methods. Nevertheless, studies have shown that in practice, PPMV offers Oral contraceptive pills, including emergency pills, and injectable contraceptives in contravention of the provision of relevant laws [13, 14, 18]. A study observed that about 70% of PPMV are likely not to refer new clients, while only 50% would refer women with complications [19]. These inappropriate practices by the PPMV are exacerbated by the limited number and spread of Pharmacies and hospitals offering contraceptive services, the unfriendly attitude of providers in hospitals, frequent stock-out of contraceptives, profitability of contraceptive services, and increasing number of trained healthcare providers as PPMV [10, 12, 19].

Inadequate human resources arising from poor funding is a major predisposing factor to the sorry state of healthcare in the country. Nigeria has a shortfall of practicing medical doctors and Pharmacists serving its population of over 200 million people. It is estimated that doctor to patient ratio is 1/6000 in Nigeria, and Pharmacist to patient ratio of 1/15,152 against the WHO standard of 1/600 and 1/1000, respectively [20, 21]. The gap in professional practice has encouraged the widespread involvement of a lower cadre of health professionals and non-health trained practitioners in the delivery of healthcare services, including family planning. There are over 200,000 PPMV providing some form of healthcare in Nigeria [22]. PPMV is widely spread in urban and rural areas of the country and offers services to all categories of the population, including adolescents. PPMV are a major providers of family planning services and are more likely to experience fewer stockouts compared to Pharmacies or hospitals [19]. They exploit their competitive advantage; proximity, shorter waiting time, flexibility in-service hours, and skill in providing short-term methods like condoms, pills, and injectables to attract clients

away from public facilities [12]. The potential for PPMV to be the contraceptive service point of choice for adolescents is reinforced by the ability of the providers to demonstrate technical competence and the ability to communicate effectively and be sensitive to the cultural matter regarding adolescents [15, 16, 18, 23, 25]. This is further enhanced by flexible operating hours, including weekends, the use of accessible technology, create linkage to nearby facilities that can remove for adolescents the barriers to access such as long-distance from service delivery points, visiting hours, and follow-up issues [16, 25, 26]. In addition, providing free or low-cost services meet the need of many adolescents who are dependent and have limited income to have access to reproductive and other essential health services. Nevertheless, some studies have observed a gap in the quality of services provided by PPMVs. For instance, [19] observed that either due to technical competence, experience, or confidence, PPMVs do not routinely interrogate women on sensitive reproductive health issues or contraindication and may likely miss providing information on how to use pills or what should be done if a dose or more is missed. Equally, PPMVs do not often promote the contraceptive services that they offer, therefore, opportunities for the client to information, education, access and communication materials at PPMVs are limited [17, 23].

Given the peculiarities of adolescents resulting from their physical and emotional state, it is imperative to assess the PPMV for their capacity to offer quality family planning services that meet their needs. Most studies have examined the demand side, but where the supply side is studied, not many have appraised the physical space and educational background, and contraceptive training of the providers. The outcome of this study will further expose the capacity existing within PPMV to offer quality contraceptive services beyond the current scope of practice and form part of the evidence that necessitate the expansion may of the contraceptive method mix offered by PPMV in Nigeria. Consequently, this study examines the capacity of PPMV to offer contraceptive services to adolescents with consideration of the physical environment, contraceptive method mix, and educational background/training of the PPMV.

This study assessed the potential capacity of PPMVs to offer contraceptive services to adolescents and only considered the supply side of the service. It may be possible that potential capacity may not necessarily translate to competence in the actual delivery of contraceptive services. The analysis is based on descriptive statistics and is limited to frequency and simple percentages. This limits the potency of the conclusion as there was no test of the hypothesis. However, the sampling technique and sample size ensured the collection of representative data for the study.

## **Materials and Methods**

This section reviews the settings, study design, target population, sampling and sampling technique, research instrument, data collection, ethical considerations, and data analysis.

## **Research Design**

The study design used for this research is the cross-sectional descriptive design. This study design was used because I wanted to understand the current situation on the delivery of family planning services by the Patent and Proprietary Medicine Vendors in Kaduna State to inform possible policy changes that may enhance the quality of service provided to adolescents.

## Setting

This study was conducted in six local government areas (LGAs) of Kaduna state. Kaduna State is the third most populated state in Nigeria, with a projected population of 8.9 million based on the 2006 national population census [27]. The study targets both registered and unregistered PPMVs in the LGAs. The study population was all the PPMV dispensing drugs within a permanent structure in the study LGAs. Determining a PPMV is based on the definition of the Pharmacists Council of Nigeria. To qualify for inclusion, the drug store must be opened on the day of visit and located at least 200 metres away from an already selected one or 400 metres away from an existing community pharmacy. Only those that fail to meet the inclusion criteria or refused to participate were excluded from the study.

## Sample and Sampling Technique

The sample population of the study are PPMVs that operate retail drug stores in selected LGAs spread across urban and rural areas of Kaduna State, Nigeria.

The study used multi-criteria Decision Analysis Framework to select the study LGAs. The selected of PPMVs that were interviewed followed the inclusion criteria based on the systematic random sampling technique. All the communities within the selected LGAs were PPMVs operate were sampled. In each community, all PPMVs that were eligible based on the inclusion criteria were selected and interviewed after given verbal consent.

#### **Data Collection**

The study used a standardized National Capacity Assessment tool developed by the Federal Ministry of Health. The tool was configured on a CSPro application and downloaded on android phones. The selection of the tool is based on the nature of the study and the study objectives and research questions. The assessment tool on android phones was administered to the selected PPMVs by interviewers. Six interviewees were identified, trained, and assigned one per LGA. The Interviewers administered the questionnaire to 462 PPMVs in the study sample. The assessment tool captured information on background, infrastructure, family planning services, staff, record keeping, inventory management, and commitment to participate in training and provide family planning services.

#### **Ethical Considerations**

The participants were informed of the purpose of the assessment and were assured of the confidentiality of the data collected. Each participant gave verbal consent before administering the questionnaire. The data collected are safely stored and would not be shared with any regulatory agency without the individual consent of the study participants. Dissemination of the data is based on aggregate data without any direct link to any of the participants.

#### **Data Analysis**

Data was collected using the CSPro Application on android phones and exported to Statistical Package for Social Science (SPSS), version 20.0, on a personal laptop. The researcher used descriptive statistics to analyse the data to generate frequency tables and percentages of the different variables.

## **Results**

This section presents the results of the four hundred and sixty-two (462) questionnaires administered; the results are presented in tabular form as shown below.

| Characteristic            | Number  | Percentage (%) |  |
|---------------------------|---------|----------------|--|
| <b>Respondents by LGA</b> | (N=462) |                |  |
| Chikun                    | 110     | 23.8           |  |
| Igabi                     | 110     | 23.8           |  |
| Kachia                    | 30      | 6.5            |  |
| Kaduna North              | 45      | 9.7            |  |
| Kaduna South              | 89      | 19.3           |  |

Table 1. Characteristics of Respondents

| Sabon Gari                   | 78      | 16.9 |
|------------------------------|---------|------|
| Status of PPMV Registration  | (N=462) |      |
| Any form of Registration     | 412     | 89.2 |
| Registered with PCN          | 176     | 38.1 |
| Registered with NAPPMED      | 357     | 77.3 |
| Rate of Registration – Urban | (N=234) |      |
| Any form of Registration     | 222     | 94.9 |
| Registered with PCN          | 73      | 31.2 |
| Registered with NAPPMED      | 197     | 84.2 |
| Rate of Registration – Rural | (N=218) |      |
| Any form of Registration     | 190     | 87.2 |
| Registered with PCN          | 103     | 47.2 |
| Registered with NAPPMED      | 160     | 73.4 |

Table 1 above indicates the background information of the study population. The distribution of the PPMVs across the selected LGAs was based on the population of PPMVs in the areas. However, distribution based on urbanrural location was almost equal, with 50.6% in urban LGAs and 49.4% in rural LGAs. Most of the PPMVs had one form of registration or the other, with a greater tendency to register with the union. Even though 89.2% said they were registered, only 38.1% registered with the

Pharmacists Council of Nigeria, while 77.3% were registered with the main union, the National Association of Patent and Proprietary Medicine Dealers (NAPPMED). Moreover, PPMVs in the rural LGAs were less likely to be registered but more compliant with regulations by registering with PCN. Hence, almost half of the PPMVs in the rural LGAs are registered with PCN compared to a little less than one in three PPMVs in the urban LGAs that are registered with PCN.

| Qualification                    | (N=462) |      |
|----------------------------------|---------|------|
| Medical Licence                  | 199     | 43.1 |
| Lower cadre Health trained       | 90      | 19.5 |
| Non-Health trained               | 160     | 34.6 |
| PPMV Formally Trained on FP      | (N=462) |      |
| Yes                              | 87      | 18.8 |
| No                               | 375     | 81.2 |
| PPMV willing to be Trained on FP | (N=462) |      |
| Yes                              | 450     | 97.4 |
| No                               | 12      | 2.6  |

Table 2. Background Knowledge of Family Planning

Table 2 shows the background knowledge of PPMVs and their willingness to learn more about contraceptive services. PPMVs reflect a mix of professionals providing health services at the community level. As much as 43.1% of the PPMVs are trained and licensed to provide clinical services. About one in five of PPMVs in the study have some form of medical training but are not licensed to provide a wide range of services. Then there are others who do not have any background in health, and they constitute 34.6%. The data also show that despite providing a wide range of FP services, only 18.8% of the PPMVs have received formal training and are certified to provide FP services. Nevertheless, almost all the PPMVs (97.4%) across backgrounds indicated willingness to be trained to offer FP service to young persons.

| Dispensing FP Commodity                    | (N=462) |      |
|--|---------|------|
| Any FP commodity                           | 423     | 91.6 |
| Combined oral pills                        | 385     | 83.3 |
| Emergency Pills                            | 270     | 58.4 |
| Male Condom                                | 372     | 80.5 |
| Depo Provera                               | 252     | 54.5 |
| Noristerat                                 | 288     | 62.3 |
| Sayana Press                               | 42      | 9.1  |
| Non-Health Trained Dispensing FP Commodity | (N=166) |      |
| Combined Oral Pills                        | 147     | 88.6 |
| Depo Provera                               | 74      | 45   |
| Noristerat                                 | 82      | 49   |
| Sayana Press                               | 12      | 7    |

Table 3. Contraceptive Commodities Offered by PPMVs

Table 3 shows the type of contraceptives that are widely provided by PPMVs. Besides Sayana Press, more than 50% of the PPMVs provide other injectables, pills, and condoms. Interestingly, 91.6% of the PPMVs in the study dispense at least one method of family planning. Regarding the individual products, PPMVs provide Combined Oral pills (83.3%), emergency pills (58.4), the male condom (80.5),

Depo Provera Injection (54.5%), and Noristerat Injection (62.3%). The study observation also shows that the non-health trained PPMVs are also providing pills and injectables that are classified as prescriptive drugs. Thus, 88.6% of the non-Health trained PPMVs to provide combined pills, 45% provide Depo provera injection, and about half of them offer noristerat injection.

| Private Space for Counselling | (N=462) |      |
|-------------------------------|---------|------|
| Private Space available       | 324     | 70.1 |
| Medical Licensed              | 166     | 78   |
| Lower Cadre Health Trained    | 72      | 77   |
| Non-Health Trained            | 98      | 59   |
| Adequacy of private space     | (N=324) |      |
| Adequate                      | 125     | 38.5 |
| Partly adequate               | 168     | 51.9 |
| Inadequate                    | 31      | 9.6  |
| Operating Time                |         |      |
| 7 days a week                 | 380     | 86.6 |
| 6 days a week                 | 54      | 12.3 |
| Less the 6 days a week        | 5       | 1.1  |
| >=12hours a day               | 365     | 83.3 |
| <12 hours a day               | 73      | 16.7 |

 Table 4. Service Delivery Space and Time

Table 4 indicates the nature of the space available for contraceptive services and the operating time of the PPMV. Overall, 70.1% of the service delivery points have private space for confidential counselling. The Medical Licensed PPMVs (78%) are more likely to operate an outlet with a private space compared to the lower cadre of health trained (77%) and non-Health trained (59%). Despite that majority of the stores have private space but less than have been adequate in terms of space, facilities, and cleanliness. About 39% of the private spaces are adequate for counselling and interaction with young persons. The greater proportion (51.9%) moderately adequate, are requiring housekeeping or lighting to become adequate. On the other hand, about one in ten of private spaces are inadequate in terms of size and with no possibility of expansion. The study further observed that 86.6% of the PPMVs operate daily while 12.3% work for 6 days of the week. Only about 1.1% of the PPMV are likely to operate less than six days a week. In addition, 83.3% of the PPMVs open for twelve hours and above daily, with the bulk of them spending between twelve and sixteen hours daily on the job.

## Discussion

The findings on the research question of whether PPMVs have a medical background that facilitates the provision of contraceptive services to adolescents showed that almost two-thirds of the PPMV have basic training in medical practice, and about half are licensed to offer a wide range of clinical services, including contraceptive service for adolescents. The high level of willingness to be trained to offer quality services to adolescents is indicative of a predisposition to continuous learning by PPMVs and the opportunity to build capacity for increased quality of FP services. With the high proportion of trained providers and positive attitude towards adolescents, contraceptive services offered by PPMVs can easily be attractive to adolescents as also observed by [24]. Interestingly, the proportion of Health trained PPMVs of 43.1% found in this study is more than the national average of about 27% reported in the 2015 assessment of the Landscape of PPMV in sixteen states of Nigeria [28], thereby indicating a higher presence of health trained PPMV in Kaduna compared to many other states in Nigeria.

Furthermore, the finding on the second question on what contraceptive services are offered by PPMVs amidst regulatory restrictions shows that PPMVs, irrespective of qualification and training, offer a mix of family planning methods that include oral pills and injectables that are prescriptive drugs. The ability of PPMVs to offer a variety of modern contraceptive methods will ease access by making services available near to places of residence for adolescents. This will eliminate two major barriers to access by young persons, that is, transport cost and commodity stockout. The ability of PPMVs to limit stock-out of contraceptives is equally observed by [19]. Nevertheless, allowing non-health trained PPMVs to provide injectable contraceptives without formal training indicates that PPMVs are poorly regulated and therefore operate outside of their scope of practice [13, 14, 18]. Only about one-third are registered with the regulatory body, indicating that the majority of PPMVs are self-regulated. Self-regulation leading to non-compliance to the scope of practice may have been influenced by other motives for setting up the business, such as profit [12, 19]. Therefore, the Pharmacists Council of Nigeria needs to intensify and expand coverage of its regulatory activities to limit PPMVs from providing services for which they lack the requisite skills.

Finally, findings relating to whether PPMV operating space and time support confidential contraceptive services to adolescents show that PPMVs are positioned to attract adolescents due to flexible operating time and availability of space for confidential service. The observation of the flexibility in operating time is viewed by [12] as a competitive advantage for PPMV among providers of contraceptive services. The observation of positive attitude and willingness among PPMV to offer contraceptive services to adolescents has the potential to mitigate stigma and break the barrier to access by adolescents as earlier documented by [29]. The observed potential of PPMV to provide youth-friendly services needs to be met by the demand among adolescents to seek services at PPMV. Therefore, research is required to understand the behaviour of adolescents toward PPMVs and to access the quality of contraceptive services that PPMV provide.

## Conclusion

Patent and Proprietary Medicine Vendors are a mix of professionals with varied clinical and communication skills that can be deployed for the benefit of adolescents seeking contraceptive services. PPMV sell a range of contraceptives and are willing to make needed improvement in the knowledge and service space necessary for adolescent-friendly services. The Pharmacists Council of Nigeria should consider the review of Acts regulating the establishment and functions

#### References

[1] National Bureau of Statistics (2017). Demographic Statistics Bulletin. nigerianstat.gov.ng/download/775.

[2] National Population Commission (NPC) [Nigeria] and ICF (2019). Nigeria Demographic and Health Survey. 2018 Key Indicators Report. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF.

[3] UNICEF, WHO, World Bank, UN-DESA Population Division (2017). Levels and trends in child mortality report 2017. Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation.

[4] WHO, UNICEF, UNFPA, World Bank Group, and the United Nations Population Division (2015). Trends in Maternal Mortality: 1990 to 2015. WHO Document Production Services, Geneva, Switzerland. ISBN: 978 92 4 156514 1. of PPMV to increase the scope of practice for PPMVs and collaborate with other regulatory and professional bodies to train PPMV to promote knowledge and skill for quality assured contraceptive services for adolescent. PPMV should be monitored to make a minor adjustment to the private space within the store to ensure adequate space that is safe for adolescents to access services.

#### Acknowledgement

I thank Society for Family Health and IntegratE Project funded by Bill and Melinda Gates Foundation, for providing the resources used for this study. I also thank Emeka Okafor for providing leadership to the project and support to data collection. I am grateful to Eliot Dakoro, Shafiu Hussaini, Nenthok Gokum Saad Ado Koki, and Hajiya Lami Umar for their participation in data collection.

## **Conflict of Interest**

The author is a staff of the Society for Family Health and previously worked on the IntegratE project.

[5] Federal Ministry of Health, Nigeria (2009).
Assessment Report of the National Response to Adolescents Sexual and Reproductive Health in Nigeria, Federal Ministry of Health, Abuja, Nigeria.
[6] Federal Ministry of Health (2007). National Strategic Framework on Health and Development of Adolescents and Adolescents in Nigeria. Federal Ministry of Health Abuja, Nigeria.

[7] Federal Ministry of Health (2007). National HIV/AIDS Reproductive Health Survey. Federal Ministry of Health Abuja, Nigeria.

[8] Meeting the Sexual and Reproductive Health Needs of Adolescents in Nigeria: A Guide for Action http://www.actionhealthinc.org/publications/docs/sr h\_guide.pdf.

[9] Sulava Gautam (2012). Best Practices for Youth-Friendly Sexual and Reproductive Health Services in Schools: Recommendations for School Nurse and School-Based or School-Linked Health Center Staff. [10] Oona M. R. Campbell1, Lenka Benova, David MacLeod1, Rebecca F. Baggaley, Laura C. Rodrigues, Kara Hanson, Timothy Powell-Jackson, Loveday Penn-Kekana, Reen Polonsky, Katharine Footman, Alice Vahanian, Shreya K. Pereira, Andreia Costa Santos, Veronique G. A. Filippi, Caroline A. Lynch, and Catherine Goodman (2016). Family planning, antenatal and delivery care: cross-sectional survey evidence on levels of coverage and inequalities by public and private sector in 57 lowand middle-income countries. *Tropical Medicine and International* Health.

https://doi.org/10.1111/tmi.12681.

[11] John Stanback, Conrad Otterness, Martha Bekiita, Olivia Nakayiza, and Anthony K. Mbonye (2011). Injected with Controversy: Sales and Administration of Injectable Contraceptives in Drug Shops in Uganda. *International Perspectives on Sexual and Reproductive Health*. Vol. 37, No. 1, pp. 24-29. Guttmacher Institute. https://www.jstor.org/stable/41202967.

[12] Angela Akol, Dawn Chin-Quee, Patricia Wamala-Mucheri, Jane Harriet Namwebya, Sarah Jilani Mercer, and John Stanback (2014). Getting closer to people: family planning provision by drug shops in Uganda. *Global Health: Science and Practice* December 2014, 2(4):472-481; https://doi.org/10.9745/GHSP-D-14-00085.

[13] Elena Lebetkin, Tracy Orr, Kafui Dzasi, Emily Keyes, Victoria Shelus, Stephen Mensah, Henry Nagai, and John Stanback (2014). Injectable Contraceptive Sales at Licensed Chemical Seller Shops in Ghana: Access and Reported Use in Rural and Periurban Communities. International *Perspectives on Sexual and Reproductive Health*. Vol. 40, No. 1, pp. 21-27. Published by: Guttmacher Institute. DOI: 10.1363/4002114.

[14] Mojisola M Fayemi, Olufemi L Oduola Queen C Ogbuji Kehinde A, Osinowo Adejoke E, Oyewo Olabimpe M, Osiberu (2010). The knowledge of emergency contraception and dispensing practices of Patent Medicine Vendors in Southwest Nigeria. *Journal of Public Health Policy*, Volume 31, Issue 3, pp 281–294.

[15] PSI, SFH, and FP Watch (2016) Nigeria 2015 Outlet Survey Findings. 2016. FP watch Research Brief. Population Services International, Society for Family Health, and FP watch. Washington DC: USA. [16] A.D Okonkwo, U.P Okonkwo (2010). Patent medicine vendors, community pharmacists, and STI management in Abuja, Nigeria. *African Health Sciences*; vol 10, No 3. Pp.: 253 – 265.

[17] Goodman C, Brieger W, Unwin A et al (2007). Medicine sellers and malaria treatment in sub-Saharan Africa: what do they do, and how can their practice be improved? *Am J Trop Med Hyg*; 77:203 – 218.

[18] Brieger WR, Osamor PE, Salami KK, Oladepo O, Otusanya SA (2004). Interactions between patent medicine vendors and customers in urban and rural Nigeria. Health Policy Plan; 19:177-182.

[19] Chinazo Ujuju, Samson B Adebayo, Jennifer Anyanti, Obi Oluigbo, Fatima Muhammad, Augustine Ankomah (2014). An assessment of the quality of advice provided by patent medicine vendors to users of oral contraceptive pills in urban Nigeria. *Dove Press Journal: Journal of Multidisciplinary Healthcare* :7 163–171.

[20] Editorial Board (2019). Tackling Doctor-Patient Ratio. Leadership Newspaper Editorial May 1, 2019. https://leadership.ng/2019/05/01/tackling-doctorpatient-ratio/.

[21]Ekpenyong, Aniekan; Udoh, Arit; Kpokiri, Eneyi; Bates, Ian (2018). An analysis of pharmacy workforce capacity in Nigeria. Journal of Pharmaceutical Policy and Practice. https://doi.org/10.1186/s40545-018-0147-9.

[22] Barnes J, Chandani T, Feeley R. (2008). Nigeria Private Sector Health Assessment. Bethesda: Private Sector Partnerships-One project, Abt Associates Inc.
[23] Meghan Corroon, Essete Kebede, Gean Spektor and Ilene Speizer (2016). Key Role of Drug Shops and Pharmacies for Family Planning in Urban Nigeria and Kenya. *Global Health: Science and Practice* December 2016, 4(4):594-609; https://doi.org/10.9745/GHSP-D-16-00197.

[24] Venkatraman Chandra-Mouli, Catherine Lane, Sylvia Wong (2015). What Does Not Work in Adolescent Sexual and Reproductive Health: A Review of Evidence on Interventions Commonly Accepted as Best Practices. *Global Health Science*  *Practice* vol. 3 no. 3 p. 333-340, doi: 10.9745/GHSP-D-15-00126. www.ghspjournal.org.

[25] IntegratE (2018). Report of GIS Mapping Survey and Directory of Community Pharmacists and Patent and Proprietary Medicine in Kaduna State, Nigeria.

[26] Oluwasina, Folajinmi Oluyemi (2017) Factors Affecting the Uptake of Modern Contraception Services among Women of Reproductive Age in Nigeria. *Texila International Journal of Public Health* Volume 5, Issue 4.

[27] Kaduna State Bureau of Statistics (2019).Demography. 2019 Key Indicators. https://kdbs.ng/domains/demography/. [28] Liu, J., Beyeler, N., Prach, L.M., Sieverding, M., Isiguzo, C., Nwokolo, E., Anyanti, J. (2015). The Landscape of Patent and Proprietary Medicine Vendors in 16 States of Nigeria. Abuja, Nigeria: Society for Family Health.

[29] Saima Hamid and Rob Stephenson (2006). Provider and Health Facility Influences on Contraceptive Adoption in Urban Pakistan. International Family Planning Perspectives. Vol. 32, No. 2, pp. 71-78. Guttmacher Institute. https://www.jstor.org/stable/4147595.