

# Intern pharmacists' perceived preparedness for practice, their extent of involvement in pharmacy related activities and future career choices in Sierra Leone: A baseline descriptive survey

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## Abstract

**Objective:** To assess intern pharmacists' perceived preparedness for practice, document the extent of their involvement in selected pharmacy related activities during the internship period, as well as determine their future career path.

**Methodology:** A descriptive cross-sectional study was conducted among intern pharmacists using an eight item questionnaire. Simple descriptive statistics were used to calculate frequency counts and percentages with regard to respondent demographics and Likert scale responses.

**Results:** Eighty-five percent of the 20 respondents perceived that they are prepared to perform dispensing and retail, and patient care activities with only half of them in multidisciplinary team care but not pharmaceutical business management (13, 65%). Close to two-thirds of respondents were often involved in patient care (13, 65%). Only six (30%) were often part of a multidisciplinary health care team. Nearly all (18, 90%) want to work in an environment with more patient contact.

**Conclusion:** This study suggests that intern pharmacists in Sierra Leone perceived to a large extent they are prepared for and were involved in most pharmacy related activities considered in this study except for multidisciplinary team care which seems to be limited; although they would prefer to work in a clinical setting in the future.

**Keywords:** *Pharmacy Practice, Career Choices, Intern Pharmacist, Sierra Leone*

## Background

The pharmacy profession is known to play a key role in health care delivery worldwide due to its unique position in ensuring that pharmaceuticals are effective, safe and used rationally (Anderson, 2002). As part of the health care delivery team in Sierra Leone, pharmacists are expected to be well trained with the required skills to effectively work in a multidisciplinary team in order to deliver best affordable patient care and to continue building capacity through training (Sierra Leone Ministry of Health and Sanitation, 2006; Ministry of Health and Sanitation Sierra Leone, 2012). The paradigm shift in pharmacy practice from drug-centred to patient-centred care, geared towards adding more value to the profession and better care for patients, makes it imperative that pharmacists assume new roles and responsibilities (Watanabe *et al.*, 2005). In this new era of Pharmacy practice, graduate pharmacists are expected to be involved in clinical care of patients and in the promotion of public health. In order for graduate pharmacists to effectively perform these new roles, in the healthcare

delivery system, a change in their education and training is of vital importance.

In Sierra Leone, pharmacists, must register with the Pharmacy Board of Sierra Leone in order to practice pharmacy as enshrined in the Pharmacy and Drugs Act of 2001 (The Government of Sierra Leone, 2001). Among others, the Pharmacy Board specifically determines standards of knowledge and skills to be attained by persons seeking to become registered members of the pharmacy profession in Sierra Leone. It also establishes and maintains the register of persons entitled to practice as members of the profession as well as having established the code of conduct that it considers desirable for the practice of the pharmacy profession (Pharmacy Board of Sierra Leone, 2010).

In Sierra Leone, registered pharmacists are required to have successfully completed a four or five year undergraduate pharmacy education from a recognised university followed by a 12 month internship training program and to have passed the preregistration

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examination conducted by the Pharmacy Board of Sierra Leone. Progress reports from preceptors also form part of the overall evaluation process for interns to be issued a license to practice (Pharmacy Board of Sierra Leone, 2010). The five year undergraduate training involves three years training in the basic medical sciences, including pharmaceutical chemistry and two years training in pharmaceutical sciences. The five year undergraduate training is largely product centred with minimal exposure to clinical care. As a result, graduate pharmacists are ill prepared and often lack the confidence to provide patient care after their undergraduate training. Recently, a new revised Bachelor of Pharmacy with Honours curriculum has been developed based on the West African Health Organisation (WAHO) Doctor of Pharmacy (PharmD) curriculum. This document is more clinically skewed in part than the former and it is expected to be upgraded to PharmD curriculum in the future when the pharmacy faculty is able to address the manpower and logistics challenges it presently faces (College of Medicine and Allied Health Sciences University of Sierra Leone, 2014)

The internship program for pharmacists in Sierra Leone involves a period of twelve months supervised post-graduation training at designated centres in community, hospital, administrative/regulatory affairs, or the pharmaceutical industry. In community pharmacy, interns are expected to learn dispensing skills, prescription interpretation, patient counselling, pharmaceutical care, public health related activities, and administrative and management skills. At the hospital, intern pharmacists are supposed to acquire clinical skills in solving medication related problems and at the same time gain skills in basic procurement and supply chain management. At present, the active involvement of pharmacists in clinical care is relatively nonexistent and as such, the knowledge and skills gained during their internship programme are devoid of the clinical expertise that is expected of them. During the administrative/regulatory part of their internship programme, interns are required to acquire knowledge and skills in drug regulation, *vis-à-vis* drug inspection, registration, quality control and pharmacovigilance. Internship training in industrial pharmacy is presently not available as drug manufacturing companies are not operational in the country (Pharmacy Board of Sierra Leone, 2010).

Several studies have indicated that a pharmacist's perceived preparedness to practice and career choice is influenced by the nature of their undergraduate and preregistration training experience. For instance, in England, Australia and New Zealand intern pharmacists indicated that their undergraduate education prepared them for professional practice and the issue of transition shock or stress was not felt by these cohorts of interns (Davies *et al.*, 2004; Kairuz *et al.*, 2010; Stupans, 2012; Mak *et al.*, 2013; Mak *et al.*, 2014). However, other studies argued that intern pharmacists and their employers considered the transition from being a pharmacy student to a pharmacist as challenging due to lack of practice experience and development of professional identity during their undergraduate training (Langley & Aheer,

2010; Noble *et al.*, 2015). With regards career choice, a study conducted in Australia showed that intern pharmacists' experience during their preregistration training affected their decision on what career path they would like to pursue after their internship (Mak *et al.*, 2013). There is little or no research data available with regards to intern pharmacists' preparedness for practice and how their preregistration experience affected their choice of career path within the African region. In Sierra Leone, no such study has been carried out. Therefore, the objective of this study was to assess the perception of intern pharmacists with regards to their preparedness for practice, to document the extent of their involvement in selected pharmacy related activities during the internship period, as well as to determine their future desired career path.

## Methods

### *Study Design and population*

This was a descriptive quantitative cross-sectional study conducted among intern pharmacists who had finished their internship training. Their internship period was between January and December 2014. At the time of the survey, only 21 newly graduated pharmacists registered for, and completed the internship program and they formed the study population. Approval to conduct the study was obtained from the research and ethics committee of College of Medicine and Allied Health Sciences, University of Sierra Leone (COMAHS-USL) and also from the Pharmacy Board of Sierra Leone.

### *Study Questionnaire*

An eight item questionnaire was designed and adapted to our setting based on the previously published survey tool used to carry out a similar study among intern pharmacists in Australia and a validated questionnaire used in England (Willis & Hassell, 2006; Stupans, 2012; Mak *et al.*, 2013). The first part of the questionnaire captured respondent demographics such sex, age, location of internship and areas where they did their internship. The second part examined the intern preparedness for pharmacy practice and their involvement in key pharmacy related activities that define the nature of pharmacy practice in Sierra Leone (Table I for a list of activities and their respective definitions in Sierra Leone). Based on these activities, interns were asked to assess how best their undergraduate pharmacy training had prepared them to carry out these activities using a four-point Likert scale. The point descriptors were: not prepared; not well prepared; prepared; and well prepared. The next item sought to determine their level of involvement in these activities during their internship also using a four-point Likert scale. The point descriptors used were: none; seldom; sometimes; and often. The third part of the questionnaire determined the intern pharmacist's choice of career after their preregistration training using a four-point Likert scale. The point descriptors were: strongly disagree; disagree; agree; and strongly agree. The last section was designed to solicit any extra information they

would liked to share regarding their internship experience. The survey instrument was given to lecturers in the Clinical Pharmacy and Therapeutics Department of the Faculty of Pharmaceutical Sciences and the Head of the Policy Standard and Practice of the Pharmacy Board of Sierra Leone for their valuable suggestions and comments. The questionnaire was then piloted on seven recently licensed practising pharmacists. Adjustments were made based on the responses received from both sides in order to make it understandable and easier to complete.

**Table I: Definitions of technical and clinical pharmacist-related activities in Sierra Leone**

Pharmacist Related activities	Definitions
<b>Technical activities</b>	
Dispensing and Retail, nonprescription and prescription activities	A technical supply task (interpreting and dispensing prescriptions or nonprescription items and other retail activities).
Pharmaceutical marketing and business management including supply chain management	Activities involved in the running of a pharmacy (e.g, Procurement and supply , accounting, drug promotion, import and export sales e.g. medical representative.
Pharmacy Regulation and administration	Regulation of pharmacy professionals and pharmaceutical products
<b>Clinical activities</b>	
Patient care role	Activities that involve an interaction with the patient (e.g. counselling of patients).
Medicines information role	Communication about medicines and their use to patients and other health professionals
Multidisciplinary team care	A collaborative approach with other health professionals in the care of a patient

### Data Collection

Questionnaires were distributed to interns after taking their preregistration examination *i.e.* a week after the end of their internship program. A written consent form that explained the purpose of the study, upholding respondent confidentiality as well as assurance that the information provided was for research purposes only was also given to each intern. It was also indicated that they could decide to opt out of the study if they desired. Signing the consent form indicated that they were willing to take part in the research. All completed questionnaires were collected from each intern by the leading investigator after they had finished answering the questions.

### Data Analysis

Data collected from filled questionnaires were coded and analysed using SPSS® for Windows v.16. Simple descriptive statistics were used to calculate frequency counts and percentages with regard to respondent's demographics and Likert scale responses. All Likert scale responses with degree of agreement were grouped together as positive responses, whilst those of degree of disagreement were grouped together as negative responses. Thematic analyses were done on the comments provided by interns regarding their internship experience.

### Results

A total number of 21 interns were issued questionnaires but only 20 filled and returned them, giving a 95% response rate.

### Demographics of Intern Pharmacists

The mean age of respondents was 30±3.00 years. The majority of the interns were males (16, 80%) and all of them did their internship in the city (Table II).

**Table II Demographics of Interns Pharmacist**

RESPONDENT CHARACTERISTICS	Frequency	Percentage (%)
<b>Sex</b>		
Male	16	80
Female	4	20
<b>Location of Internship</b>		
Urban	20	100
Rural	0	0

### Areas of Internship Training

Analysis of the data also revealed that all (20, 100%) did their internship training at community and hospital pharmacy followed by drug regulatory authority (19, 95%). Only two (10%) had training in a public health organisation whilst none had training in a drug manufacturing company (Table III).

### Preparedness for Pharmacy Practice

Respondents indicated that they felt prepared to carry out the following technical activity: dispensing and retail, nonprescription and prescription activities (17, 85%), pharmacy regulation (15, 75%). On the other hand, 13 (65%) indicated that they were ill prepared to carry out pharmaceutical marketing and business management including supply chain management. When asked of their readiness to undertake clinical pharmacy activities most said that their undergraduate education had prepared them to take up patient care roles 17(85%) and medicine information role (15, 75%). Only half (10, 50%) indicated that their undergraduate pharmacy training prepared them to work as part of a multidisciplinary health care team.

**Table III: Areas of Internship Training**

AREAS	Frequency (n)	Percentage (%)
Community	20	100
Hospital	20	100
Drug Regulatory Authority	19	95
Public Health Organisation	2	10
Pharma Marketing Organisation	6	30
Pharma Manufacturing Industry	0	0

**Table IV: Preparedness for Pharmacy**

Pharmacist Related activities	A n (%)	B n (%)	C n (%)	D n (%)
<b>Technical activities</b>				
Dispensing and retail, nonprescription and prescription activities	1 (5)	2 (10)	9 (45)	8 (40)
Pharmaceutical marketing and business management including supply chain management	3 (15)	10 (50)	6 (30)	1 (5)
Pharmacy Regulation	1 (5)	4 (20)	8 (40)	7 (35)
<b>Clinical Activities</b>				
Patient care role	3 (15)	0	8 (40)	9 (45)
Medicines information role	5 (25)	0 (0)	8 (40)	7 (35)
Multidisciplinary team care	10 (50)	0 (0)	7 (35)	3 (15)

A - Practice; Not prepared; B - Not well prepared; C - Adequately Prepared; D - Well Prepared

#### **Extent of involvement of intern pharmacists in pharmacy related activities.**

Respondents were further asked to indicate the extent of their involvement in pharmacy related activities during their internship period. With respect to technical activities, 12 (60%) and 7 (35%) respectively said they were often and sometimes involved in dispensing and retail, nonprescription, and prescription activities. Nine of those surveyed said they were sometimes and/or often involved in pharmaceutical product regulation whereas, 7 (35%) indicated they were seldom or often involved in pharmaceutical marketing activities. Thirteen (65%) respondents said they were often involved in patient care. Six (30%) reported that they were seldom part of a multidisciplinary healthcare team (Table V)

#### **Future Career choices of intern pharmacists**

As summarised in Table VI, interns were further asked about their career intentions. Ninety percent of all interns (18, 90%) wanted to work as a pharmacist in an environment with more patient contact. On the other hand, six (30%) indicated they want to do something other than practising pharmacy. Only two (10%) said they are undecided as to what they want to do after their internship training.

**Table V: Extent of involvement of intern pharmacist in the following Pharmacy related activities**

Pharmacy Related activities	A n (%)	B n (%)	C n (%)	D n (%)
<b>Technical activities</b>				
Dispensing and Retail, nonprescription and prescription activities	1 (5)	0	7 (35)	12 (60)
Pharmaceutical marketing and business management including supply chain management	1 (5)	7 (35)	5 (25)	7 (35)
Pharmacy Regulation	0	2 (10)	9 (45)	9 (45)
<b>Clinical Activities</b>				
Patient care role	0	4 (20)	3 (15)	13 (65)
Medicines information role	1 (5)	4 (20)	3 (15)	12 (60)
Multidisciplinary team care	1 (5)	6 (30)	7 (35)	6 (30)

A - None; B - Seldom; C - Sometimes; D - Often

#### **Thematic analysis of comments by interns on their internship experience**

- **Interns believed that some form of incentive should be provided during the internship period**

*“Interns should be given incentives when posted to hospitals community pharmacies and other sectors”*

*“Incentives should be provided for all interns during all categories of training”*

- **Interns also expressed a desire to be more involved with patients**

*“I want pharmacy professionals to be involved in patient care, rather than just regulating”*

- **Interns noted that many pharmacists and pharmacy premises did not comply with legal regulations and they felt that these regulations should be properly enforced**

*“I noticed an insufficient auditing of premises as some premises owners do not comply with the regulations laid down by the regulatory body”*

*“There is need for proper supervision and coordination with the proprietors of pharmaceutical outlets”*

- **Interns commented that not all the topics needed for practice were included in the undergraduate program**

*“Well I gained lot during my internship period and it introduces me to business management which was not taught in college”*

**Table VI: Future Career choices of intern pharmacists**

Statements	A n (%)	B n (%)	C n (%)	D n (%)
I want to work as a practicing pharmacist with less or no patient contact	14 (70)	3 (15)	3 (15)	0
I want to work as a practicing pharmacist with more public health role e.g. community pharmacy setting	0	3 (15)	6 (30)	11 (55)
I want to work in a pharmacy role with more patient contact e.g. clinical role	0	2 (10)	4 (20)	14 (70)
I want to do something else other than being a practicing pharmacist	7 (35)	7 (35)	4 (20)	2 (10)
I'm undecided about my future	14 (70)	4 (20)	0	2 (10)

A - Strong Disagree; B - Disagree; C - Agree; D - Strongly Agree

## Discussion

This study examined pharmacist interns' perceived preparedness for pharmacy practice in Sierra Leone, their extent of involvement in pharmacy related activities, and their future career choices. All respondents did their internship in the city which is expected, as most facilities including manpower for internship training, are only found in urban areas; in this case the capital city Freetown. The nature of the pharmacy internship training requires that interns rotate round the various fields of pharmacy currently practiced in Sierra Leone (Pharmacy Board of Sierra Leone, 2010). This gives them the opportunity to further improve their knowledge and skills in various aspects of pharmacy practice.

In this study, all respondents had some form of internship training in the community and hospital pharmacy setting. Another key feature noted in this study was pharmacy regulation appears to be a key sector of pharmacy practice in Sierra Leone. Nearly all interns did some part of their internship programme in the area of pharmacy regulation. As prescribed in the Pharmacy and Drugs Act 2001, the Pharmacy board of Sierra Leone is responsible to regulate pharmaceuticals and the profession at the same time (The Government of Sierra Leone, 2001). Over the past five years, it has transformed into a structured organisation run by pharmacy professionals and as such has become the most noticeable and respected area of pharmacy practice in Sierra Leone. Only two (10%) interns had training at a public health organisation which is a cause for concern considering the fact that public health is one of the expanded scopes of practice of pharmacists (Stergachis *et al.*, 2006). It is imperative that intern pharmacists are exposed to public health activities especially during their preregistration training in a bid to increase their contribution to the healthcare delivery system in Sierra Leone.

With regards to clinical activities, most respondents believed that their pharmacy education prepared them for patient care and medicine information roles. Only half of them indicated that they were not prepared for multidisciplinary team care. This result resonates with similar studies done among intern pharmacists in Australia (Mak *et al.*, 2013; Mak *et al.*, 2014). Their confidence in being prepared to undertake these roles is likely boosted by their increased involvement in these activities during their internship period as seen in Table III. The belief that their pharmacy education has prepared them for patient care and medicine information role is a welcome development with regards to the strides pharmacy faculty has taken in responding to the new reality of pharmacy practice worldwide. It also shows that interns had the opportunity to discuss with patients about their medicines and their disease; even though it might not be in a systematic way. Anecdotally, there is a disconnect between pharmacists being prepared for a clinical care role and actually practising pharmaceutical care after preregistration training. The issue of inertia by pharmacists in taking up new roles is a key determinant that can partly be attributed to lack of confidence on their part, and that the present healthcare delivery system including training does not support the concept of multidisciplinary team care. A striking feature that supports this observation is that only a small number thought their undergraduate education does foster multidisciplinary team care and few were involved in this type of activity during their internship period. The university and the health ministry should strive to promote interprofessionalism in the learning and practice environment if the dream of effective patient care is to be realised.

An encouraging trend observed in this study was that most interns would like their career to be more clinically oriented. This is in line with the new focus of pharmacy practice around the world (Wiedenmayer *et al.*, 2006). It is more self-fulfilling on the part of the individual and will contribute greatly to the healthcare delivery system in the country when pharmacists are actively involved in patient care. However, the present reality of practice speaks otherwise. Anecdotal reports suggest that most pharmacists are in drug regulation, procurement and supply chain management, community, and academia. As one of them stated "*there is need for pharmacy professionals to be involved in patient care, rather than just regulating*". This suggests a need for pharmacists to take up clinical roles especially in hospitals and clinics where they can serve as the expert in drug therapy in order to maximise patient therapeutic outcomes and at the same time, serve as mentors for upcoming pharmacists who opt for clinical pharmacy as a career path. Being able to solve medication related problems of patients is the most valuable expertise that pharmacists can bring to the health service delivery system in Sierra Leone - and this requires advanced knowledge and skills which is presently lacking. It is somewhat alarming that six (30%) of the twenty interns said they want to do something different other than being a pharmacist. Reasons for their

decision might be linked to the nature of their undergraduate training experience, pharmacy not being their first choice of study, as well as public perception and nature of practice of the profession in the country. Although not captured in this study, personal communication with some members of this cohort revealed that they intend to study medicine and practice as a medical doctor as it is considered to be well structured, respected and more financially rewarding than pharmacy.

Since this study is a first of its kind in Sierra Leone, it provides baseline information of new pharmacists' perceptions and experience regarding the nature of pharmacy pre-registration training program in Sierra Leone. In particular, findings from this study revealed a key action point that needs to be addressed. It highlights the need for the undergraduate pharmacy curriculum and internship training to focus on patient centred teaching and practice that promotes interdisciplinary team care. It is therefore, a welcome development that the newly revised curriculum in part, captures the new paradigm in pharmacy education (Hritcko, 2006). It is hoped that in the future, a comprehensive PharmD program will fully address the shortcomings of the present curriculum in providing competent pharmacists to work effectively in multidisciplinary healthcare delivery environment. Also, our findings will spark debate amongst stakeholders on the need to restructure the current internship training program to better respond to this new model of pharmacy practice (Wiedenmayer *et al.*, 2006).

Despite its strengths, this present study has limitations. Firstly, this is purely a descriptive study. It does not look at factors that might influence intern pharmacists' perceived preparedness for practice or future career aspirations as well as preceptor's views on the pre-registration program. Also, their perception of preparedness and actual preparedness for pharmacy practice might not be the same. Further research in these areas is needed to fully inform and guide the development and implementation of an effective undergraduate pharmacy curriculum and internship training program that respond to the needs and aspirations of intern pharmacists and the healthcare delivery system in Sierra Leone.

### Conclusion

The findings of this study suggest that intern pharmacists in Sierra Leone thought to a large extent that undergraduate pharmacy training prepared them for practice and an appreciable number of them were at least involved in the pharmacy related activities considered in this study. However, their perceived preparedness for and involvement in multidisciplinary team care was still limited. With regards to career intentions, most wanted their practice to be more clinically based as compared to the traditional pharmacy paradigm. Future research should investigate the factors that influence intern pharmacist perceived preparedness for practice and career choice. Also their expectations prior to and after preregistration training, as well as preceptor's views

regarding the pharmacist intern training program in Sierra Leone should be explored. This will better inform and guide the changes that need to be made to effectively deliver an internship training program that seeks to address the needs and expectations of intern pharmacists and at the same time, meet the health workforce requirement of the Ministry of Health and Sanitation of Sierra Leone.

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### Conflict of Interest

The authors have declared no conflicts of interest whatsoever with respect to the research, authorship, and/or publication of this article.

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### References

- Anderson, S. (2002). The state of the world's pharmacy: a portrait of the pharmacy profession. *Journal of Interprofessional Care*, **16**(4), 391-404.
- College of Medicine and Allied Health Sciences University of Sierra Leone. (2014). Revised Curriculum For The Bachelor Of Pharmacy with Honours Program Freetown: University of Sierra Leone.
- Davies, J.G., Bates, I., Healey, R., Webb, D.G. & McRobbie, D. (2004). Fit for purpose? Pharmacy graduates' perceptions of their readiness to undertake clinical pharmacy activities. *International Journal of Pharmacy Practice*, **12**(Suppl 1), R17-R19.
- Hritcko, P.M. (2006). A new paradigm for pharmacy practice and education. *Harvard Health Policy Review*, **7**(1), 143-146.
- Kairuz, T., Noble, C. & Shaw, J. (2010). Preceptors, interns, and newly registered pharmacists' perceptions of New Zealand pharmacy graduates' preparedness to practice. *American Journal of Pharmaceutical Education*, **74**(6), 108.
- Langley, C.A. & Aheer, S. (2010). Do Pharmacy Graduates Possess the Necessary Professional Skills? *Pharmacy Education*, **10**(2), 114-118.
- Mak, V.S., March, G., Clark, A. & Gilbert, A.L. (2013). Australian intern pharmacists perceived preparedness for practice, and their expectations and experiences of the internship year and future career intentions. *Integrated Pharmacy Research and Practice*, **2**, 25-34.

- Mak, V.S., March, G., Clark, A. & Gilbert, A.L. (2014). Do South Australian pharmacy interns have the educational and behavioural precursors to meet the objectives of Australia's health care reform agenda? *Integrated Pharmacy Research and Practice*, **22**(5), 366-372.
- Ministry of Health and Sanitation Sierra Leone. (2012). National Medicine Policy Freetown, Sierra Leone.
- Ministry of Health and Sanitation. (2006). Human Resource for Health Policy (online). Available at: [http://www.who.int/work\\_forcealliance/countries/SierraLeone\\_HRHPlan\\_2006-2010.pdf](http://www.who.int/work_forcealliance/countries/SierraLeone_HRHPlan_2006-2010.pdf). Accessed 17<sup>th</sup> July, 2015
- Noble, C., Coombes, I., Nissen, L., Shaw, P.N. & Clavarino, A. (2015). Making the transition from pharmacy student to pharmacist: Australian interns' perceptions of professional identity formation. *International Journal of Pharmacy Practice*, **23**(4), 292–304.
- Pharmacy Board of Sierra Leone. (2010). Pharmacy Internship Manual. Sierra Leone
- Stergachis, A., Lander, R.D. & Webb, L.E. (2006). Promoting the pharmacist's role in public health. *Journal of the American Pharmacists Association*, **46**(3), 311-319.
- Stupans, I. (2012). Qualitative interviews of pharmacy interns: determining curricular preparedness for work life. *Pharmacy Practice*, **10**(1), 52-56.
- The Government of Sierra Leone. (2001). The Pharmacy and Drugs Act, 2001. Freetown Sierra Leone
- Watanabe, T., Ohtani, Y., Yamamoto, T., Nemoto, Y., Ida, Y. & Bachynsky, J.A. (2005). The case for shift in pharmacists' activities and pharmacy education. *Yakugaku Zasshi*, **125**(3), 283-292.
- Wiedenmayer K, Summers, R.S., Mackie C.A., Gous A.G.S. & Everard, M. (2006). Developing pharmacy practice: A focus on patient care, WHO & FIP (online). Available at: [http://www.who.int/medicines/publications/WHO\\_PSM\\_PAR\\_2006.5.pdf](http://www.who.int/medicines/publications/WHO_PSM_PAR_2006.5.pdf). Accessed 23<sup>rd</sup> August 2015.
- Willis, S.C., Shann, P. & Hassell, K. (2006). Report 5: Piloting the questionnaire. London (No. 5). Manchester: School of Pharmacy The University of Manchester