Is there a need for a hospital pharmacy common training framework? Review of the literature on the impact of educational interventions on health outcome

Lorna Marie West,¹ Cornelia Vetter-Kerkhoff,² Nenad Miljkovic,³ Roberto Frontini⁴

¹Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, Msida, Malta

²Department of Pharmacy, University Hospital of Munich, Munich, Germany

³Department of Pharmacy, Institute of Orthopaedic Surgery "Banjica", University Hospital of Belgrade, Belgrade, Serbia

⁴Apotheke Liebigstr, Universitätsklinikum, Leipzig, Germany

Correspondence to

Dr Lorna Marie West, Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, Msida, Malta; lorna.west@um.edu.mt

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ABSTRACT

Background With the update of the directive 2005/36/EU on the recognition of professional qualifications (2013/55/EU), the European Union (EU) legislation opened also to pharmacists the possibility to define specialisations via a common training framework (CTF).

Objective The aim of this study was to review, synthesise and present published evidence on the impact of health educational interventions targeting healthcare professionals on patients' health outcomes that support a hospital pharmacy CTF in EU.

Method The search was carried out in Medline and Cumulative Index to Nursing & Allied Health Literature and was limited to English language full review articles or primary research published since 2000. Data were extracted independently and compared by three of the researchers.

Results Ten papers (9 primary research studies and one literature review) were identified. Almost one-third of the studies (30%, n=3) targeted pharmacists in their research. The majority of studies (80%, n=8) have shown that higher education levels among healthcare professionals improved patient outcomes. No study discussed the importance of a CTF.

Conclusion The review of the literature has demonstrated the need for education and training of health personnel to improve patient outcome. Controlled studies about pharmacist education and training in European countries showed that the benefit of a CTF is lacking.

For inpatients, the evidence on the added value of pharmacists in the care team is huge. Reviews and meta-analyses demonstrated that pharmacists improve clinical^{4–7} and economical outcomes^{8,9} as well as adherence.^{7,10} More specifically in hospitals, the participation of pharmacists in the care team reduces adverse events,¹¹ improves outcomes and reduces errors in the intensive care unit^{9,12,13} including paediatrics,¹⁴ reduces readmissions of elderly patients,¹⁵ improves the quality of the medication after surgery¹⁶ as well as in heart failure,¹⁷ reduces errors in internal medicine wards¹⁸ and optimises the use of antibiotics.¹⁹

Nevertheless, in terms of education, it is relevant to assess whether an advanced education compared with the standard education and experience in hospital settings improves the quality of pharmacist interventions and therefore supports the implementation of a harmonised European training by CTF to improve patients' outcomes.

AIM

The aim of this study was to review, synthesise and present published evidence on the impact of health educational interventions targeting healthcare professionals on patients' health outcomes that support a hospital pharmacy CTF in EU. There was no requirement for ethical approval prior to commencing the review.

METHOD

Search strategy

Included studies researched areas in relation to education and impact of pharmacists, medical doctors or nurses on patient outcomes. The search was carried out in Medline and Cumulative Index to Nursing & Allied Health Literature (CINAHL) and was limited to English language full review articles or primary research published since 2000 using terms listed in [box 1](#).

Paper selection was carried out by two independent teams of three researchers each to ensure inter-rater reliability. Each team screened all titles, followed by screening of abstracts and by full paper screening and reference lists. References lists were scrutinised and any additional relevant titles were included.

A data extraction tool was developed and included information related to the review's aim. Data were extracted independently and compared by three of the researchers. Any inconsistencies

INTRODUCTION

With the update of the directive 2005/36/EU¹ on the recognition of professional qualifications (2013/55/EU)², the European Union (EU) legislation opened also to pharmacists the possibility to define specialisations via a common training framework (CTF). The former legislation had only mutually recognised specialisations for physicians, while other sectorial professions—like pharmacists—could not use the tool of CTF. CTF defines a list of competencies and has to be agreed by at least one-third of the EU countries, that is, currently 10 countries.

Based on the 44 statements³ agreed at the summit of Brussels 2014 by the members of the European Association of Hospital Pharmacists (EAHP), patient groups, physician and nurses, EAHP started a working party with aim to defining the competencies for the advanced education of pharmacists working in hospitals and healthcare systems.

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Box 1 Search terms and search strings

Pharmac* or doctor or prescriber or physician or nurse
COMBINED with (1) educat* (2) impact (3) workforce or work
force (4) manpower or man power COMBINED with (1) outcome
(2) patient

among the reviewers were resolved by consensus. Due to the heterogeneous nature of reported data, a narrative approach was used to present study findings.²⁰

RESULTS

Ten papers (nine primary research studies and one literature review) were identified as illustrated in the PRISMA flow chart (figure 1).²¹

Study designs were mainly quantitative with half (50%, n=5) employing survey methods among nurses^{22–25} and pharmacists²⁶ ranging from 105 pharmacists²⁶ to 39 038 nurses²³ in hospital settings. Table 1 summarises studies reporting impact of health educational programmes targeting healthcare professionals on patients' health outcomes.

Almost one-third of the studies (30%, n=3) targeted pharmacists in their research.^{26–28} The majority of studies (80%, n=8) have shown that higher education levels among healthcare

professionals improved patient outcomes.^{22–27 29 30} No study discussed the importance of a CTF.

DISCUSSION

This review targeted key findings of the research literature reporting impact of educational programs on health outcome. While studies in this review highlight the significant impact continuing education can have on patient outcomes, none of the studies discussed the importance of a CTF to standardise specialisations across the hospital pharmacy profession in different European countries. In every profession where individuals who are trained differently and hold different academic credentials yet carry out similar working duties, there are debates about their education,³¹ and thus the need to standardise their training. The national evaluation 'Better training Better Care' program in the UK demonstrated improvements to patient care after integration of training in service delivery. Health Education England is pursuing to find evidence for the impact of education and training on patient care.³²

The pharmacy profession has changed over time from that of a chemist to a purely dispensing service and finally to an extended clinical pharmacy role. The role of pharmacists, as for any other profession, has changed and evolved as a consequence of competition, change in needs, changes in workplaces and social forces.³¹ This brought around the need for further training

Figure 1 Prisma diagram of literature retrieval and screening

Table 1 Study design of papers included in the literature review

Authors year, country	Setting and type of workforce	Method of data collection	Key findings
Aiken <i>et al</i> , 2003, USA ²²	Setting: hospital Workforce: nurses	Cross-sectional questionnaire (n=168 hospitals, 10 184 nurses)	1. In hospitals with higher proportion of nurses educated at the baccalaureate level or higher, surgical patients experienced lower mortality OR 0.94 (p=0.02) and failure to rescue rates OR 0.92 (p<0.001)
Aiken <i>et al</i> , 2011, USA ²³	Setting: hospital Workforce: nurses	Annual nurse survey data (n=665 hospitals, 39 038 nurses)	1. In hospitals with higher proportion of nurses educated patients experienced lower mortality OR 0.96 (p=0.0005) and failure to rescue rates OR 0.96 (p=0.0007)
Aiken <i>et al</i> , 2014, Nine European countries ²⁴	Setting: hospital workforce: nurses	Retrospective, observational study, survey (n=9 European countries, 300 hospitals, 26 516 nurses)	1. An increase in a nurse's workload by one patient increased the likelihood of an inpatient dying within 30 days of admission by 7% (OR 1.068, 95% CI 1.031 to 1.106) 2. Every 10% increase in bachelor's degree nurses was associated with a decrease in the likelihood of an inpatient dying within 30 days of admission by 7% (OR 0.929, 95% CI 0.886 to 0.973)
Aziz Fentianah, 2012, Saudi Arabia ²⁷	Setting: hospital Workforce: nurses	Mixed-method study (n=250 nurses)	1. The Ministry of Health Nursing Competency Program shows that the program can help nurse educators and managers to assess, maintain, monitor and improve nursing competence in delivering high-quality nursing care and ensuring safe nursing practice
Bond and Raehl, 2007, USA ²⁷	Setting: hospital Workforce: pharmacists	Retrospective, observational study (n=885 hospitals)	1. Clinical pharmacist provided in-service education was associated with reduced mortality rates: (10 660 reduced deaths, p=0.037)
Chiang <i>et al</i> , 2010, Taiwan ²⁶	Setting: not specified Workforce: pharmacists	Cross-sectional questionnaire preintervention and postintervention (n=105 pharmacists)	1. The continuing education program significantly improved pharmacists' knowledge of asthma care (p=0.0008) 2. The score in the subscale of asthma pharmacotherapy improved (p<0.001) 3. The preintervention and postintervention Asthma Attitude Scale in Mandarin attitude scores improved significantly by 2.5 points (p<0.001) 4. The subsets attitude scores of the importance of specialised training, the health impact of asthma disease, the value of close monitoring and the role of the pharmacist in asthma care showed significant improvement after the program
Cho <i>et al</i> , 2015, South Korea ²⁵	Setting: hospital Workforce: nurses	Retrospective, observational study, survey (n=14 hospitals, 1024 nurses)	1. Risk-adjusted models reveal that nurse staffing, nurse work environments and nurse education were significantly associated with patient mortality (OR 1.05, 95% CI 1.00 to 1.10; OR 0.52, 95% CI 0.31 to 0.88; and OR 0.91, CI 0.83 to 0.99, respectively)
Meštrović <i>et al</i> , 2012, Croatia ²⁸	Setting: community Workforce: pharmacists	Prospective cohort study (n=100 pharmacists)	1. General level framework is a valid educational tool for pharmacist development
van Zyl and Rheeder, 2004, South Africa ²⁹	Setting: tertiary care diabetes clinics Workforce: doctors	Quasi-experimental controlled before and after study	1. A physician education programme and structured consultation schedule would improve the quality of diabetes patient care in a diabetes care clinic
Wade, 2009 ³⁰	Setting: not specified Workforce: nurses	Review (n=12 studies)	1. Certification was found to be positively associated with nurses' job satisfaction, sense of empowerment and sense of collaboration with other healthcare team members. 2. Studies showed an association between certification and intrinsic value, such as enhanced feeling of personal accomplishment, personal satisfaction, validation of knowledge and the attainment of a practice standard. 3. Empowerment was the second most common reward of certification described in the studies. 4. Two out of three studies found a positive relationship between certification and patient satisfaction. 5. Seven out of eight studies found a significant relationship between certification and nurses' perception of their skills and knowledge being enhanced and validated. 6. Two studies measured the relationship between certification and patient health outcomes. One of the studies reported a positive correlation and the other found no significance correlation.

and the need for specialised roles. This review, while mainly relating to nursing studies, clearly highlights that healthcare professionals with higher degrees or extended training impact positively and significantly on patient outcomes, including mortality rates. Therefore, further hospital pharmacy education could have a significant effect on professional status and services reimbursement.

The freedom of movement between different European countries, including pharmacist migration, is a known fact. Pharmacists, as for other professions such as nurses, may be migrating in search of better wages and working conditions, career mobility, professional development, better life, or sometimes for the sake of novelty.³³ UK is one of the European countries that attracts a number of foreign pharmacists, although a large number of these have graduated from the UK.³⁴ Currently, in different European countries, separate

bodies employing different systems are responsible for training or examining foreign pharmacists at a national or subnational level.³⁴ To mitigate this issue, the pharmacy profession authorities need to take responsibility about pharmacy education and harmonise postgraduate curricula under a CTF to protect the integrity of pharmacy education and especially patient safety.³⁵

Patients across hospitals around different countries deserve the same standards of safe and high-quality care. Key findings of identified studies within this review clearly indicate that higher education levels translate into better patient outcomes and lower mortality. Therefore, a CTF can be considered as the foundation stone for ensuring the best use of medicines by patients in hospitals and should be the benchmark for all European countries to strive for. Moreover, a CTF can improve the prospect of cooperation in specialisation education provision between different

countries, always with the aim of providing the same standards of care to all patients.³⁶

This literature review has a number of strengths and limitations. The literature search was carried out by two teams of researchers to ensure inter-rater reliability at each stage of screening and data extraction. However, the search was limited to two databases and was restricted to studies published in the English language.

CONCLUSION

The review of the literature has demonstrated the need for education and training of health personnel to improve patient outcome. Controlled studies about pharmacist education and training in European countries showed that the benefit of a CTF is lacking. Due to the significant lack of studies, insufficient data exist on the subject and future studies in this field should be encouraged.

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