

Implementation of pharmaceutical care knowledge in Bulgarian community pharmacies

V. PETKOVA, ST. GEORGIEV, Z.L. DIMITROVA, & M. RADIVOEVA

Department of Social Pharmacy, Faculty of Pharmacy, Medical University-Sofia, 2-Dunav street, Sofia 1000, Bulgaria

Abstract

Introduction: The concept “Pharmaceutical care” is a new philosophy for Bulgarian community pharmacy practice. Beginning in 2000, a new course in pharmaceutical care was introduced in the curriculum of the Faculty of Pharmacy, Sofia, Bulgaria. Later its status changed from free to compulsory and was included in the National Education regulation for higher pharmaceutical education. The newly graduated pharmacists are making their first attempts to introduce this knowledge into practice.

Aim: This study was designed to evaluate two criteria; the applicability of pharmaceutical care standards to Bulgarian pharmacies and their importance for the patient.

Results: The results from two questionnaires show that practicing pharmacists appraise the pharmaceutical care standards for pharmacy practice as applicable and are interested in applying these standards if a legal regulation is introduced.

Conclusion: Pharmacists are better prepared to implement pharmaceutical care practice and standards in Bulgarian community pharmacy.

Keywords: *Pharmaceutical care, community practice, Bulgaria, pharmaceutical education*

Introduction

The profession of pharmacy has experienced significant growth and development over recent years. Pharmaceutics has changed from the traditional function that included delivering, preparing and evaluating drug products, where the primary obligation of the pharmacist was to ensure that the drugs sold were pure and of high quality, to mainly patient-oriented functions such as pharmacokinetic dosing, therapeutic monitoring and drug information. This traditional role began to wane as the preparation of pharmaceuticals was gradually taken over by the pharmaceutical industry (Hepler & Strand, 1990). The most important strategies for pharmacists to define their new role include a patient-orientated attitude and activities like patient counselling, professional values for the safe and efficient use of drugs, and pharmacists’ concern for the therapeutic outcome of drug treatment (Schaefer, 2005). There are many factors that influence the possibility of delivering pharmaceutical care. One of these factors is

the education of pharmacists and staff (van Mil, 1999).

Since the 1990s, a number of countries have adopted the concept of “Pharmaceutical care” and have implemented standards and strategies for its realization in practice. These strategies are described by Hepler and Strand’s (1990) concept, based on the definition that pharmaceutical care is the “responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life”. The essence of the concept allows the pharmacist to be a safeguard in order to enhance rational drug use and to contribute to a measurable therapeutic outcome of drug treatment, usually in close cooperation with the physician.

In order to train highly qualified pharmacists, that can deal with all the problems in the pharmacy and provide effective, safe and convenient drug therapy for the patients, a new course on pharmaceutical care was developed in the Department of Social Pharmacy, Faculty of Pharmacy. The status of this course has more recently changed from optional to compulsory

Correspondence: V. Petkova, Department of Social Pharmacy, Faculty of Pharmacy, Medical University-Sofia, 2-Dunav street, Sofia 1000, Bulgaria. Tel: 359 2 923 659 3. Fax: 359 2 987 987 4. E-mail: vpetkova@mbox.pharmfac.acad.bg

and it was included in the National Education regulation for higher pharmaceutical education (Petkova & Dimitrova, 2003).

Additionally, course lectures were read as a further education course for practice pharmacists in order to elucidate the essence of the Pharmaceutical care concept. The Pharma Union Bulgaria has since adopted in its Rules the FIP's Good Pharmaceutical Practice, and the essence of the pharmaceutical care concept.

As the pharmaceutical literature shows, there are a great number of barriers for the implementation of pharmaceutical care in practice (Penna, 1990). Despite wide approval of the concept and the significant number of studies that have been published about its adoption in practice, many countries have taken the first step in this respect. The more recent literature shows that the main obstacle for the accelerated implementation of this new practice is the lack of standards that has to be applied by the pharmacists in their daily practice. This does not mean that every pharmacy has to offer equal services and that every pharmacist has to react in one and the same way. But these standards will lead pharmacists to render services to patients that will improve their medical treatment. Hepler and Strand (1990) asserted that independent from the common aim of the pharmaceutical care, "the specific content of the standards can vary in accordance with the profile of the pharmacies".

The published standards for the US Pharmaceutical Care Practice prompted researchers to evaluate two criteria; the applicability of pharmaceutical care standards in the Bulgarian pharmacies; and, their importance for the patient after the introduction of the new concept in practice.

Materials and methods

This study was conducted by collecting data at the end of a further education course on pharmaceutical care for practice pharmacists. A Likert scale was used in order to measure the subjects' attitudes towards the applicability of pharmaceutical care standards in the Bulgarian pharmacy setting. Subjects were asked to express agreement or disagreement of a six-point scale. Each degree of agreement is given a numerical value from one to six. Thus a total numerical value was calculated from all the responses. The answers were analysed by using SPSS statistical software version 12.0 by using descriptive statistics.

The Delphi method, defined as a "consecutive procedure for achievement of a consensus" was applied (Helmer, 1966). It includes achievement of an expected consensus of opinions after several consecutive cycles of questioning. On account of its capacity to quantitatively measure the experts' opinion, it was logically chosen to define appropriate

standards for the pharmaceutical care in community pharmacies.

Thirty-nine pharmacists, who took part in the further education course, participated in the study.

Expert selection was completed based on the following criteria:

1. Good knowledge and experience of the discussed problem.
2. Representative sample from all pharmacists working in community pharmacies in the city of Sofia, Bulgaria.
3. Indicated as an expert by the managerial body of the "Sofia pharmacies" economic unit.

Results

From the 39 pharmacists, 13 (six men and seven women) matched the expert criteria. Their demographic data is presented in the Table I. The predominant age group is 41–50 years. Forty percentages of them were in a managerial position. These numbers show that the pharmacists are well selected.

Initially, participants were asked to assess by a 6-grade scale the applicability of each of the standards for pharmaceutical care one by one (1-no, 2-low, 3-moderate, 4-good, 5-high, 6-very high). Each of the 13 participants completed the questionnaire.

During the second cycle, the experts were given the means and the confidence intervals for application of each standard. After that, the possibility was given for reassessment of each standard. All of the 13 experts completed the second cycle questionnaires. Again, the means and the standard deviations were calculated for each single standard (Tables II–VI).

Results of the second cycle were compared with the calculated means from the first cycle using a paired

Table I. Demographic characterization of the expert group.

| Characteristics | Number | Percentage |
|---------------------|--------|------------|
| Age | | |
| Up to 30 years | 1 | 8 |
| 41–50 years | 7 | 54 |
| 51–60 years | 4 | 31 |
| Above 61 years | 1 | 8 |
| Gender | | |
| Male | 6 | 46 |
| Female | 7 | 54 |
| Position | | |
| Manager | 5 | 38 |
| Master of pharmacy | 8 | 62 |
| Length of service | | |
| From 1 to 10 years | 1 | 8 |
| From 11 to 20 years | 4 | 31 |
| From 21 to 30 years | 5 | 38 |
| Above 30 years | 3 | 23 |

Table II. Pharmaceutical care competency assessment tool.

| |
|---|
| List of the main standards: |
| Establish a relationship (A) |
| Establish expectations—patient or caregiver, pharmacist and pharmacy (B) |
| Define desired outcomes for each medication-related problem (C) |
| Develop and document the treatment plan from listed alternatives (D) |
| Develop and document educational plan (E) |
| Develop and document plan for monitoring expected and unexpected outcomes (e.g. plan for monitoring adverse events) (F) |
| The endpoint of the relationship (G) (Klem & Miller, 1997) |

t-test to determine if a consensus was met (Table VII: $t = -1.451, p = 0.197$). The standards are considered applicable and meaningful if the experts reached a consensus (mean difference of no more than 0.1).

Discussion

Thirteen experts were assessed as applicable in some degree according to the standards listed in Table II. During the first cycle of assessment they expressed agreement 12 times with five (high) and 34 times with four (good), and during the second cycle their opinion changed slightly—14 responses of five (high) and 39 responses of four (good). This shows that the published literature standards for pharmaceutical

Table III. Experts' assessment of the applicability of the main standards.

| Experts | Main pharmaceutical care standards | | | | | | |
|---------|------------------------------------|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| 1 | 4 | 3 | 4 | 3 | 4 | 3 | 4 |
| 2 | 5 | 3 | 5 | 3 | 4 | 3 | 4 |
| 3 | 6 | 4 | 5 | 4 | 3 | 3 | 4 |
| 4 | 6 | 4 | 4 | 4 | 3 | 3 | 4 |
| 5 | 3 | 4 | 4 | 4 | 2 | 2 | 5 |
| 6 | 2 | 2 | 5 | 4 | 2 | 2 | 5 |
| 7 | 4 | 2 | 6 | 3 | 2 | 2 | 5 |
| 8 | 4 | 3 | 6 | 3 | 1 | 2 | 4 |
| 9 | 5 | 3 | 5 | 5 | 3 | 2 | 4 |
| 10 | 3 | 4 | 4 | 4 | 3 | 3 | 4 |
| 11 | 4 | 4 | 4 | 4 | 3 | 3 | 6 |
| 12 | 5 | 3 | 4 | 4 | 3 | 3 | 4 |
| 13 | 5 | 4 | 3 | 3 | 3 | 3 | 4 |

Scale: 1 = no agreement; 6 = complete agreement.

Table IV. Statistical results after the first cycle of the experiment.

| Main standards | N | Sum | Mean | Standard deviation |
|----------------|----|-------|--------|--------------------|
| A | 13 | 56.00 | 4.3077 | 1.18213 |
| B | 13 | 43.00 | 3.3077 | 0.75107 |
| C | 13 | 59.00 | 4.5385 | 0.87706 |
| D | 13 | 48.00 | 3.6923 | 0.63043 |
| E | 13 | 36.00 | 2.7692 | 0.83205 |
| F | 13 | 34.00 | 2.6154 | 0.50637 |
| G | 13 | 57.00 | 4.3846 | 0.65044 |

Table V. Experts' reassessment of the applicability of the main standards.

| Experts | Main pharmaceutical care standards after reassessment | | | | | | |
|---------|---|----|----|----|----|----|----|
| | A1 | B1 | C1 | D1 | E1 | F1 | G1 |
| 1 | 4 | 3 | 4 | 3 | 4 | 3 | 4 |
| 2 | 4 | 3 | 5 | 3 | 4 | 3 | 4 |
| 3 | 5 | 4 | 5 | 4 | 3 | 3 | 4 |
| 4 | 5 | 4 | 4 | 4 | 3 | 3 | 4 |
| 5 | 4 | 4 | 4 | 4 | 2 | 2 | 5 |
| 6 | 4 | 2 | 5 | 4 | 2 | 2 | 5 |
| 7 | 4 | 3 | 6 | 3 | 4 | 2 | 5 |
| 8 | 4 | 3 | 6 | 3 | 3 | 3 | 4 |
| 9 | 5 | 3 | 5 | 3 | 3 | 3 | 4 |
| 10 | 4 | 4 | 4 | 4 | 3 | 3 | 4 |
| 11 | 4 | 4 | 4 | 4 | 3 | 3 | 5 |
| 12 | 5 | 3 | 4 | 4 | 3 | 3 | 4 |
| 13 | 5 | 4 | 5 | 3 | 3 | 3 | 4 |

Scale: 1 = no agreement; 6 = complete agreement.

care are meaningful for achievement of desired therapeutical results in the study context (Klem & Miller, 1997). The outcome from the first cycle shows that only three of the standards are assessed as applicable in Bulgarian conditions, regardless of the fact that the educational process includes all seven standards. There are problems with the communication with the rest of the health workers, obstacles for providing of pharmaceutical care working conditions in the pharmacies, lack of appropriate software products. The same result is achieved during the second cycle. The other four standards received non-consensual assessment (low to moderate) in both cycles. This result is due to the fact that patients may not be constant clients in any one pharmacy. This holds true especially when purchasing over the counter (OTC) drugs. That is why it is extremely difficult to monitor patient consistency between visits. Standard number 6 (F) was dropped as inapplicable as a result although it is very important factor in the patients' condition. This conclusion confirms literature data that it is not possible to expect equal pharmaceutical services from all pharmacists. The essential element is the pharmacist's acceptance of direct responsibility for the patient (Hepler, 1993). Four main criteria must be met before pharmacists

Table VI. Statistical results after the second cycle of the experiment.

| | N | Sum | Mean | Standard deviation |
|----|----|-------|--------|--------------------|
| A1 | 13 | 57.00 | 4.3846 | 0.50637 |
| B1 | 13 | 44.00 | 3.3846 | 0.65044 |
| C1 | 13 | 61.00 | 4.6923 | 0.75107 |
| D1 | 13 | 46.00 | 3.5385 | 0.51887 |
| E1 | 13 | 40.00 | 3.0769 | 0.64051 |
| F1 | 13 | 36.00 | 2.7692 | 0.43853 |
| G1 | 13 | 56.00 | 4.3077 | 0.48038 |

Table VII. Results from the comparison.

| | | Mean | N | Mean difference | <i>t</i> | Significance (two-tailed) |
|------|---------------------------|--------|---|-----------------|----------|---------------------------|
| Pair | Main standards | 3.6451 | 7 | -0.09120 | -1.451 | 0.197 |
| | Main standards reassessed | 3.7363 | 7 | | | |

should be granted the authority to provide pharmaceutical care and before pharmacists should accept that responsibility:

1. The provider must have adequate knowledge and skills in pharmaceutics and clinical pharmacology.
2. The provider must be able to mobilize the drug distribution system through which drug-use decisions and implementation.
3. The provider must be able to develop the relationships with the patient and other health-care professionals that are required in the provision of pharmaceutical care.
4. As a practical matter, there must be a sufficient number of providers to serve each community (Hepler & Strand, 1990).

The goal is to educate a number of competent practitioners through training on the above mentioned criteria, preparing them to meet society's need for pharmaceutical care. The Bulgarian pharmaceutical education is coming closer to fulfilling this purpose.

Conclusion

The initial list of seven standards for pharmaceutical care, assessed by the 6-grade scale and developed on the basis of published studies is assessed according to their applicability and by their importance. As a result of the evaluation over two consecutive cycles, a consensus was achieved for all the standards. This means that experts assess these standards as applicable

in the Bulgarian pharmacies. They consider the curriculum of the pharmaceutical course well developed and related to the practice, thus providing capable and well-trained specialists. Results from the two questionnaire studies show that the practicing pharmacists are ready to adopt these pharmaceutical care standards in the Bulgarian pharmacy context, after the introduction of legal regulation. The implementation of these standards will allow the pharmaceutical profession to show the benefits of this training for optimisation of therapeutic and cost effective results for the treatment of patients.

References

- Helmer, O. (1966). *Social technology*. New York: Basic books, Inc., p. 11.
- Hepler, C. D. (1993). Issues in implementing pharmaceutical care. *American Journal of Hospital Pharmacy*, 50, 1635–1639.
- Hepler, C. D., & Strand, L. M. (1990). Opportunities and responsibilities in pharmaceutical care. *American Journal of Hospital Pharmacy*, 47, 533–543.
- Klem, S., & Miller, D. (1997). Michigan pharmaceutical care model. *Michigan Pharmacist Journal*, 35, 3–20.
- Penna, R. P. (1990). Pharmaceutical care: Pharmacy's mission for the 1990s. *American Journal of Hospital Pharmacy*, 47, 545–547.
- Petkova, V., & Dimitrova, Z. I. (2003). Pharmaceutical practice, pharmaceutical care and pharmacy education in Bulgaria. *Pharmacy Education*, 3, 205–207.
- Schaefer, M. (2005). The role of the pharmacist in future—pharmaceutical care. Sofia. *Pharmacia*, 52, 168–173.
- van Mil, J. (1999). Pharmaceutical care, the future of pharmacy. Theory, research and practice. Dissertation. Groningen, Drukkerij De Volharding, pp. 149–159.