

Management of Point-of-Care Testing (POCT) Services by Community Pharmacists in Osun State Nigeria

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Abstract

Background: Point-of-care testing (POCT) provides important opportunity for community pharmacists to participate in oriented primary patient care. Effective management of these services is required to deliver their currently- underexploited benefits.

Objectives: Assessed attitudes and practice, examined management functions deployed and identified factors affecting provision of POCTs by community pharmacists.

Methods: A questionnaire-guided cross-sectional survey of 146 randomly-selected community pharmacists was conducted in Osun State Southwestern Nigeria. Study variables were measured on 5-point Likert scales with weighted averages, median scores and ranks used to present item performances. Interquartile ranges were computed to categorize practice scores. Chi square statistic was used to examine association of variables. ANOVA and 2-sample t-test were used to compare means.

Results: A response rate of 94.5% was achieved. Respondents had a positive attitude (MWA 3.75) towards provision of POCTs as core component of their practice (MWA 4.58) with potential to contribute significantly to profitability (MWA 4.31). Respondents' median practice score was 3.01 (moderate practice) with blood pressure screening (4.77), weight measurement (4.45), and blood glucose screening (4.18) as leading POCTs, while cervical cancer screening (1.09) was least practiced. Management of POCTs was fair (MWA 3.33) with organisation of work as pre-eminent domain (MWA 3.66). Management practices were significantly associated with almost all demographic variables ($p < .05$). Positive public perception of pharmacists' roles (MWA 4.31) and their improving clinical skills (MWA 4.01) were the leading enablers while the lack of enabling policy framework (MWA 3.80) and poor health information backbone (MWA 3.78) were major challenges to routine adoption of POCTs by respondents.

Conclusion: The community pharmacists had positive attitude and moderate practice of POCTs. Management of these services was fair. Improving public perception of pharmacists should be exploited while enabling legal and health information systems should be provided to drive routine adoption of POCTs.

Keywords: pharmacy services, point-of-care tests, healthcare technologies, service management, disease prevention.

Introduction

Point-of-Care Testing (POCT) services refer to a rapidly-expanding range of clinical testing services conducted at or close to the site of patient care. POCTs, sometimes called *on-site* or *near-patient tests* are typically performed by trained personnel near the patient, and the results are made available to the patient at the same clinic visit to support clinical decision-making and triage.¹ With rapid advancements in digital technologies, many POCTs are nowadays conducted by individuals with little or no training. When properly conducted, and the results accurately interpreted, POCTs offer a number of important advantages. They are easy to use, require no sample processing or sample transportation to standard laboratories, use minimal volume of sample (mostly a single drop of blood/body fluid), rapid availability of test results, and faster therapeutic intervention enabling improved

patient care.² POCTs contribute to reduced out-patient visits to clinics, improved patient convenience and access to diagnostic services, reduction in misuse and abuse of antimicrobials, optimal use of floor space and professional time of health care providers, among many other benefits.³ However, there is inadequate data regarding how much of these benefits are currently accessed by individuals who need them in many developing health systems.

Over the last decade, the number of diagnostic tests available as POCTs has grown significantly, including non-invasive blood pressure monitoring, blood glucose screening, blood cholesterol tests, HIV screening, urinalysis, chlamydia screening, Covid-19 antigen tests, oxygen saturation tests, peak flow tests for asthma patients, pregnancy tests, malaria screening, staphylococcus screening, ovulation tests, hepatitis B screening, among many others.⁴⁻⁷ Community pharmacists offer a variety of patient-oriented services, including point-of-care tests, beyond their traditional roles in dispensing prescribed medicines.⁸⁻¹² However there are scanty reports of the scope of these POCTs, as well as factors conducive to their optimal deployment within the contextual realities of the practice ecosystem in Nigeria.

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In practice, effective and efficient deployment of POCTs in community pharmacies requires a management approach as the strict quality requirements and clinical validity of test results are not diminished by the convenience and simplicity offered by these technologies.¹³ A systematic approach is imperative for the planning, assessment and comparison of technologies, staff training, establishment of standard operating procedures, documentation, monitoring and evaluation, as well as health, safety and environmental practices associated with these tests.¹⁴

Commissioning a new POCT service in a pharmacy demands a clear understanding of the demand and supply variables associated with the service, and how the interplay of these variables will enhance the attainment of the long and short-term goals of the pharmacy organisation.¹⁵ Though community pharmacists are known to conduct POCTs, the extent of deployment of management functions in these endeavors requires further interrogation.

In conceptualizing the adoption of modern technologies for POCT administration by community pharmacists, the Technology Acceptance Model seems most appropriate in view of its ability to calibrate the fit between technology and user tasks, and the power to predict use, individual intention to perform a behavior and accept technology.¹⁶ The model contends that, subject to certain variables in the external environment, the attitude of community pharmacists towards the adoption of POCT tools (new technologies) will depend on its perceived usefulness and ease of use.

When the community pharmacists develop a positive attitude towards POCTs, there will be a favorable behavioral intention to use, leading to the actual deployment of the technology. This study assessed attitudes and practice of POCTs, examined management functions deployed and identified factors affecting the effective provision of these tests by community pharmacists in Osun State Nigeria.

Methods

Study Design: The study was a cross sectional survey of community-based pharmacists in Osun State, Southwestern Nigeria.

Study Setting: The study was conducted in community pharmacies spread across the 30 Local Government Areas of Osun State, Southwestern Nigeria. The landlocked State sits on 14,875km² of arable land with a population of about 4 million people. There were 201 registered community pharmacists in Osun State as at 31st December, 2022.

Study Participants: The study population comprised the 201 registered community pharmacists in the State while inclusion

in the survey required evidence of current licensure and informed consent to participate.

Sample Size Determination and Sampling Technique

The Taro Yamane formula for sampling finite populations was applied with an overage of 10% of the calculated sample size added to make up for possible non-respondents.¹⁷ Simple random sampling technique was applied to select 146 respondents: First, sequential numbers were assigned to the 201 community pharmacists registered in the database of the Pharmacy Council of Nigeria (PCN) as at 31st December, 2022. Then computer-generated random numbers were used to select 146 out of the 201 names on the list. A combination of physical questionnaires and online versions (Google forms) were administered on selected participants.

Development and Validation of Research Instruments

The questionnaire used to collect primary data for the study was designed in 5 sections. Items were developed from a detailed review of relevant literature.^{3, 9, 10} Section 1 had 6 items that sought information on demographic characteristics of respondents including age, sex, highest educational qualification, length of practice experience, nature of employment, and location of practice.

Section 2 comprised 13 items that examined frequency of practice of POCTs on a 5-point Likert scale ranging from "Never"- never offered the service; "Rarely"- offers the service at least once in several months; "Sometimes"- offers the service at least once every month; "Often"- offers the service at least once every week; to "Always"- offers the service at least once daily.

Section 3 contained 10 attitude items on a 5-point Likert scale ranging from "Strongly agree"- agree in every way; "Agree"- agree to some extent; "Can't say"- not sure; "Disagree"- disagree to some extent; to "Strongly disagree"- disagree in every way.

Section 4 had 16 items that examined frequency of deployment of relevant management practices in providing the POCTs on a 5-point Likert scale ranging from "Never"- never implemented the management function; "Rarely"- deployed the management function at least once in several months; "Sometimes"- deployed the function at least once every month; "Often"-deployed the function at least once every week; to "Always"- deploys the function at least once daily.

Section 5 comprised 11 factors affecting the management of POCTs and responses were measured on a 5-point Likert scale ranging from "Strongly agree"- agree in every way; "Agree"- agree to some extent; "Can't say"- not sure; "Disagree"-

disagree to some extent; to “Strongly disagree”- disagree in every way.

Draft instruments were subjected to the informed scrutiny of 2 senior faculty members with vast experience in community pharmacy practice research. Their comments were used to improve the face and content validity of the instruments. The questionnaire was further administered to 15 community pharmacists who were not part of the main study in a test-retest format (2 weeks apart). The sample size of 15 was chosen because it was up to 10% of the sample size of the main survey.¹⁸ Their responses were used to compute the Cronbach’s alpha reliability coefficient, which was $\alpha \geq 0.80$ for all the sections indicating a high internal consistency.¹⁹

Ethical Considerations

Ethical approval for the study, (Ref No. IPH/OAU/12/2164) was obtained from the Health Research Ethics Committee, Institute of Public Health, Obafemi Awolowo University, Ile-Ife. All participants gave their written informed consents before taking the survey.

Data Collection and Analysis

Four (4) research assistants were recruited and trained on data collection for three days. Physical questionnaires were administered on selected participants at their practice settings while online questionnaires were sent to the emails of those who could not be reached physically. Frequent gentle reminders were sent to all respondents to ensure timely retrieval of questionnaires. Data collection lasted from 1st February to 30th April, 2023.

Completed questionnaires from both streams (physical and online) were merged, sorted, cleaned and analysed using the Statistical Package for the Social Sciences SPSS version 21 for Windows software.²⁰ Categorical demographic data of respondents were analysed using frequency and percentages. Continuous variables were computed using means, medians, and standard deviations.

Attitude scores were analysed by computing the analytical weighted means for each attitude statement while the mid-point 2.5 was adopted as a cut –off point between positive (>2.5) and negative (<2.5) attitudes. The mean of all the mean scores was calculated to present a composite index of the attitudes of respondents towards POCTs.

Scores on practice of POCTs were analysed by computing the analytical weighted means and median scores for each POCT service. The overall mean of means for all the POCT items was computed to present a composite index of the practice of POCTs by respondents. The median scores were used to compute the interquartile ranges which was applied to rank the POCT items into poorly-practiced (Q1), moderately-

practiced (Q2 + Q3), and highly-practiced (Q4) POCT services. Chi square test was applied to examine association of demographic variables with practice of POCTs. Data on management practices were analysed under the three domains of “organisation of work”, “human resource management”, and “service performance management”. Mean scores for the domains were used to rank them while 2-sample t-test was applied to compare means of management practice scores by demographic variables of respondents. Factors affecting the management of POCT services were classified into “enablers” and “challenges” with mean weighted averages computed and used to rank items.

Results

Out of the 146 questionnaires administered to selected community pharmacists, 138 were filled and returned, giving a returning rate of 94.5%. Table 1 shows respondents’ attitude towards the adoption of POCTs, which can generally be described as positive (MWA 3.75).

Table 2 shows that the overall median score for the practice of administering POCTs among respondents was 3.01 (out of a maximum possible score of 5). Based on the interquartile ranges, 3 (23%) of the POCT services were poorly practiced (1st quartile Q1 = 1.295); 3 (23%) of the POCT services were highly practiced (4th quartile Q4 = 3.995); while 7 (54%) of the POCT services were moderately practiced (2nd and 3rd quartile Q2 + Q3: >1.295 and <3.995).

As seen in Table 3, age of respondents, their highest educational qualifications, and length of community pharmacy practice experience had significant associations with their practice of POCTs ($p < .05$). In Table 4, management practices were presented under the three domains and ranked by the mean weighted average scores of the domains. Table 5 displayed the significant associations of demographic variables with the management practice domains.

The factors affecting the management of POCT services were presented in Table 6 as either enablers or challenges, ranked in order of their mean weighted average scores.

Discussion

The high response rate recorded in this study may be attributed to regular polite reminders to respondents, as well as the support of the leadership of Association of Community Pharmacists in the State who used their official channels to promote members’ participation.

The positive attitude of respondents towards adoption of POCTs seems to suggest that more of these services will likely become commonplace in the near future, a trend that holds important benefits for patients and the health system.^{2,3} This optimism is informed by the rapid expansion of healthcare

technologies in most health systems and the finding here that most respondents believed that POCTs should be provided by every community pharmacist and were eager to invest organisational resources and receive training (alongside their staff members) on these emerging technologies.²¹ Trends in miniaturization and digitalization have produced POCT devices that are hand-held and easy to use, attributes which the pharmacists believe will boost their professional images within the community. Moreover, in line with expectations of the Technology Acceptance Model, favorable trends in subjective norms in the external environment, signaled by the notion of improving public awareness and acceptance of the roles of the community pharmacist as a primary health care provider are deemed to be strong drivers of a wider adoption of POCTs.^{12, 16} The positive attitude of respondents reflects similar shifts in many health systems such as Brazil,²² Canada,²³ United States,²⁴ and the United Kingdom.³

The practice of administering POCTs among the community pharmacists can generally be described as moderate, as about half (54%) of the services examined fell within this category while the mean practice score was 2.8 on a scale of 1-5. However, rapid epidemiological transitions in the local populations, occasioned by a rise in the prevalence of important non-communicable diseases (NCDs such as hypertension, diabetes and dyslipidemia), demands a lot more than moderate action in disease prevention and early detection across the entire health services.²⁵ This demand is re-enforced by the rapid depletion of existing stock of health human resources due to migration to advanced health systems in pursuit of better reward for skills.²⁶ It is therefore interesting to find that blood pressure screening, weight measurement and blood glucose screening were the three most prominent POCTs offered by respondents, as these tests make important contributions to interventions meant to address these NCDs. This finding is in tandem with earlier local evidence in Delta State Nigeria.⁸

Respondents' level of educational qualification had significant association with their practice of POCTs ($p < .05$) while most of them were willing to be trained on these technologies (MWA 4.26), which suggest that a systematic approach to improving their competences in the use of POCTs could lead to a widespread deployment of these services. In view of the acute shortages in health workforce,²⁷ what is required for community pharmacists will be a training in, and deployment of the so-called multiparametric POCTs which involve the use of equipment with the capacity to detect multiple biomarkers for different disease conditions in one test using same sample.^{3, 28} As more community pharmacists in both urban and rural settings embrace POCTs, their contribution to providing quality, oriented care will improve leading to reduced medication errors, improved patient safety and

quality care, and reduced inequities in access to healthcare services.

This study found that the nature of employment status of the community pharmacist had significant association with their practice of POCTs ($\chi^2 = 15.366$, $p < .05$). This evidence agrees with the finding from the United Kingdom that pharmacy ownership played a significant role in influencing quality of pharmacy services.²⁹ Strategies to improve the adoption of POCTs by community pharmacists should therefore be directed at those pharmacies and pharmacists with the capacity to make decisions regarding the commissioning and on-going support for the services with clear objectives and criteria for evaluation.

Every community pharmacy is a health care facility as well as a business organisation. This dual orientation presents significant tension between quality patient care and profit generation in commissioning pharmacy services. A management orientation is therefore required for effective and efficient deployment of POCTs.³⁰ In this study, respondents' score for management practices was above average (MWA 3.33). Organisation of work was the most prominent management practice domain indicating that the respondents demonstrated sufficient capacity to plan for appropriate POCT services, match available resources to service requirements, and connect with relevant demographics of potential service consumers.³¹ Though respondents performed fairly well in human resource management (MWA 3.17), the need for a team-based approach to POCTs in community pharmacy requires greater attention. As emphasized in similar studies in Canada,³² and Brazil,²² as well as the General Pharmaceutical Council's "Guidance to ensure a safe and effective pharmacy team" in the United Kingdom,³³ every community pharmacy needs a critical mass of trained workforce to deliver safe and high-quality clinical services to clients. That the scores of management practices were significantly associated with almost all the demographic variables seems to suggest that efforts to improve management of POCT services by the community pharmacists should be individualized and context-specific.

Concerns for consistent quality, safety (for both service provider and consumer), and diagnostic validity of POCTs remain matters of concern for health care policy makers. Addressing these concerns requires that due attention be paid to service performance management. Though respondents' score in this domain is fair (MWA 3.13), there is much room for improvement. For an instance, the respondents performed the least in "conducting surveys to identify POCT services needed by clients". This seems to suggest a disconnect between customer needs (demand) and provider offerings (supply). As seen in studies in Italy,³⁴ and United Arab

Emirates,³⁵ such disparities lead to inefficiencies and poor performance of health services and systems. Moreover, unlike the UK's National Health Service, most developing health systems, including Nigeria, lack policy guidelines for the commissioning and on-going evaluation of POCTs. Individual pharmacist managers therefore need to demonstrate a high level of service performance management competences to deliver the benefits of POCTs while minimizing downstream effects.

The community pharmacist who wants to deploy POCT services needs to recognize certain factors in the practice ecosystem. Previous studies by the authors have identified the improving public awareness and acceptance of the pharmacist as a health care provider as an important enabler of their successful participation in primary patient care.^{12, 36} This study re-enforces these findings. While respondents reported that their clients were willing to pay (out of pocket) for POCTs, the recent enactment of the National Health Insurance Authority Act in Nigeria is expected further drive a more widespread adoption of these services.³⁷ However, the need for an enabling legal framework to guide pharmacists' provision of POCTs remains pre-eminent. This finding is significant given the rising global interest in consumer protection and patient safety in the provision of health services.^{38, 39} In addition, the impact of absence of a robust health information system can be seen in the lack of uniform documentation format for clinical interventions by the community pharmacists. Overcoming this important challenge will require substantial investment of resources by government alongside policy reforms.

Conclusion

The community pharmacists exhibited a positive attitude towards the provision of POCTs. The most prominent POCTs offered were blood pressure screening, weight measurement and blood glucose screening but least of cervical cancer screening. Management of these services was fair with organisation of work being pre-eminent. Improving public perception of the pharmacist and their clinical skills were the most commonly perceived enablers while lack of enabling legal framework and health information system were the most commonly perceived challenges to widespread adoption of POCTs among the respondents.

Limitations of the Study

This study did not examine customer perspectives of POCTs offered by community pharmacists. This would have provided information to address disparities in supply-demand dynamics as a guide to service optimization. Only one State (out of a total of 36) in Nigeria was surveyed, making it difficult to generalize for the entire country. Moreover, this study employed a cross-sectional design; hence it is difficult to establish causal relationships.

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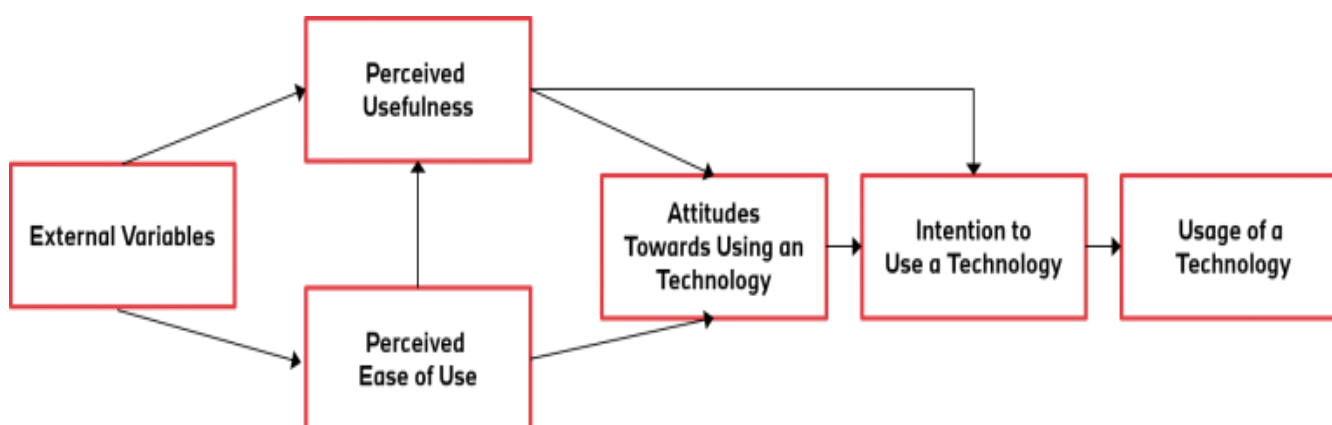


Figure 1: Technology Acceptance Model. Reprinted with permission from Davies

Table 1: Attitudes of Community Pharmacists towards Point-of -Care Testing Services. (N=138)

S/N	Attitudes	Responses F (%)					MWA	Rank
		Strongly Disagree	Disagree	Cannot Say	Agree	Strongly Agree		
1.	POCTs are an important aspect of community practice	2(1.4)	0(0)	6(4.3)	38(27.5)	92(66.8)	4.58	1
2.	POCTs are profitable to the pharmacy as a business	2(1.4)	4(2.9)	17(12.3)	71(51.4)	44(31.9)	4.31	2
3.	I am willing to be trained on POCT services	0(0)	2(1.4)	4(2.9)	92(66.7)	40(29.0)	4.26	3
4.	I think it is good to publicize available POCTs to clients	4(2.9)	2(1.4)	13(9.4)	61(44.2)	58(42.0)	4.24	4.5
5.	I am willing to train my staff members on POCTs	0(0)	2(1.4)	6(4.3)	86(62.3)	44(31.9)	4.24	4.5
6.	I am willing to invest resources to acquire gadgets for POCTs	0(0)	2(1.4)	12(8.7)	84(60.9)	40(29.0)	4.17	6
7.	POCT services will boost the professional image of my pharmacy	0(0)	2(1.4)	29(21.0)	59(42.8)	48(34.8)	4.11	7
8.	Every Community Pharmacy should provide POCTs	0(0)	8(5.8)	34(24.6)	36(40.6)	40(29.0)	3.35	8
9.	POCT services can only add to the cost of running a pharmacy	25(18.1)	52(37.7)	36(26.1)	25(18.1)	0(0)	2.44	9
10.	The Nigeria market is not suitable for pharmacy-based POCTs	51(37.0)	67(48.6)	8(5.8)	8(5.8)	4(2.9)	1.83	10
Mean of Means							3.75	

Abbreviation: MWA = Mean Weighted Average

Table 2: Practice of Point-of-Care Tests (POCT) by Community Pharmacists (N = 138)

S/N	Point of Care Tests	Responses, F (%)					MWA	Median	Rank
		Never	Rarely	Sometimes	Often	Always			
1	Blood Pressure screening	1(1.0)	2(1.4)	7(5.1)	34(24.5)	94(68.1)	4.58	4.77	1
2	Weight measurement	0(0)	2(2.2)	13(9.4)	56(40.6)	66(47.8)	4.31	4.45	2
3	Blood Glucose screening	4(2.9)	4(2.9)	15(10.9)	67(48.6)	48(34.8)	4.09	4.18	3
4	Temperature measurement	4(2.9)	25(18.1)	29(21.0)	34(24.6)	46(33.3)	3.67	3.81	4
5	Pregnancy Test	13(9.4)	27(19.6)	33(23.9)	38(27.5)	27(19.6)	3.28	3.37	5
6	Malaria screening	20(14.3)	25(18.1)	34(24.1)	29(21.0)	31(22.5)	3.20	3.20	6
7	Body Mass Index assessment	17(12.3)	25(19.2)	52(37.2)	31(22.1)	13(9.2)	2.99	3.01	7
8	Ovulation Test	56(40.5)	46(33.3)	27(19.6)	6(4.3)	3(2.2)	1.94	1.77	8
9	HIV screening	66(47.8)	21(15.2)	27(19.6)	14(10.1)	10(7.2)	2.14	1.63	9
10	Hepatitis B virus screening	84(60.9)	25(18.1)	22(15.9)	4(2.9)	3(2.2)	1.67	1.31	10
11	Full Blood count screening	87(63.0)	23(16.7)	14(10.1)	14(10.1)	0(0)	1.67	1.28	11
12	Blood Cholesterol measurement	88(63.8)	29(21.0)	13(9.4)	8(5.8)	0(0)	1.57	1.27	12
13	Cervical cancer screening	115(83.3)	14(10.1)	7(5.1%)	2(1.4)	0(0)	1.24	1.09	13

Mean of Means = 2.80; Overall Median Practice Score = 3.01; MWA: mean weighted average

Table 3: Association of Demographic Variables with Practice of POCT Services (N = 138)

Variables	Poor Practice F (%)	Moderate Practice F (%)	High Practice F (%)	χ^2	P. Value
Gender					
Male	16(26.3)	33(54.1)	12(19.7)	3.230	.19896
Female	22(28.6)	48(62.3)	7(9.1)		
Age (years)					
Below 30	9(15.0)	39(65.0)	12(20.0)	2.348	.88507
30-39	12(24.0)	30(60.0)	8(16.0)		
40-49	5(25.0)	11(55.0)	4(20.0)		
50 and above	2(25.0)	4(50.0)	2(25.0)		
Highest Educational Qualification					
B.Pharm./Pharm.D.	32(52.5)	21(34.4)	8(13.1)	18.724	.00466*
M.Sc./M.Pharm.	10(21.3)	24(51.1)	13(27.7)		
FPCPharm.	9(32.1)	7(25.0)	12(42.9)		
Ph.D.	1(50.0)	1(50.0)	0(0.0)		
Length of Community Pharmacy Experience (Years)					
Below 10	12(20.0)	37(61.7)	11(18.3)	11.824	.06600
10 - 19	18(34.6)	29(55.8)	5(9.6)		
20 - 29	7(50.0)	3(21.4)	4(28.6)		
30 and above	2(16.7)	7(58.3)	3(25.0)		
Nature of Employment					
Owner/Manager	12(22.6)	32(60.4)	9(17.0)	15.366	.01759*
Superintendent RPh	24(45.3)	13(24.5)	16(30.2)		
Full-time RPh	2(25.0)	5(62.5)	1(12.5)		
Part-time RPh	7(29.2)	12(50.0)	5(20.8)		
Location of Practice					
Urban	41(33.9)	66(54.5)	14(11.6)	1.178	.55479
Rural	7(41.2)	7(41.2)	3(17.6)		

Table 4: Item Performance by Domains of Management Practices for POCT Services (N = 138)

S/N	Management Practice Domains	MWA	SD	Rank
Organisation of Work for POCTs				
1	Acquiring necessary equipment to conduct POCT	3.84	.311	
2	Scheduling follow-up counselling on POCT results	3.83	.421	
3	Acquiring Health Education Aids to communicate POCT results	3.78	.104	
4	Designing floor space to provide privacy for POCT services	3.60	.221	
5	Publicizing available POCT services to recruit clients	2.25	.376	
	Mean of Means	3.66	.287	1st
Human Resources Management for POCTs				
6	Training staff members on POCT services	3.46	.453	
7	Designating a staff to coordinate POCT services	3.40	.398	
8	Training staff on use of Health Education Aids to communicate POCT results	3.30	.202	
9	Rewarding staff for performing POCT services	3.04	.311	
10	Hiring staff who can perform POCT services	2.91	.129	
11	Including POCT services as index for staff performance appraisal	2.90	.427	
	Mean of Means	3.17	.320	2nd
POCT Service Performance Management				
12	Establishing pricing templates for different POCT services	3.47	.287	
13	Establishing documentation templates for POCT services	3.43	.311	
14	Developing standard operating procedures for POCTs	3.05	.432	
15	Preparing budgetary allocation for POCT services	2.92	.211	
16	Conducting surveys to identify POCT services needed in the community	2.78	.587	
	Mean of Means	3.13	.366	3rd

Table 5: Association of Demographic Variables with POCT Service Management Domains (N = 138)

Demographics Variables	Freq (%)	Organisation of Work for POCTs			Human Resource Management for POCTs			POCT Service Performance Management		
		Mean ± SD	t/f	P value	Mean ± SD	t/f	P value	Mean ± SD	t/f	P value
Gender										
Male	61(44.2)	3.52±.211	8.192β	.015*	2.98±.301	8.237β	.014*	3.11±.011	8.257β	.014*
Female	77(55.8)	3.40±.347			3.21±.220			2.74±.222		
Age (Years)										
Below 30	60(43.5)	2.94±.929			3.11±.234			2.99±.278		
30-39	50(36.2)	3.75±.711	6.413	.045*	3.23±.311	6.584	.043*	2.84±.465	6.577	.043*
40-49	20(14.5)	3.62±.612			2.98±.322			3.41±.322		
50 and above	8(5.8)	3.51±.411			2.87±.411			3.01±.101		
Highest Educational Qualification										
B.Pharm./Pharm.D.	61(44.2)	3.77±.311			3.46±.011			3.01±.276		
M.Sc./M.Pharm.	47(34.1)	3.19±.988	6.008	.050*	3.11±.121	6.128	.481	3.34±.121	6.092	.049*
FPCPharm.	28(20.3)	3.84±.101			2.72±.376			2.97±.786		
Ph.D.	2(1.4)	2.11±.211			2.42±.311			2.77±.544		
Length of Community Pharmacy Experience (Years)										
Below 10	60(43.5)	3.79±.177			2.90±.222			3.48±.011		
10 - 19	52(37.7)	3.81±.287	6.115	.048*	3.12±.323	6.303	.046*	2.78±.277	6.287	.046*
20 – 29	14(10.1)	3.45±.211			2.98±.277			3.12±.322		
30 and above	12(8.7)	3.03±.411			3.41±.229			2.97±.211		
Nature of Employment										
Business Owner/Manager	53(38.4)	3.88±.123			2.98±.867			3.01±.176		
Superintendent Pharmacist	53(38.4)	3.12±.341	7.827	.031*	3.10±.211	7.918	.306	2.98±.211	7.900	.231
Full-time Pharmacist	8(5.8)	2.98±.189			2.79±.789			3.41±.159		
Part-time Pharmacist	24(17.4)	3.01±.378			3.41±.233			3.02±.211		
Location of Practice										
Urban	121(87.7)	3.78±.101	1.255β	.330	3.11±.211	1.264β	.334	2.98±.278	1.268β	.332
Rural	17(12.3)	3.69±.376			3.43±.344			3.12±.311		

B- Values obtained using 2-sample t-test, Others obtained using ANOVA; * significance; SD – Standard Deviation

Table 6: Factors Affecting the Management of Point-of-Care Services in Community Pharmacies (N = 138)

S/N	Factors	Responses F (%)					MWA	Rank
		Strongly Disagree	Disagree	Cannot Say	Agree	Strongly Agree		
Enablers								
1	Improving public awareness on the roles of community pharmacist	2(1.4)	4(2.9)	5(3.6)	65(47.1)	62(44.9)	4.31	1
2	Improvement in pharmacists' clinical skills	2(1.4)	11(8.0)	8(6.0)	80(58.0)	37(26.6)	4.01	2
3	Willingness of consumers to pay for point of care services	6(4.3)	13(9.4)	13(9.4)	65(47.1)	41(29.7)	3.88	3
Challenges								
4	Lack of enabling laws protecting pharmacists' provision of point of care services	6(4.3)	14(10.1)	18(13.0)	64(46.4)	36(26.1)	3.80	1
5	Lack of format of documentation of pharmacist-patient interaction	10(7.2)	21(15.2)	20(14.5)	25(18.1)	62(44.9)	3.78	2
6	The cost of the equipment required to carry out the services	3(2.2)	29(21.0)	14(10.1)	71(51.4)	21(15.2)	3.60	3
7	Poor health care financing mechanisms for point of care services	6(4.3)	21(15.2)	24(17.4)	65(47.1)	22(16.0)	3.55	4
8	Inadequate demand pull for the POC services	7(5.1)	18(13.0)	36(26.1)	60(43.5)	17(12.3)	3.45	5
9	Poor public perceptions of pharmacists' roles	13(9.4)	27(20.0)	15(10.9)	61(44.2)	22(15.5)	3.38	6
10	Insufficient time to provide POC services in a busy pharmacy	17(12.3)	24(17.4)	20(14.5)	49(35.5)	28(20.3)	3.34	7
11	Poor technological environment to support point of care services	16(11.6)	24(17.4)	27(19.6)	53(38.4)	18(13.0)	3.24	8

MWA = Mean Weighted Average