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Assessment of the preventive health content of pharmacy curriculum in Nigerian universities

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Abstract

There is a compelling need for curricular adjustments if pharmacy graduates are to effectively deliver preventive health services.

Objective: To evaluate pharmacy training curriculum of Nigerian universities for contents of preventive healthcare services

Method: A forty-two item pre-tested questionnaire with Cronbach's *alpha* 0.875, was administered to the Heads of the Clinical Pharmacy department in 14 faculties of pharmacy in Nigeria. Data were expressed as frequency and percentages. Possible relationships were explored using *Chi*-square test.

Results: Only four (28%) offered public health as a stand-alone course. Although the proportion of schools that incorporated preventive health topics in the curriculum ranged from 50 to 78%, topics such as disaster management, immunisation, accident prevention and infant nutrition were taught by only a few faculties. Regarding trainer capability, more than 70% (10) of faculties had only one or two faculty members with a degree in public health. Nearly one quarter, (n=2, 21.4%) had no faculty member with a degree in public health.

Conclusion: Preventive health content of pharmacy curriculum in Nigerian universities appears adequate but there are deficiencies in the depth of the curricular content and trainer capabilities.

Keywords: *Curriculum, Nigerian Universities, Pharmacy Education, Preventive Health, Public Health*

Introduction

The focus of contemporary pharmacy practice has shifted from compounding and dispensing to patient care activities such as medication management, dosage regimen design, drug information services and pharmaceutical care (Adamcik *et al.,* 1986; Hepler & Strand, 1989; Holland & Nimmo, 1999; Paolini & Rouse, 2009). This expanded scope of practice calls for a restructuring of pharmacy education from its focus on science, compounding and dispensing to a more patient-oriented curriculum (WHO, 1997). It is expected that such adjustments would equip pharmacy graduates with skills that would enable them to function effectively within inter-professional patient care teams (Accreditation Council for Pharmacy Education [ACPE], 2006).

Apart from clinically oriented patient care activities, preventive health is another area that affords pharmacists opportunities for role expansion (Walker, 2000; Anderson, 2007; Calis *et al*., 2004; American Public Health Association [APHA], 1981). This can be done both at the individual level and at the level of small population groups and larger communities (Acheson, 1988).

The potential for pharmacists to impact positively on public health through preventive healthcare has long been recognised (News Feature, 2004; RPSGB & Pharm Health Link, 2003). Several groups and organisations including the APHA, have noted that the unique expertise of pharmacists, the potential to reach a large number of people and the easily-accessed practice settings, puts them in an ideal position to effectively deliver preventive health services (APHA, 1981; Fincham, 2007). Curricula adjustments are also necessary in order to prepare future pharmacists for preventive health roles (Hassali *et al*., 2009).

Since 2004, the American Association of Colleges of Pharmacy (AACP) through the Centre for the Advancement of Pharmaceutical Education (CAPE) has advocated the inclusion of public health as a major competency in pharmaceutical education and emphasised the 'providing care for diverse patient populations,

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contributing to the health and wellness of individuals and communities...and participating in population health management' as educational outcomes for pharmacy schools (Medina *et al*., 2013: p.3;5). Also the ACPE incorporated public health related outcomes into the 2007 standards for accreditation (ACPE, 2006). Similarly, the Joint Commission of Pharmacy Practitioners (JCCP) recommendations for Pharmacy Practise in 2015 included the provision of ''patient-centred and population-based care" (JCPP, 2004). The 'Healthy People 2010' objectives 1-7 emphasises the need to "increase the proportion of schools of medicine, schools of nursing and other health professional training schools where basic curriculum includes the core competencies in health promotion and disease prevention" (USDHSS, 2010: p.1:24). In line with these recommendations, many pharmacy schools in the United States of America (USA) have incorporated public health as a core course in their curriculum. Nearly one quarter of pharmacy schools in the USA offer a joint Doctor of Pharmacy/Master of Public Health (Pharm.D./MPH) course (Lenz, 2007; Di Pietro, *et al*., 2011; Gortney *et al*., 2013). It is, however, uncertain if the same can be said of pharmacy schools in developing nations like Nigeria.

The main objective of this study was to evaluate the pharmacy training curriculum of Nigerian universities for inclusion of preventive healthcare services. The specific objectives were to identify preventive health content in the curriculum of the various faculties of pharmacy, to identify areas of strength and weaknesses in the curriculum related to preventive healthcare, and to evaluate preventive health training capabilities of pharmacy teachers.

Methods

Research setting

The study involved all accredited pharmacy schools in Nigeria. There are a total of 111 tertiary institutions spread across the six geopolitical zones of Nigeria with a predominance in the south (68.8%) compared to the north (34.54%) (Oderinde *et al*., 2012). There are 17 faculties of pharmacy in Nigeria. Almost all faculties of pharmacy offer a Bachelor of Pharmacy degree which is skewed towards the traditional role of dispensing. The Bachelor of Pharmacy curriculum emphasises science, laboratory work and compounding with little or no stress on non-drug related or clinical content (Pharmacists Council of Nigeria [PCN], 2008). The PCN is responsible for determining standards of knowledge and skills for pharmacists in Nigeria.

Instrument development

A forty-two item pre-tested questionnaire consisting of three sections, and a two-point response scale was developed based on curriculum items in preventive health identified from a literature search. Documents such as the Benchmark Minimum Academic Standards in pharmaceutical science for undergraduate programmes in Nigerian universities (NUC, 2007) and the United States Centre for Advancement of Pharmacy Education - Educational Outcome 2013 (Medina *et al*., 2013) were consulted. The questionnaire consisted of three sections: Section A contained questions about faculty demographics, Section B evaluated training capabilities of the hosting department, and the last section contained specific items that should be part of a preventive health oriented curriculum.

Expert opinion was sought and amendments made to the instrument thereby establishing face and content validity.

Population/sample

The number of faculties of pharmacy accredited by the Nigerian Universities Commission and the PCN, and accessible at the time of the study, was 14. In view of the small figure, all 14 pharmacy schools were invited to complete the survey. Faculties located in insurgency-prone areas of the Northern part of the country could not be accessed due to high risk of kidnapping and breakdown in communication networks.

Data collection/ Data analysis

Questionnaires were administered to the Heads of the Department of Clinical Pharmacy in the various schools of pharmacy. Data analysis was done using IBM SPSS Version 20 statistical package. Categorical variables were expressed as frequencies and percentages, *Chi*-square test was used to explore the relationship between the demographic variables and curriculum specifics. A *p*-value of less than 0.05 was considered significant.

Results

All 14 questionnaires were completed giving a response rate of 100 percent. Cronbach's *alpha* for the questionnaire was 0.875. Most pharmacy schools, (13, 92.9%) were government funded. Only one (7.1%) offered a Pharm.D. degree. Nearly three quarters (10, 71.4%) did not teach public health as a stand-alone course. Nearly one quarter, (3, 21.4%) had no faculty members with a degree in public health. More than 70% (10) had a maximum of two faculty members with a degree in public health, (Table I).

Disease screening (78.6%), reproductive health topics (78.5%), food safety and nutrition (72.1%), and statistical methods (71.4%), were areas of preventive health taught by most schools of pharmacy. Only 48.2% of the pharmacy schools taught all the identified areas in health promotion. This was lower than infectious disease (60.7%) and policy development (50%) Specific details of curricular content of faculties of pharmacy are presented in Table III.

Table I: Faculty Demographics

Demographic Attributes	Frequency (%) n=14
Length of faculty existence (years)	
1-5	1 (7.1)
6-10	4 (28.6)
11-15	2 (14.30)
16-20	0 (0)
20-25	4 (28.6)
Above 25	3 (21.4)
Type of university	
Public	13 (92.9)
Private	1 (7.1)
Degree offered	
B.Pharm.	13 (92.9)
Pharm.D.	1 (7.1)
Public health as a stand-alone course	
Yes	4 (28.6)
No	10 (71.4)

Table II: Staff strength and faculty members with degree in Public Health

Staff Characteristics	Number of faculties n=14 N(%)
Staff Strength	
1-4	2 (14.3)
5-8	4 (28.6)
9-12	5 (35.7)
Above 12	3 (21.4)
Staff with degree in Public Health	
0	3 (21.4)
1	3 (21.4)
2	4 (28.6)
3	2 (14.3)
4	1 (7.1)
5	1 (7.1)

Table III: Specific details of Preventive Health Topics Taught in Pharmacy Curricula

Preventive Health Topics	Yes no (%)	Sub group Average n (%)
Statistical methods		10 (71.4)
Biostatistics	13 (92.9)	
Method of measuring mortality/morbidity	8 (57.1)	
Statistical methods applicable to health	9 (64.3)	
Calculation of Incidence, prevalence rates	10 (71.4)	
Epidemiology	10 (71.4)	
Disease Screening		11 (78.6)
Diabetes	13 (92.9)	
Cholesterol	12 (95.7)	
Blood pressure	14 (100)	
Breast cancer	10 (71.4)	
Cervical cancer	9 (64.3)	
Prostate cancer	10 (71.4)	
Cardiovascular disease	14 (100)	
Breast cancer awareness	10 (71.4)	
Prostate cancer awareness	9 (64.3)	
Cervical cancer awareness	9 (64.3)	
Food safety /Nutrition		10 (71.4)
Nutrition and healthy eating	12 (95.7)	
Micronutrient deficiency	12 (95.7)	
Growth monitoring	6 (42.9)	
Breast feeding	7 (50.0)	
Infant formula	6 (42.9)	
Water purification techniques	13 (92.9)	
Identification/prevention of food-borne diseases	12 (85.7)	
Identification/prevention of water-borne diseases	13 (92.9)	
Infectious disease/Vaccination		9 (64.3)
Basic immunology	12 (95.7)	
Principles of communicable disease control	11 (78.6)	
Pharmacist role in Malaria HIV/AIDS and TB	12 (85.7)	
Vaccine schedule/ storage	13 (92.9)	
Travel health safety precautions	4 (28.6)	
Recommended vaccine for travellers	3 (21.4)	
Travellers' diarrhoea	5 (35.7)	

Preventive Health Topics	Yes no (%)	Sub group Average n (%)
Women/ Reproductive health		11 (78.6)
Family planning	11 (78.6)	
Emergency contraception	11 (78.6)	
Teen pregnancy	12 (78.6)	
STI's	12 (85.7)	
Chlamydia infection	11 (78.6)	
HIV/AIDS	13 (92.8)	
Safe sex	9 (64.3)	
Pregnancy related illness	9 (64.3)	
Policy development/Social health		7 (50)
Socio-economic determinants of health	8 (57.1)	
Theories of behaviour change	9 (64.3)	
Health inequalities	0 (0.0)	
National health policy	12 (85.7)	
Disaster Management	1 (7.1)	
National health insurance scheme	12 (85.7)	
Health promotion/ Disease prevention		7(50)
Health promotion	12 (85.7)	
Communicable disease control and prevention	13 (92.9)	
Non-communicable disease control and prevention	13 (92.9)	
Lipid management	12 (85.7)	
Smoking cessation	9 (64.3)	
Obesity management	11 (78.6)	
Oral health	4 (28.6)	
Wellness	8 (57.1)	
Basic first aid	11 (78.6)	
Cardio pulmonary resuscitation	8 (57.1)	
Accident Prevention	7 (50.0)	
Occupational diseases	5 (35.7)	
Safety at work	3 (21.4)	
Physical activity guidelines	5 (35.7)	
Poison prevention	7 (50.0)	

A *Chi*-square test was performed to determine association between faculty demographics and the teaching of various aspects of preventive health. Apart from a significant association between numbers of staff having additional qualifications in public health and the teaching of topics in nutrition and food safety, (X^2=14, df=6; p=0.030), all others were non–significant. The areas of weakness and deficits in preventive curricular elements of faculties of pharmacy are shown in Table IV

Table IV: Deficiencies in public health curriculum in faculties of pharmacy*

Items	(n)%
Faculties deficient in faculty members with a degree in public health	10 (71.4)*
Faculties without a stand-alone public health course#	10 (71.4)
Public health topics with low frequency (taught by ≤50% of faculties)	
Food safety /Nutrition	
Growth monitoring	6 (42.9)
Infant formula	6 (42.9)
Breast feeding	7 (50.0)
Infectious diseases/Vaccination	
Travel health/recommended vaccines	3 (21.4)
Traveller's diarrhoea	5 (35.7)
Health policy/Social health	
Health inequalities/measure to reduce health inequalities	0 (0)
Disaster preparation/management	1 (7.1)
Programme development/evaluation/monitoring	3 (21.4)
Safety at work	3 (21.4)
International health agencies	4 (28.6)
Oral health/Products that promote oral health	4 (28.6)
Safety precautions at work	5 (35.7)
Health literacy/cultural competency	5 (35.7)
Occupational diseases	5 (35.7)
Physical activity guidelines/recommendation	5 (35.7)
Techniques for designing health information materials/leaflets	5 (35.7)
Poison prevention	7 (50.0)

*Deficiency means less than 2 faculty members with degree in public health

Stand-alone = a module within the pharmacy curriculum

The proportion of staff with a degree in public health in relation to the over-all staff strength of the hosting department was low and ranged from 0 to 50% (Table V).

Table V: Proportion of faculty staff with a degree in public health

Staff with PH degree	Staff strength of hosting department	Percentage (%)
3	13	23
3	11	27
2	10	20
1	5	20
5	10	50
0	6	0
4	12	33
0	8	0
2	5	40
2	9	22
2	8	25
1	12	8
1	7	14
0	4	0

Discussion

This study revealed that preventive health topics were, to a large extent, integrated into pharmacy curricula of most universities in Nigeria. This is somewhat different from the situation in other developing countries where the curriculum is geared mainly towards training pharmacists to become drug experts (Hassali, 2011; Abdulkarem, 2014). Recent curricular adjustments in many developing countries have been aimed at imparting pharmaceutical care and patient care skills (Abdulkarem, 2014). The emphasis is on science, drug production and increased clinical content with minimal emphasis on preventive health curricular content (Hassali, 2011). It is quite gratifying to notice the robust preventive health content of pharmacy curricula in Nigeria. However, the extent to which preventive health topics were taught varied from one institution to another. Also in most faculties of pharmacy, preventive health topics were taught as a component of other courses rather than a stand-alone course. This might limit the number of hours spent teaching the course and consequently the scope and depth. Teaching preventive health as a stand-alone course would allow sufficient time to be devoted to items in the curriculum and is more likely to achieve the goals stipulated in the CAPE educational outcomes document (Medina *et al*., 2013: pp 3,5)

The number of staff who have training in public health were very few and did not compare favourably with the overall staff strength of the hosting department in the respective institutions. Although faculty members who are experientially qualified may have the competence to teach preventive health, best practice requires trainers with the MPH degree in addition to relevant expertise in their areas of specialty (Collier *et al.*, 2010). Such

educators are generally lacking in the area of public health pharmacy (Hassali, 2011). This situation might call into question the ability of the various faculties to effectively teach preventive health.

Organisations such as American Pharmacists Association , the American Society of Health-Systems Pharmacists, and the APHA have released updated position statements emphasising the role of pharmacists in Public Health (APHA, 1981; ASHP, 2008). One clear message that could be deduced from these statements is that a lack of role models could be responsible for the deficit of pharmacists in public health practice. This study seems to confirm the need for more faculty members to undergo training in fields of preventive and public health in order to impact positively on the undergraduates or student pharmacists. Teaching public health as a stand-alone course would allow for a more in-depth approach to teaching, instead of having brief overviews of an array of topics (Fincham *et al*., 2007).

Areas of need highlighted in this work include topics in food safety and nutrition, travel health, health policy and social health. Over 250 million people in the USA visit community pharmacies each week for medicines and health related advice (Giberson, 2011). The situation is similar in Nigeria. A recent collaborative survey conducted in Nigeria revealed that in 2014, 43% of the population visited pharmacies compared to 34 % who visited private health facilities. The proportion was even higher in the South-south region where 65% of the population visited pharmacies an average of six times a year compared to public and private health facilities that were visited an average of four times a year (NOI Polls, 2015). Pharmacy graduates must therefore be equipped to address issues relating to nutrition, travel health and health policy formulation. In addition, in view of recent developments in the global health scene, topics such as bioterrorism, emergency preparedness, epidemics and pandemics need be included in the pharmacy curriculum even though these were not included in the present evaluation (CDC, 2017).

Conclusion

Most pharmacy programmes included public health subjects in the curriculum; however deficiencies still remained as some crucial topics, such as travel health, occupational health and safety, disaster preparedness and health inequalities were not included in the curriculum. Only a few faculties taught preventive/public health as stand-alone course thereby limiting the depth and range to which public health was taught. Also, faculty members with additional qualifications in public health were very few in comparison to the total staff in the department. This might also have limited the quality and expertise of public health teaching.

Recommendations

All faculties of pharmacy in Nigeria should increase the preventive health content of their curriculum to include population-based public health issues. Public health pharmacy should be taught as a stand-alone course so as to adequately prepare student pharmacists for future public health roles. Pharmacy faculty members should be encouraged to acquire additional qualifications in public health in order to teach more effectively and to provide role models for student pharmacists.

Study limitations

It is possible that the head of the clinical pharmacy department may not have had complete information regarding the entire pharmacy didactic curriculum. This may have affected the validity of the response. The conclusions are based on information relating to Nigeria and may not be applicable to other countries. Some areas within Nigeria were omitted from the study for security reasons.

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