

- Journal of Business and Social Research, IJBSR. 2013; 3 (8) 75-87
11. Kumurya A. S. Supply chain management of health medicines and logistics: Fundamental components of booming medical laboratory services. *European Journal of Logistics, Purchasing and Supply Chain Management*. 2015; 3 (4): 62-72
 12. Riungu J. M. Managing health supply chains in Africa [Internet]. Nairobi: Africa Christian Health Associations platform; 2010 [Cited 2016 April 15]. Available from: <http://africachap.org/en/news-and-events/>
 13. Ministry of Health. Nakuru County health at a glance [Internet]. Kenya: Ministry of Health ; 2015 [Updated 2015 May; Cited 2016 April 15]. Available from: <http://www.healthpolicyproject.com/pubs/291/Nakuru%20County-FINAL.pdf>
 14. Nakuru County Health Management Information System
 15. Ojaka D, Olango S, Jarvis J. Factors affecting motivation and retention of primary health care workers in three disparate regions in Kenya. *Human Resources for Health* [Internet]. 2014 [Cited 2016 April 16]; 12 (33). doi: 10.1186/1478-4491-12-33. Available from: <http://human-resources-health.biomedcentral.com/articles/10.1186/1478-4491-12-33>
 16. Muthama B M, Okero D C, Mwangi E M. Management of medicines for nursing services during labor and delivery: A case of Mbagathi Hospital, Nairobi County, Kenya. *The Journal of Global Health Care System* [Internet]. 2015 [Cited 2016 Apr 16]; 5 (2). Available from: jghcs.info/index.php/j/article/download/406/353
 17. Kiambati H, Kiio C, Toweett J. Understanding the Labour Market of Human Resources for Health in Kenya [Internet]. Geneva: WHO; 2013 [Cited 2016 April 15]. Available from: http://www.who.int/hrh/tools/labour_market/en/
 18. Mujasi P, Martin K. Uganda National Tuberculosis Logistics System Assessment Tool [Internet]. Arlington, Va: USAID | DELIVER PROJECT, Task Order 1; 2009 [Cited 2016 Apr 16]. Available from: http://deliver.jsi.com/dlvr_content/resources/allpubs/countryreports/UG_NatiT-BLogiSystLSAT.pdf
 19. MSH/HCSM. Management Sciences for Health /Health Medicines and Services Management Program (MSH/HCSM) Quarterly Progress Report: 1st October – 31st December 2013 [Internet]. Nairobi, Kenya: USAID; 2014 [Cited 2016 Apr 16]. Available from http://pdf.usaid.gov/pdf_docs/PA00K672.pdf
 20. USAID | DELIVER, Task Order 1. The logistics handbook: A practical guide for the supply chain management of health medicines [Internet]. Arlington VA: USAID | DELIVER PROJECT; 2011 [Cited 2016 Apr 16]. Available from: <http://apps.who.int/medicinedocs/documents/s20211en/s20211en.pdf>
 21. Jamison D T, Breman J G, Measham A R, Alleyne G, Claeson M, Evans D B, et al. Disease control priorities in developing countries. 2nd ed [Internet]. Newyork: Oxford University Press; 2006 [Cited 2016 Apr 16]. Available from: <http://www.who.int/management/referralhospitals.pdf>
 22. Asiiimwe C, Gelvin D, Lee E, Amor Y B, Quinto E, Katureebe C, et al. Use of an innovative, affordable, and open-source short message service-based tool to monitor Malaria in remote areas of Uganda. *Am J Trop Med Hyg* [Internet]. 2011 [Cited 2016 Apr 16]; 85 (1): 26–33. Available from: <http://www.ajtmh.org/content/85/1/26.short>
 23. Mkoka D A, Goicolea I, Kiwara A, Mwangi M, Hurtig A K. Availability of drugs and medical supplies for emergency obstetric care: Experience of health facility managers in a rural district of Tanzania. *BMC Pregnancy Childbirth* [Internet]. 2014 [Cited 2016 Apr 16]; 14(108). Available from: <http://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/1471-2393-14-108>

The Qualification Statuses of Community Pharmacy Managers in Nairobi County, Kenya

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Abstract

The aim of this study was to determine the proportion of qualified community pharmacy managers. The indicators for qualification included pharmacy training, registration with the Pharmacy Board, professional body affiliation and continuous medical education. It was executed in Nairobi County. Twenty six electoral wards were selected randomly. Mapping of the selected clusters yielded a study sample of

477 community pharmacies. A self-administered, structured questionnaire in English was administered to the pharmacy managers.

The response rate was 57.4% with roughly half below 30 years of age while 93% were below 45 years of age. Slightly over half of the respondents were males while the rest were female. Over 62% had diploma level education while 18.6% were degree holders. About 19% had either post-secondary

certificates or were secondary school leavers. About two thirds had pharmacy experience ranging 0-5 years while 29% had 6-10 years' experience. Only 4.7% had over 10 years' experience. The majority of respondents (92.3%) had some form of pharmacy training. Out of these, 16% had a pharmacy degree, 68% diploma and 16% pharmacy certificates. This means only 75% of respondents had acceptable qualifications (pharmacy degree or diploma). Similarly, 77% had Pharmacy and Poisons Board registration. About 70% belonged to professional bodies while 73% regularly attended continuous medical education. Of those affiliated to professional bodies, 28% were affiliated to the Pharmaceutical Society of Kenya, 68% to Kenya Pharmaceutical Association and about 4% belonged to other professional bodies.

The majority of community pharmacy managers met the qualification criteria. However, about 25% did not meet the minimum acceptable level of training, and were therefore not licensed by the regulator. This situation raises concern given the sensitivity of the position. It is recommended that pharmacists and pharmaceutical technologists should combine forces with the regulatory authority to eliminate illegal operators.

Keywords: *Highest level of education, pharmacy training status, qualification, regulatory approval, professional body membership, continuous medical education.*

Introduction

According to Rakesh and Kumar, the term "community pharmacy (CP)" includes all those establishments that are privately owned and whose function, to varying degrees, is to serve societies' needs for both drug products and pharmaceutical services [1]. Pharmaceutical services include counselling of patients on proper medicine use, providing drug information to other health professionals, patients and the communities, and participation in health promotion programmes [2]. The community pharmacist is said to be most accessible to the public among health professionals while the CP is often the first point of entry into the healthcare system [2].

In Kenya, the CP sector faces several challenges. One is the mushrooming of unlicensed pharmacies. Illegal drug outlets are said to outnumber legal CPs especially in rural areas [4]. Another challenge which affects the pharmaceutical sector in general is counterfeiting. Consignments of counterfeit products have been intercepted in various ports of entry and widely reported in the media. Related to this is the illegal importation of unregistered pharmaceuticals of unknown quality. Stolen drugs including government stock have also been reportedly seized in some CPs.

The focus of this paper is to determine the levels of qualification of persons responsible for the management of CPs. In Tanzania, a cross sectional survey found that pharmacists accounted for only 8% of medicine dispensers in CPs [5], while 23% were pharmaceutical technologists. The rest consisted of clinical officers (15%), nurses (27%)

and school leavers (27%). A different survey depicted a more desperate situation in Pakistan. Almost half of CP attendants (45%) were said to be at various stages of secondary school. Only 9.5% had a pharmacy degree while another 16% had undergone a dispensing course [6]. In contrast, practically 100% of CP managers in Saudi Arabia were educated to degree level, according to a cross sectional survey. The qualifications included Bachelor of Pharmacy (B. Pharm), Doctor of Pharmacy (Pharm. D), Master of Science (MSc) and Doctor of Philosophy (PhD)[7].

To practice pharmacy legally in Kenya, one must be duly registered with the Pharmacy and Poisons Board (PPB). The Board licences pharmacists (pharmacy degree holders) and pharmaceutical technologists (pharmacy diploma holders) to superintend CPs. However, unlicensed drug shops operating under unqualified personnel are said to be common in Kenya, particularly in rural areas [4]. According to the Global Pharmacy Workforce Report [8], the training of pharmaceutical technologists in Kenya started in 1968. This was meant to complement the low numbers of pharmacists at the time, according to the Private Sector Innovation Programme for Health [9]. On the other hand, training of pharmacists started in 1974 [8]. At the time of this study, there were six Kenyan universities accredited to train pharmacists compared to 25 colleges approved to train pharmaceutical technologists, according to the PPB website [10].

Pharmaceutical technologists are not licensed to superintend distribution business [9], a factor that tends to concentrate them in CPs. The effect of economic immigration of pharmacists is another factor that can affect the composition of CP technical staff. It was estimated that about twenty pharmacists applied for immigration annually to practice in Australia, Canada, US and UK [8]. It is against this background that this survey was carried out.

Objectives

The principal objective was to determine the levels of qualification of community pharmacy managers in Nairobi County. The specific objectives are as follows.

1. To determine the socio-demographic characteristics of community pharmacy managers including age, sex, level of formal education, pharmacy experience and extent of pharmacy ownership.
2. To determine the level of qualification of community pharmacy managers in terms of training status, PPB registration status, professional body membership status and CME attendance status.

Methodology

This study design is a cross-sectional survey. The main variables were highest level of education, pharmacy training status, PPB registration status, professional body membership status and continuing medical education (CME) attendance status. Other variables included age category, sex, pharmacy experience and extent of pharmacy ownership.

The study was undertaken in Nairobi County, the capital city of Kenya. Electorally, Nairobi County is subdivided into 85 wards. This information was obtained from the Independent Electoral and Boundaries Commission (IEBC) website [11]. The study population was defined as managers of CPs located within Nairobi County. For the purposes of this study, a pharmacy manager was the person responsible for the technical management of the pharmacy. Each community pharmacy constituted one unit of the study population.

The calculated sample size was 332. Simple two-stage cluster sampling method was applied. The primary sampling unit (PSU) or cluster was an electoral ward. By perusing data available in the PPB website, it was estimated that Nairobi had roughly 1100 CPs. This figure was used to estimate the minimum number of secondary sampling units (SSUs) required for the calculated sample size. The calculation yielded 26 PSUs which were then selected using simple random sampling aided by Microsoft excel programme. Since a comprehensive sampling frame was not available, mapping was done to obtain the full list of SSUs in the 26 selected PSUs. This yielded a total of 477 SSUs which formed the final study sample. The second stage of sampling was not undertaken. It was felt that the number of SSUs was not big enough to warrant further selection in light of the pilot test which had produced a response rate of about 60%.

Only CPs providing services directly to the community and located within the boundaries of Nairobi County were included. A CP was excluded if the manager was unwilling or unavailable to take part in the study or the CP was closed during the data collection period.

Data were analyzed using the Statistical Product and Service Solutions (SPSS) version 22 and presented using tables, figures and statements. The pilot test was carried out in Korogocho and Kawangware wards prior to the actual data collection. These wards were not included in the final sample of PSUs. Apart from pre-testing the questionnaire, it also helped estimate the length of time required for the actual data collection. Both the questionnaire and method of analysis were found suitable after taking the trial data through analysis. The data collection tool was a self-administered, structured questionnaire in English language. Quality control measures included training of the research assistants, supervision and proof-reading of completed questionnaires.

This study was non-clinical. The participants were not exposed to any risk of harm. Secondly, participants were allowed to choose freely to take part or not without coercion or inducement. They were informed of their right to withdraw at any stage without incurring any consequences. Potential participants were fully informed of the title, objectives and expected benefits of the study. Only participants who signed the informed consent form were included in the study. Strict confidentiality and anonymity of the data was maintained. The study findings are expected to be beneficial to the industry, the regulator and the community by describing the competence of managers in charge of CPs which may necessitate corrective measures.

The mapping and data collection activities faced some challenges. One is the failure of some CPs to display their

names. Secondly, some pharmacy names were common to several pharmacies making it difficult to distinguish between them. Some CPs could not participate because managers were unavailable, declined to take part, or their pharmacies were closed during data collection. More closures were observed in some areas relative to others, a factor which may introduce selection bias. This study was carried out in Nairobi County. It would be inappropriate to generalize the findings to other counties in the absence of empirical data.

Results

All computations were based on 95% level of confidence. The response rate was 57.4%.

Socio-demographic Characteristics of the Respondents

Respondents' background information included age category, sex, highest level of schooling, pharmacy working experience, and pharmacy business ownership status. Almost half of the respondents (49.3%) were aged below 30 years while another 43.8% were aged between 30 and 44 years. Only 7% were above 44 years of age. The difference in proportions was statistically significant at $p=0.000$. Slightly over half of the respondents (53%) were male while the rest were female ($p=0.004$).

Over 62% of respondents had schooled up to diploma level while degree holders among the respondents were only 18.6% (Fig.1). The remaining 19% had levels of education lower than diploma ($p=0.000$). About 19.7% of respondents had less than 2 years' experience while 46% had between 2 and 5 years. Thus the proportion of respondents with up to 5 years pharmacy experience was almost two thirds (65.7%). Those with 6 to 10 years' experience represented 29.2% of respondents while those with experience over ten years were 4.7% (Fig.1). The difference in proportions was statistically significant at $p=0.000$.

Out of 272 respondents, 20.2% were owners of the pharmacies in which they worked. A further 18.8% were in partnership while 64% were employees (Fig. 1). The difference in proportions was statistically significant at $p=0.000$.

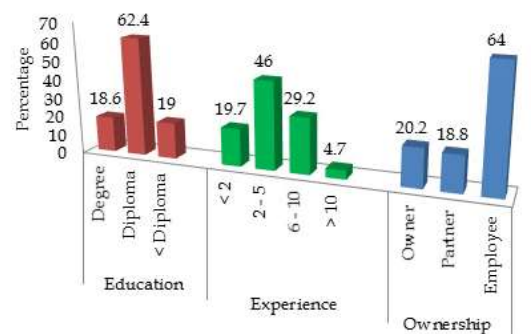


Figure 1. Distribution of respondents by level of education ($n=270$), pharmacy experience in years ($n=274$) and pharmacy ownership status ($n=272$)

Qualification of Community Pharmacy Managers

The four indicators for manager qualification were pharmacy

training, Pharmacy and Poisons Board registration, professional body membership and continuous medical education attendance. The distribution of respondents according to the main qualification factors is summarized on table 1. Out of 272 respondents, 92.3% had some form of pharmacy training while 7.7% had none ($p=0.000$). Of those with pharmacy training, 16% were pharmacy degree holders, 68% were pharmacy diploma holders while another 16% were pharmacy certificate holders. A certificate in pharmacy is not legally recognized, hence the proportion of respondents qualified to legally run a pharmacy was 77.3% ($p=0.000$).

Table 1: Distribution of respondents according to the main qualification criteria

Qualification Criterion	Response		P value
	Yes (%)	No (%)	
Pharmacy Training (n=272)	92.3	7.7	0.000
PPB Registration (n=267)	77.2	22.8	0.000
Professional Body (n=264)	69.7	30.3	0.000
CME Attendance (n=268)	72.8	27.2	0.000

The majority of respondents (77.2%) had PPB registration compared with 22.8% who were not registered ($p=0.000$). Out of the 264 respondents, 184 (69.7%) belonged to a professional body while 80 (30.3%) did not ($p=0.000$). About 72.8% of respondents regularly attended CME. The remaining 27.2% of respondents did not regularly attend CME ($p=0.000$). Of those affiliated to professional bodies, PSK members were 52 (28.3%), Kenya Pharmaceutical Association (KPA) members were 125 (67.9%), and 7 respondents (3.8%) belonged to other professional bodies (Fig. 2).

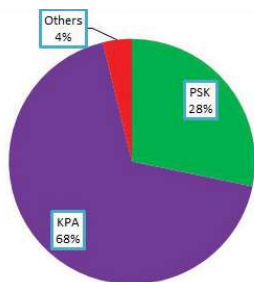


Figure 2. Distribution of respondents by professional body affiliation (n=184)

The results indicate that the majority of CP managers in Nairobi County were adequately qualified to superintend CPs going by the criteria evaluated. However, the proportion of unlicensed CP managers was significant when viewed against the sensitive nature of their role. A significant finding is the domination of CP management by pharmaceutical technologists in comparison to pharmacists.

Discussion

The demographic characteristics of the respondents show that the majority of CP managers were young and fairly inexperienced. This could imply that many pharmacy professionals work in the sector after completing their

training and later transit to other sectors. The fact that 64% were employees with no permanent attachment to their CPs is consistent with this inference. It is easier to get a job in CP since CPs are numerous. However, career progression is better defined in sectors such as industrial pharmacy, hospitals, NGOs and academia. This raises the profile of positions in these sectors as compared to CPs. Also, the numbers leaving colleges and universities have risen over the years gradually outnumbering the older lot. The import of the foregoing is that the sector is denied experienced professionals who would be expected to render higher quality services to the community.

The proportion of managers with the relevant professional training was 77%, meaning 23% of CP managers were not trained for the role. The CP manager makes important decisions that affect the health of individuals and families. Among the roles they play is prescription processing, advising on appropriate drug use, treatment of uncomplicated ailments, extemporaneous preparations and providing information to other healthcare professionals as well as the public. It is therefore a serious shortcoming when nearly a quarter of those playing this role are not appropriately trained. In Tanzania, only 31% of medicine dispensers in Dar-es-Salaam CPs had the relevant training i.e. pharmacists and pharmaceutical technologists [5]. However, the difference in study populations and long time lapse mean that direct comparison with the current study is inappropriate.

In Pakistan, 55% of CP attendants had only secondary school education while only 9.5% were educated to degree level [6]. However, it is noted that the study populations were differently defined in both cases. Elsewhere in Saudi Arabia, the majority of CP managers were highly qualified. A huge percentage (96%) of community pharmacists had a Bachelor of Science degree; over 2% had Doctor of Pharmacy (Pharm. D), over 1% Master of Science and about 0.6% had Doctor of Philosophy degrees [7]. These comparisons suggest that poor countries are more likely to have higher percentages of unqualified CP managers compared to richer countries. According to World Bank data for the period 2011-2015, the gross domestic product (GDP) per capita for Saudi Arabia is almost 18 times that of Kenya [12]. Considering that pharmacy practice imparts directly on human health, it is fair to state that the current situation in Nairobi County is far from ideal.

At face value, the finding that 77% of respondents were registered with PPB looks satisfactory. However, the fact that 23% of CP managers were operating illegally is grave due to the reasons stated above. Any mistakes made due to incompetence may result in severe complications or even death. This finding seems inconsistent with existing literature which reported a high incidence of informal CPs in Kenya, particularly in rural areas [9]. In fact unlicensed pharmacies were said to outnumber licensed ones in the rural areas [4] although no empirical evidence was cited. Although many illegal operators are occasionally arrested and their stocks confiscated, such operations have not been frequent enough. It will take more than sporadic raids and arrests to effectively deal with the problem.

Nairobi County is mainly urban and hosts the PPB headquarters. This fact might have made enforcement of regulations easier than in other rural counties, which may explain the high percentage of CP managers registered with PPB. However, Nairobi also hosts some of the biggest slums in the region some with very poor accessibility. It is likely that unlicensed pharmacy managers (or managers of illegal pharmacies) were more likely to avoid taking part in the study as they treated any strangers with suspicion due to fear of being nabbed by PPB inspectors. It is a fact that some CP workers closed shop or just took off on sighting a data collector, especially the male research assistants. It was assumed that they were being mistaken for the dreaded PPB inspectors.

The proportion of respondents who were members of professional bodies was 70%. One of the main advantages of joining a professional body is keeping in touch with new developments in the profession through CMEs and regular communication. A good example is product recall which besides press announcements, would also be channelled through PSK and KPA. The members also get to share information through regular interactions. The effect is improved services to the communities. It is not surprising that the proportion of those subscribing to the professional bodies was comparable to the proportion of those regularly attending CME (73%) since professional bodies usually facilitate CME. In fact 87% of those with membership to professional bodies regularly attended CME compared to 40.5% of those who were not members of professional bodies. The PPB requires proof of membership to a professional body prior to initial registration and annual licensing of both pharmacists and pharmaceutical technologists.

The apparent domination of CP management by pharmaceutical technologists can be attributed to several factors. As mentioned in the introduction, their training not only started earlier than that of pharmacists but is also on a much larger scale. Again as already alluded to, pharmaceutical technologists are not licensed to manage distribution business, meaning the pharmacists available are spread thin. The effect of economic immigration is also a contributing factor. The number of pharmacists leaving universities cannot match the rate of growth of the CP sector. The CP will be largely the domain of pharmaceutical technologists in the foreseeable future. This is not necessarily a bad thing since pharmaceutical technologists are specifically trained to dispense pharmaceuticals. However, it would be desirable to increase the numbers of highly trained graduates to improve services, as is the case in countries such as Saudi Arabia.

Conclusions and Recommendations

Although the majority of CP managers were qualified in terms of the defined criteria, the proportion of the unqualified is still unacceptably high. It is difficult for the PPB as presently structured to deal with the problem effectively since it requires sustained policing of both the illegal pharmacies and their suppliers. Suppliers to illegal outlets are usually legitimate but unethical operators. It is

therefore recommended that both pharmacists and pharmaceutical technologists, through PSK and KPA respectively, should combine forces to smoke out illegal operators. The professionals need to defend their own profession and the public good by collaborating and joining forces to lock out quacks.

Relatively young and fairly inexperienced persons are the ones commonly in charge of CPs. This is despite the person having to make weighty decisions affecting the consumer's health. Any measures that can make the CP sector more attractive should be explored. It may be useful to rethink the design of the pharmacy to remove the "shop" mindset. A more professional look with more emphasis on services rather than goods may help.

References

1. Rakesh S, Kumar, RA. A Text Book of Community Pharmacy Practice. 2012; (1) 1-13.
2. World Health Organization [Internet] World Health Organization. Available from: <http://apps.who.int/medicinedocs/en/d/Jh2995e/1.6.2.html#Jh2995e.1.6.2>.
3. Wafula, F. Availability and Dispensing Practices for Antimalarials and Antimicrobials in Western Kenyan Pharmacies. *Pharmaceutical Regulatory Affairs*. 2013; 2(1) 106. doi:10.4172/2167-7689.1000106
4. Mugoyela V, Ally S. The quality of pharmaceutical practice among dispensers in private pharmacies: a case study in Dar es Salaam, Tanzania. *East and Central African Journal of Pharmaceutical Science*. 2002; 5(2) 24-27.
5. Aslam N, Bushra R, Khan MU. Community Pharmacy Practice in Pakistan. *Archives of Pharmacy Practice*. 2012; 3(4) 297-302.
6. Khojah HMJ, Pallos H, Tsuboi H, Yoshida N, Abou-Auda HS, Kimura K. Adherence of Community Pharmacies in Riyadh, Saudi Arabia, to Optimal Conditions for Keeping and Selling Good-Quality Medicines. *Pharmacology and Pharmacy*. 2013; (4) 431-437.
7. Thoithi GN, Okalebo FA. Country Case Study: Kenya. 2009 FIP Global Pharmacy Workforce Report. 2009; 49-53.
8. PSP4H. Overview of Experiences in Pharmaceutical Supply Chain: Implications for the Poor in Kenya. 2014. Available from <http://www.psp4h.com>.
9. Pharmacy and Poisons Board. [Internet] Nairobi: Pharmacy and Poisons Board. [cited 2013 October 16] Available from: <http://pharmacyboardkenya.org/?p=528>.
10. IEBC: Final Report of Boundaries of Constituencies and Wards [Internet] (available at <http://www.cmd-kenya.org/files/IEBC-Final-Report-of-Boundaries-of-Constituencies-and-Wards.pdf>)
11. World Bank [Internet] World Bank. [cited 2016 March 8] Available from; <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>