

## Clinical pharmacy curriculum development in Norway: Pharmacists' expectations in the context of current European developments

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### Abstract

*Introduction:* The inclusion of patient-centred teaching into the “core curriculum” of the pharmacist’s basic education is varied throughout Europe. While clinical pharmacy is taught in an integrated way within the undergraduate pharmacy curriculum at the University of Tromsø, its relationship to the delivery of pharmaceutical care requires to be developed. This study explored the perceptions of pharmacists in Norway about pharmacy undergraduate curriculum change.

*Methods:* A general questionnaire was sent to 100 registered Norwegian pharmacists. The views of respondents were used along with tape recorded interviews (with six individual pharmacists and one group of seven) to design a specific questionnaire issued to 89 Tromsø Master of Pharmacy graduates (1999–2003).

*Results and conclusion:* The response rate to the general questionnaire was 63% and to the specific questionnaire 42%. The findings showed strong preferences for joint teaching with medical students; teaching from pharmacist practitioners; the imparting of problem solving skills through group work; the use of real patient case studies; and early contact with role models including community pharmacists. The investigation supports the curriculum changes, we have made to develop clinical pharmacy at the University of Tromsø. The study has identified the potential for improvement including joint teaching with medical students.

**Keywords:** *Pharmacy, curriculum, clinical pharmacy, Norway, professional development*

### Introduction

The University of Oslo School of Pharmacy in Norway was established in 1924, a second School of Pharmacy was introduced at the University of Tromsø in 1994 and a third at the University of Bergen in 2003. The past 10 years has seen the adoption of clinical pharmacy and pharmaceutical care as integral parts of the undergraduate pharmacy curriculum. The extent of incorporation of patient-centred teaching into the “core curriculum” of the pharmacist’s basic education is varied throughout Europe. The variation is partly a reflection of differing states of development in clinical pharmacy and differences in the delivery of pharmaceutical care within the health care systems (Hudson, 2004). This study was undertaken to explore the perceptions of pharmacists in Norway

about the need for curriculum change in the direction of patient-centred teaching.

The founding document of the University of Tromsø Institute of Pharmacy (Aarbakke et al., 1993) acknowledged that the work of the pharmacist... “as a member of the health care system today and in the future is related to the use of drug related knowledge. In patient care, the role of the pharmacist will be to use drug related knowledge to optimise therapeutic regimens for individual patients in co-operation with the medical doctor and the patient themselves. In the health care system, the pharmacist will seek to work for a rational and economic use of drugs and have the responsibility of quality assurance of the pharmaceutical services”. This predicted future for the profession has arrived in certain parts of Europe; and in the UK, it has become manifest by the legal acknowledgement

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of the prescribing role of the pharmacist in the individualisation of drug therapy (UK Department of Health, 2003). The rapid changes in societal expectations of the pharmacist's changing role are coupled with major advances in drug technology affecting medicines use in hospitals and in the community. Changes in societal expectations are leading to a restructuring of community pharmacy, which is responding to a combination of commercial drivers and to the health insurer organisations' expectations of an expanded public health role for pharmacists (Leufkens, Hekster, & Hudson, 1997). University Departments (Schools) of Pharmacy are required to maintain a curriculum that can adapt quickly to societal changes. For that they need to be responsive to changes in higher education and to the professional aspirations and expectations of pharmacists in practice.

The increases in the numbers of Schools of Pharmacy most recently in Norway and the UK has raised awareness of the potential for co-operation or competition among Schools as they face possible changes in pharmacy student recruitment and teaching staff retention. The changes in academic practice add further to the dynamics in the profession and call for increased dialogue within academia and between academia and the profession, so that educational changes can be planned to meet the challenges of professional developments.

In 1996, a task force of the European Association of Faculties of Pharmacy was established to provide a basis of consensus for the development of Pharmaceutical Care within the curricula of European Schools of Pharmacy (Tromp, 1999). This was a major attempt within European pharmacy to unite the patient-oriented educational needs of pharmacists and to reconcile descriptions of educational needs in a framework meaningful to community and hospital pharmacists alike. At around the same time, European students, represented by European Pharmacy Students Association (EPSA), demonstrated their recognition of the need for changes in the curricula through their project "*Pharmacy Education—A vision for the future*". (EPSA Report, 1999)

The aims of this present study were, first, to interpret, through questionnaires and interviews of "opinion forming" pharmacists in Norway, an understanding of clinical pharmacy practice and the need for patient-centred education to support that practice. Second, we wanted to use the results of the first phase to develop and interpret a questionnaire issued to Tromsø Master of Pharmacy graduates. The objectives of the whole study were to identify curriculum changes in the Master of Pharmacy program in Tromsø that might be required to achieve an improved capacity to respond to professional expectations.

## Methods

### First phase

Tape recorded interviews were conducted with individuals and a group. A general questionnaire with open questions was sent to a sample of pharmacists currently registered to practise in Norway. The findings informed the design of a specific questionnaire issued to recently qualified pharmacists in the second phase.

Interviews were conducted and tape recorded with selected Norwegian pharmacists, each over the course of approximately 1 h, as one-to-one (semi-structured) interviews (six subjects including one telephone interview due to prior illness of the subject) and as a separate group interview (seven other subjects) (Table I).

At the same time as the interviews were conducted, a generalised questionnaire addressing the main areas focus in the interviews, was developed and sent to 100 individuals randomly selected from about 2200 individuals on the Norwegian Pharmaceutical Register. This register did not differentiate those pharmacists in Norway functioning as prescriptionists (having a three year University College education at Bachelor level) from others (having a five year University education at Masters level). The education of prescriptionists is a feature of the Scandinavian countries and was founded in the 1960s in response to an acute lack of pharmacists in the community pharmacy service, especially outside the cities. Prescriptionists are qualified to work widely in community pharmacy but must make special application to work in hospitals. The sample of subjects receiving the general questionnaire therefore encompassed the broader opinion within the profession and included primarily the types of pharmacists that function widely in community pharmacy services as well as hospital services.

Table I. First phase: Outline interview schedule.

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- What do we in Norway associate with what is meant by clinical pharmacy?
    - Overall aims of clinical pharmacy practice
    - Locations at which clinical pharmacy is practised
    - Professional interactions involved in clinical pharmacy
    - Characteristics of the relationship to patients
    - Practical tasks involved
  - What are the future challenges to clinical pharmacy in Norway?
  - What are the educational needs of pharmacists to qualify them to start to practice clinical pharmacy?
  - Do pharmacists graduating recently from Tromsø or Oslo meet the qualifications needed to practise clinical pharmacy?
  - Is there a congruency between the content of clinical pharmacy in the curriculum today and the needs of clinical pharmacy practice to support developments nationally?
  - What important teaching should be in the curriculum to support clinical pharmacy?
  - Does the present teaching in the curriculum stimulate learning of clinical pharmacy?
  - What changes are necessary to the present curriculum in Tromsø to meet the challenges of clinical pharmacy in the future?
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Table II. Interviewees response to themes within the interviews.

Theme	Evidence
1 Clinical pharmacy includes pharmaceutical care but also separate services such as drug information	<p>“Clinical pharmacy...”</p> <p>“... includes terms like pharmaceutical care but also drug information which tend to be regarded as two separate things”</p> <p>“... is always angled towards the individual patient”</p> <p>“... describes what the pharmacist does and so is about describing the service”</p> <p>“... (relevant) especially to fields of therapy where the patient needs a lot of motivation to use the drugs correctly ... asthma, hypertension, rheumatology”</p>
2 Challenges to clinical pharmacy in Norway include revision of work practices, establishment of role models to demonstrate worth	<p>“... hospital pharmacies and retail pharmacies should reconsider how they use their pharmacists...”</p> <p>“... we need to prove something before we get counted on...”</p> <p>“... be present every day... at fixed hours...”</p> <p>“... one to two wards per pharmacist...”</p> <p>“... patient being referred to a pharmacist (by other health care team members) ...</p> <p>“... to conquer some positions in the health care system related to the patients and their use of medicines”</p> <p>“... I am not sure we are good enough yet with respect to the professional identity...”</p>
3 Qualifications to practise clinical pharmacy include a patient (and disease) orientation and good teamwork	<p>“... Perhaps we know too little about pathology...”</p> <p>“... personal empathy and ability to work in a team...”</p> <p>“... most important qualification is ability to communicate...”</p>
4 Current education needs review to expand the contact with patients to overcome the limitations of paper case studies	<p>“... needs to be changed and get the focus entirely on patients...”</p> <p>“... (cases studies help the curriculum become) ... more patient-centred but didn't (often) meet the patients themselves...”</p> <p>“whole different picture... (gained by students) ... by meeting the patient...”</p>
5 Education needs to be used to help motivate change in the profession by stimulating confidence to innovate and act within a multidisciplinary team	<p>“... the educational system is able to develop pressure on the hospitals” decisions to implement clinical pharmacy...”</p> <p>“... needs to motivate students to step into those roles...”</p> <p>“... is essential to be multiprofessional...”</p>

The generalised questionnaires and interviews were analysed by response rate and themes respectively, as shown in Tables II and III. Interviewees comprised academic staff from the fields of pharmacology/therapeutics and social pharmacy characterised as opinion-formers in the clinical pharmacy curriculum from the universities of Tromsø (three subjects) and Oslo (two subjects) and a leading hospital pharmacist who is academically active at the postgraduate level. The group interview was conducted over approximately three hours among seven hospital pharmacists working in Oslo with familiarity of practising at ward level and all except one had been practising for more than two years.

### Second phase

The findings from the two exploratory approaches of the first phase were used to design a specific questionnaire which was sent to 89 pharmacy graduates from the University of Tromsø (1999–2003). All Tromsø graduates are Masters of Pharmacy (five year education). All questions required a response on a five point Likert scale (anchored at strongly agree and strongly disagree).

Whereas the aim of the first phase was to establish an understanding of the field of clinical pharmacy, the second phase was aimed directly towards the pharmacy education at the University in Tromsø to

Table III. Findings from the generalised questionnaire.

Topic	Response	
1 Knowledge/skills to which respondents attached maximum importance in qualifying a clinical pharmacist	Communication skills	46%
	Physiology/pathophysiology	8%
	Basic pharmacology	27%
	Pharmacotherapy	71%
	Pharmacokinetics	27%
	Literature evaluation	19%
2 Setting in which clinical pharmacy is thought most important	Hospital	52%
	Community	3%
	Neither	41%
	Other	3%
3 Relevance of working either directly with patients or indirectly with teams	Direct with patients	16%
	Indirectly with teams	3%
	Both directly and indirectly	81%
4 Direct types of working with patients to which respondents attached maximum importance	Drug history on admission	25%
	Education during hospital stay	45%
	Discharge education	45%
	Education in the community hospital	20%

get some contextualised ideas on how to develop the curriculum to strengthen the field of clinical pharmacy in the future.

## Results

### *First phase*

The response rate to the general questionnaire was 63 (63%). The themes and quotes representing interviewees responses and responses to open questions in the general questionnaire are summarised in Table II. Findings from the general questionnaire are summarised in Table III.

### *Second phase*

The response rate to the specific questionnaire was 37 (42%). Table III describes the percentage responses to questions on preferred learning approaches and the relevance of using practice research findings in teaching professional aspects of the curriculum. Table IV describes responses to questions relating to the acquisition of problem solving skills and the role of pharmacy practitioners in the curriculum (Table V).

## Discussion

The reasons for the relatively low response rate to the specific questionnaire may be that some of the respondents recently had received the generalised questionnaire and consequently did not feel the motivation to respond especially in the absence of a reminder. This was a weakness in our methodology.

The analyses of the interviews and the general questionnaires in the first phase indicated a need to match the curriculum to students' preferred approaches to learning as well as the importance of student exposure to professional and academic role models that were reinforced in the analyses of the specific questionnaire in the second phase of the study.

The study has heightened our awareness of the need for clinical experience to be integrated within the curriculum and identified the potentially wider role of practice research in helping to create the required learning environment in the practice setting.

### *Preferred approaches to learning*

While most respondents on the specific questionnaire, all of whom had graduated from Tromsø, appreciated receiving a theoretical approach prior to learning about practical applications, almost all were educationally motivated by learning about the application of basic knowledge. There is a strong preference for joint teaching with medical students and this has been a finding elsewhere (Horsburgh, Landin, & Williams-onet, 2001); while there was little enthusiasm for joint teaching with nurses. The use of interdisciplinary teaching in health care is becoming more widespread (Otter et al., 2003; Zwarenstein et al., 2006) and there may be differing arguments for sharing of lectures, sharing of group discussion and sharing of experiential learning in the clinical setting (Yanchick, 2005).

Rather than being taught drug problem solving by doctors, respondents supported a clear enthusiasm for more teaching from practising clinical pharmacists,

Table IV. Specific questionnaire: Acquisition of knowledge and use of practice research.

Questions	n	Responses %				
		Strongly dis-agree	Dis-agree	Neither agree nor dis-agree	Agree	Strongly agree
<i>Acquisition of knowledge: Preferences</i>						
1 More teaching together with medical students	37	5	14	11	49	22
2 More teaching together with students of nursing and other health professions	37	11	35	32	19	3
3 Teaching on drug problem solving by doctors rather than pharmacists	37	8	27	49	14	3
4 Drug problem solving best taught by teachers who are practising patient care even though they may not be experienced teachers	37	0	19	24	49	8
5 Learning from practising pharmacists who are not experienced teachers is generally more difficult than learning from university staff	37	14	35	35	16	0
6 The application of theoretical knowledge motivates me to learn the basic theory	37	0	5	8	32	54
7 Prefer learning the basic theory before learning about the practical application	37	0	8	24	54	14
8 Clinical role of pharmacist needs early introduction in the curriculum	37	0	5	43	41	11
9 Lack of university teaching staff with awareness of clinical practice	37	0	30	27	35	8
10 Curriculum would benefit from a wider understanding of role of pharmacist in patient care by university staff	37	0	16	35	38	11
<i>Awareness of pharmacy practice research in clinical pharmacy teaching</i>						
11 Pharmacy practice should be taught (like other subjects) by reference to the research underpinning it	37	0	8	19	51	22
12 Pharmacy practice (unlike other subjects) requires teaching that is not necessarily drawn from formal research	37	5	46	35	14	0
13 There is a satisfactory balance of professional research and practice backgrounds among the staff	37	3	14	41	41	3
14 Teachers of pharmacy practice should refer to the use of practice research in their teaching	37	0	5	35	54	5

regardless of the practitioners' teaching experience. This finding underlines the need for pharmacy courses to recognise suitable practitioners and develop the means to engage them in the teaching (Zarembski, Boyer, & Vlasses, 2005). Early clinical orientation was positively supported by the respondents and such teaching may need to be introduced in the first year of the curriculum. That early exposure to the professional role would support an argument for the students' professional studies to start from day one in the university (Drab et al., 2004). The associated curriculum model might be one in which professional studies formed an integrated theme through all five years, while gaining in prominence in the latter half of the course (Healey, Kane, Marshall, & Wilson, 1996).

#### *Acquisition of problem solving skills*

The wider use of problem based learning has led to increased use of clinical case studies, especially in the teaching of therapeutics. In our study, there was very strong support for the use of case studies using real

patients, preferable to those in books and for case studies to include specific dialogue with doctors to establish an accurate medical context or to practise negotiation skills. Group work in the learning of clinical skills and practice in communication skills was supported. There was a recognised desire for individual assessment of student problem solving performance. More experience of patient care and more contact with patients are needed; including observing experienced pharmacists in practice and working alongside them. These findings showed a definite appreciation of problem-based learning and for extension of it to experiential learning in real life clinical settings.

Pharmacists as role models for the students was a theme that was strongly supported in the first phase interviews and by responses to several questions in the second phase questionnaire. Early exposure to role models was supported as part of the professional orientation at the start of the curriculum and those role models should include community pharmacists. Respondents supported the engagement of experienced

Table V. Specific questionnaire: Acquisition of skills and attitudes.

Questions	n	Responses %				
		Strongly dis-agree	Dis-agree	Neither agree nor dis-agree	Agree	Strongly agree
<i>Acquisition of skills and attitudes: Preferences</i>						
15 Case studies of real patients help students learn problem solving better than cases presented in books	37	0	5	16	43	35
16 Case studies of real patients can cause too many distractions which take students away from common essential solutions	37	14	60	14	11	3
17 Group work is an effective way of learning clinical skills	37	16	11	14	60	0
18 There is a need for students demonstrating individual performance in problem solving to help them apply in practice what they have learned	37	3	11	19	60	8
19 Prefer to have obtained more experience of patient care within the curriculum	37	0	8	8	62	22
20 Observation of experienced pharmacists practising is valuable for students developing their skills in patient care	37	0	3	0	46	51
21 Experienced practitioners should be part of classroom teaching as well as in the patient care setting	37	0	0	5	62	32
22 Experienced practitioners should be included in the assessment (examination process) of student performance	37	0	0	27	54	19
23 Some practising pharmacists have been expected to be role models but were not suitable to do this in my experience	37	3	27	54	14	3
24 Pharmacy students should have contact with pharmacist role models in the first year of the curriculum	37	0	16	14	51	19
25 Role models in community pharmacy should be recognised by the university just as those in hospital pharmacy	37	0	8	11	54	27
26 Patient contact for students is essential to be developed in the curriculum	37	0	0	3	68	30
27 It is valuable to receive the views of the doctor in real patient case studies	37	0	0	3	54	43
28 Students should get more experience of patient care prior to the practical period	37	0	5	19	57	19
29 Pharmacy students need to be given the opportunity to work alongside practising pharmacists in patient care areas	37	0	0	3	41	57
30 Pharmacy students should have contact with real patients in the first year of the curriculum	37	5	43	32	14	5
31 Clinical tasks should form a defined part of the practical period	37	0	0	0	54	46
32 Pharmacist supervisors in the practical period should be helped to become clinical role models	37	0	3	19	54	24
33 The practical period should provide a defined opportunity to work closely with doctors and nurses	37	0	3	14	43	41
34 Students should receive formal feedback on their clinical skills during the practical period	37	0	5	22	49	24

practitioners to participate in classroom teaching and in student assessment. More experience of patient care should be in the curriculum before the student enters the practical period prior to being registered as a pharmacist. Generally, that practical period may need to be structured more specifically to form a clinical training ground by ensuring inclusion of better defined clinical tasks and increased opportunities to work with doctors and nurses. Attention might usefully be given to the feedback on clinical skills performance received by students during that time in their development.

One way of teaching undergraduates clinical skills on real problems may be to run a patient focused programme as the one recently developed at the School of Pharmacy, University of London (Shah, Savage, & Kapadia, 2005). The programme aims to give the students an early patient contact to promote good communication skills, an understanding of patient's experiences about their illnesses and medicines and to establish the pharmaceutical needs of patients. That earlier contact together with an initiative to introduce multidisciplinary learning (joint teaching with medical students) are conclusions that have been highlighted by a survey of curricula and students' expectations conducted in the UK (Wilson, Langley, Jesson, & Hatfield, 2006). We see our findings endorsing a harmonisation of developments in other European countries with the rapid changes in pharmacy practice being pursued in the UK.

#### *Integration of clinical experience within the curriculum*

Universities have traditionally found it easier to engage hospital pharmacist role models, partly due to hospital pharmacists being able to take greater advantage of clinical specialisation. In Norwegian hospitals, there is more access to pharmacists with the five year education, who are perhaps more comfortable in dialogue with doctors about patient care and therefore the best role models for pharmacy students. The hospital also more easily provides a suitable learning environment with access to clinical data and multidisciplinary co-operation. In contrast, the community pharmacies encompass prescriptionists with three years of education from university college and thus a smaller set of resources in terms of pharmacists with the professional experience of engaging with university staff and with the various types of medical staff.

In order to mobilise community pharmacists as student role models, the respondents supported the idea that the universities strengthen that role and improve their recognition of the pharmacists providing the clinical supervision during the practical period. Universities will need to develop new ways of co-operating with practitioners by helping pharmacists transform the community pharmacy into a more flexible learning environment (Zarembski et al., 2005). For pharmacists to extend their patient care activities

in the pharmacy they must improve documentation, maintain databases, create drug information systems and patient education resources as well as achieve greater interdisciplinary co-operation. Universities have a part to play in helping community pharmacists to develop their systems and practices in support of patient care, so that as their clinical environment evolves it also becomes a better learning environment (Speedie, 2003; Wilson et al., 2006).

The development of the pharmacy curriculum is therefore challenged by the need to provide a high quality of supervised access to patients. In our opinion, this requires academically appointed staff to not only become increasingly more comfortable in teaching within clinical settings but also to support the development of the academic role amongst the pharmacy practitioners. For this reason, there is a need to increase the number of academic positions for pharmacists that have an additional clinical function. Likewise, there is an increasing need for pharmacists holding clinical positions to be active in teaching and research (Peters & Mackinnon, 2004). The respondents supported pharmacy practice research as part of the learning of clinical practice. Clinical and practice research methods teaching may therefore contribute to the extension of the clinical pharmacy component of the curriculum. Our experience has been that the final year project provides a very good opportunity for creative collaboration between academic and clinical staff in the supervision and instruction of students. We believe such collaboration also has the potential to benefit the delivery of new pharmacy services. The study has revealed the need for us to expand our approaches to integrating practitioners into our teaching and the active participation of staff and students in identified service developments. This is a process which has been started in Tromsø, by having two clinical pharmacists from the field of rheumatology, one from psychiatry at the University hospital, in part time teaching positions at our undergraduate programme for pharmacy students. Furthermore, an associate professor in clinical pharmacy, being responsible for the teaching in cardiovascular therapeutics, has a part time position at a heart failure clinic at the hospital. This study has demonstrated that the preferred approaches to learning require the curriculum in Tromsø and elsewhere in Norway to build specifically on the current use of problem-based learning through a range of initiatives to build capacity for experiential and multidisciplinary learning.

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