

# Formation of Deontological Culture of Future Pharmacists in Higher Education Institutions of Ukraine

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**Abstract** One of the leading factors that enables the successful functioning of the pharmaceutical industry is staffing. Proper training of specialists, along with the formation of their professional characteristics, should also include the development of spirituality and morality. The purpose of this study is to substantiate and experimentally test the model of formation of deontological culture of future pharmacists in higher education institutions. The level of formation of deontological culture was determined by a set of methods using an integrative indicator. A total of 180 students and 26 teachers from medical colleges and 19 pharmacy staff took part in the study. At the formative stage of the pedagogical experiment, 61 applicants for higher education were involved. Our research has shown that deontological culture is associated with a system of values, professional and personal formations of the specialist, through which their moral consciousness is manifested in professional activities. The structure of the deontological culture of the pharmacist is determined by the humanistic worldview, empathy, communicative activity and personality qualities. The model of formation of deontological culture of future pharmacists includes a set of interconnected components that determine the semantic construction of this purposeful process, and its effectiveness is ensured by the implementation of organizational and methodological conditions such as organizational and pedagogical, specialized, mutually

formative and cognitive and advanced. The results of the experimental test showed the effectiveness of the proposed model and the corresponding organizational and methodological conditions.

**Keywords** Deontological Culture, Pharmaceutical Industry, Future Specialists, Institutions of Higher Education, Model

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## 1. Introduction

Modern social and economic and political transformations in Ukraine, the numerous challenges and problems associated with them, the need for their rapid and effective solution have highlighted the need of society for people with a high level of spirituality and culture who successfully improve and interact with the world. Rethinking the importance and role of the individual in the world, seeing the ideal of human education, making new demands on the quality of human capital in accordance with modern transformations and transfigurations, are the main trend of social progress and the need for continuous improvement of training, including for the pharmaceutical industry. In the current conditions of leveling traditional values, devaluation of moral principles and orientation of

the younger generation mostly on consumption and not on spiritual heritage, one of the important tasks of modern higher education is to form the personality of the future pharmacist "with an inner need to live and act in accordance with the principles of moral coexistence" [1].

The profession of pharmacist is specified by the complexity and variability of physiological processes in the human body, a large enough range of drugs to regulate the above processes, the variability of diseases in their individual manifestations in each individual, as well as the ever-increasing flow of scientific pharmaceutical and medical information and therapeutic techniques, the synthesis of pharmaceutically active ingredients and the emergence of state-of-the-art drugs [2-4]. An important feature of the professional activity of a pharmacist is the specific provision of assistance directly to the person, the direct impact on the quality of their life through the correction of health, which requires positive qualities and high culture.

Increasing commercialization of society encourages pharmacists to focus on demand analysis, pricing policy, profitability of drugs, which often deprives them of the perception of the pharmacy client as a person, complicates the provision of pharmaceutical care to the suffering person [5, 6]. However, just as it is very doubtful to form a comprehensively and harmoniously developed personality outside of universal moral values, it is impossible to achieve the success of a pharmacist in their professional activity without proper ethics and deontological principles.

Therefore, the training of future pharmacists for professional activities should ensure the formation of their deontological culture – a stable personal and professional education that determines the behavior and relationships of the specialist in performing professional duties and reflects the development of their personally significant and professionally important qualities and ability [7, 8]. Given the unsatisfactory state of health of the population of Ukraine and the steady trend of its deterioration [9-12], as well as the vocation of the pharmacist profession – caring for the well-being of each patient, which obliges to put their health above personal and commercial interests [13], the urgency of the formation of deontological culture of future pharmacists is growing significantly.

## 2. Objectives

The objectives of this article are to present the results of our experimental work related to the formation of deontological culture of future pharmacists in higher education institutions of Ukraine. In our research, we sought to find answers to the following questions: What exactly reveals the essence of deontological culture? What components determine its structure? What complex of organizational and methodological conditions will ensure the effectiveness of the process of formation of deontological culture? At the same time, this article presents a structural model of the formation of deontological culture of future pharmacists in higher education institutions of Ukraine.

## 3. Materials and Methods

The study was conducted during 2018-2021 on the basis of medical colleges of Zaporizhzhia and Ternopil regions of Ukraine. A total of 180 students from pharmaceutical departments, 26 teachers from higher education institutions and 19 pharmacy workers took part in the pedagogical experiment. 61 students were directly involved in the formative stage of the experiment.

Theoretical principles of formation of deontological culture of future pharmacists were studied by means of analysis, synthesis, generalization and comparison of scientific information on the problem of research, educational and methodical and normative documentation; modeling of professional training of medical college students; comparison of the obtained experimental data.

To form the deontological culture of future pharmacists and test the effectiveness of organizational and methodological conditions that ensure the effectiveness of this educational process, a pedagogical experiment was used, supplemented by the necessary observations.

Diagnostic testing of the formation of deontological culture of future pharmacists was carried out according to personal, cognitive and activity criteria and involved the use of a set of methods presented in Table 1.

**Table 1.** Methods of diagnostic testing of the formation of deontological culture of future pharmacists

Components	Diagnostic testing methods	Indicators
<i>Personality criterion</i>		
Motivational and axiological	Diagnostic testing of the motivational structure of personality by V. Milman [14]	Identification of healthcare motives
	Methods of value orientations by M. Rokych [15]	Awareness of one's own values, manifestation of positive moral virtues and traits, possession of personal deontological judgments
<i>Cognitive criterion</i>		
Cognitive	Modernized method of determining the level of mental ability of a pharmacist by V. Snyavsky [16]	Ability to properly perform pharmaceutical analysis, resource conservation, pharmaceutical care
	Modified diagnostics of expressiveness of deontological features and diagnostics of deontological knowledge by O. Sheplyakova [17]	Assimilation of ethical and deontological concepts, the ability to conduct rapid analysis of active pharmaceutical ingredients, knowledge of work practice principles
<i>Activity criterion</i>		
Reflective	Diagnostics of benevolence on the D. Campbell's scale [18]	Identifying the level of culture of professional communication, the ability to provide appropriate pharmaceutical advice
	Modified diagnostics of the ability to store personal information by I. Platt [19]	Ability to maintain medical confidentiality in the provision of pharmaceutical advice
	Diagnostics of the level of development of moral consciousness by L. Kohlberg [20]	Ability to apply the legitimacy of advertising, address professional ethical issues and identify principles in the pharmaceutical business
	Diagnostics of the perception of others on the W. Faye's scale [21]	Ability to provide proper pharmaceutical care

The integrative indicator of the formation of deontological culture of future pharmacists was determined by the objective function L, which consisted of the results of diagnostic tests and was calculated by formula (1):

$$L = C1X1 + C2X2 + C3X3 + C4X4 + C5X5 + C6X6 + C7X7 + C8X8 \quad (1)$$

where, X are the average values of the sample that characterize the level of formation of motivational and axiological (X1; X2), cognitive (X3; X4) and reflective (X5; X6; X7; X8) components of deontological culture;

C - coefficients, which were established by the method of expert estimates and corresponded to the following values:

$$C1 = \frac{1}{4} (0.25); C2 = \frac{1}{20} (0.05); C3 = \frac{1}{4} (0.25); C4 = \frac{1}{20} (0.05); C5 = \frac{1}{4} (0.25); C6 = \frac{1}{20} (0.05); C7 = \frac{1}{20} (0.05); C8 = \frac{1}{20} (0.05).$$

Determining the level of formation of deontological culture of future pharmacists was carried out using the scale of assessment of the integrated indicator developed by us:

Level of competence	Scores	Coefficient
Creative	90-100	0,9-1
High	75-89	0,75-0,89
Sufficient	60-74	0,6-0,74
Base	0-59	0-0,59

## 4. Results and Discussion

### 4.1. The Essence and Structure of Deontological Culture of the Pharmacist

Deontological culture is one of the most important social and cultural factors in the formation of the personality of the specialist. Acting as an element of professional and general culture, it is based on generally accepted spiritual and moral values, norms and rules, as well as ways of human interaction as a unit of the professional community to which they belong. We assume that the general culture is characterized by norms and rules of life, which are established on the basis of common methods of socialization, education and development and they are common to all people, and professional culture is determined by norms and standards directly related to certain activities and specific interaction among members of one of the socio-professional groups [22].

In turn, deontological culture, on the one hand, indicates the state of the spiritual sphere of the individual, the presence of moral and ethical beliefs and relevant qualities, and on the other, regulates the performance of professional duties and provides reflection [23-25]. It is determined not only by the set of social and psychological, spiritual and intellectual, emotional and volitional, professional and ethical values and personality traits that determine the ethical and cultural significance of the specialist [26], but also the degree of their assignment, which is embedded in

professional and spiritual experience in the development of medicine and pharmacy [27].

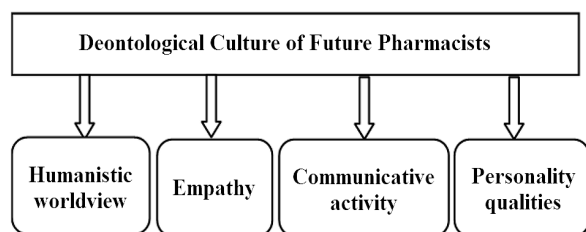
This personal phenomenon synthesizes a strong focus on professional values, their awareness and proper performance of the functions of a pharmacist at the level of duty and responsibility [28]. Deontological culture ensures the relationship between moral values and the content of work and norms of behavior of a specialist in the pharmaceutical industry. Acting as an internal regulator of personality, deontological culture is always reflected in actions, observance of moral and ethical norms in relationships with others.

And if "deontology falls within the domain of moral theories that guide and assess our choices of what we ought to do" [29], then deontological culture is the key to providing quality pharmaceutical care to the population to preserve their health. Accordingly, the level of its formation determines the manifestation of pharmacists' moral consciousness in everyday professional activities, which ultimately determines the effectiveness of work.

In addition, deontological culture is manifested in the desire of humans to transform their inner world, which involves constant self-improvement of the individual on the basis of self-knowledge, self-determination and free choice. This is important for our study, because the phenomenon under study is complex and multidimensional and acts as a subject, means, result of educational and professional activities, in the process of which certain specific categories of values are assimilated and disseminated [30].

RQ1 The essence of the deontological culture of a pharmacist reveals the system of values and qualities of the individual, which provides regulation of their professional behavior to provide quality pharmaceutical care to the population.

Based on the analysis of works devoted to research of professional training of future specialists in higher education institutions [31, 32, 33], features of professional activity of pharmacist [2, 34, 35], content and direction of deontological culture [8, 17, 36], in the structure of deontological culture of the pharmacist, the following components were identified: humanistic worldview, empathy, communicative activity and personality qualities (Figure 1).



**Figure 1.** Structural and logical scheme of components of deontological culture of future pharmacists

In life, a person always refers to certain values and acts

on the basis of moral principles and beliefs. Based on each other, all values are inextricably linked, forming a certain hierarchical structure. In a situation of value self-determination, the future specialist should always be guided by the fact that the main values for the pharmacist are the person themselves, their health and life. Recognition of the interests of humans, their well-being, health and prosperity of the highest value means that the humanistic worldview should be an integral component of deontological culture.

In pharmaceutical activities, the humanistic worldview contributes to a better understanding of the pharmacy client, which allows optimal selection of drugs, the correct determination of their dosage according to age, weight, sex, comorbidities, special physiological conditions and more. Trust in a pharmacist provides more detailed and truthful primary information from a person about the history of a disease and other pressing problems, based on which you can establish appropriate medical treatment, necessary medical devices, as well as herbal and homeopathic remedies.

An important aspect of the formation of deontological culture of future pharmacists is the development of empathy – a sense of awareness of other people's emotions and trying to understand how they feel [37]. After all, the ability to share and understand the emotions of others is the key to success in professional activities [38]. Empathy provides the processes of sympathy, the ability to empathize, inclusion in the emotional state of another person in order to form a psychological resonance and provide assistance. Entering the emotional state of the pharmacy client increases their confidence, accelerates treatment and recovery after illness by establishing various types of interaction.

In turn, the establishment of effective interaction is ensured by the communicative competence of the future specialist, the integrity of which is due to the unity and interrelationships of its axiological, cognitive and personality and activity components [39]. The latter can serve as indicators of communication activities, as they accumulate the most important results of training – motivation, knowledge, skills, ability and personal experience. At the same time, the communicative activity of a specialist in the pharmaceutical industry involves a fairly wide range of skills, namely:

- ability of verbal and nonverbal communication, i.e. the ability to speak, listen, use gestures, facial expressions, pantomime, gaze, etc.;
- ability to distribute attention;
- ability of social perception (to perceive and understand the internal state of the partner on external grounds);
- ability to predict the reaction of the communication partner;
- the ability to control one's own behavior in communication [40].

Communication in the name of another, involvement in their problems, providing quality pharmaceutical care are provided by a set of personality traits that are an organic component of the deontological culture of the specialist. In our opinion, personal qualities and traits are manifested in the deontological thinking of the specialist (priority of the pharmacy client's interests over personal ones), their moral beliefs (responsibility, obligation, justice, discretion, objectivity, decency, patience), proper behavior, mercy, sincerity, sensitivity, attentiveness, tact), decent appearance (accuracy, modesty), professional language (listening ability, politeness, sociability, understanding, indulgence) and reflection (honesty, demanding, prudence, tolerance).

RQ2 The structure of the deontological culture of a pharmacist is determined by such components as humanistic worldview, empathy, communicative activity and personality qualities.

#### **4.2. Model of Formation of Deontological Culture of Future Pharmacists**

The formation of deontological culture of future pharmacists was carried out on the basis of the developed model, which is presented by a set of components and connections among them, which determine the semantic structure of this purposeful process (Figure 2). The proposed model reflects the properties of the subject of study and the principles of its operation.

The social order of society for a competitive specialist in the pharmaceutical industry determines the goals of training, which are reflected in its results, associated with the appropriate level of formation of deontological culture. The formation of deontological culture of future pharmacists required the definition and justification of organizational and methodological conditions that ensure the effectiveness of this educational process. Organizational and methodological conditions are considered as a result of joint actions of participants in the educational process to achieve the goals and objectives of training and the factors influencing its effectiveness [41]. We assume that all conditions, acting as elements of a single system, are in close connection and interaction, and their implementation should be based on mutual assistance [42]. Our research allows us to determine such organizational and methodological conditions for the formation of deontological culture of future pharmacists,

as:

- organizational and pedagogical – actualization of tasks through the improvement of the content, forms and methods of organization of the educational process in medical colleges;
- specialized – teaching a special course "pharmaceutical deontological culture" and ensuring the continuity of pedagogical influence on the formation of deontological culture;
- mutual and formative – participation of teachers, promotion of bilateral influence of pedagogical process, transfer of own ethical and deontological dominants, observance of psychological strategy, introduction of constant monitoring of level of formation of components of deontological culture of future pharmacists;
- cognitive and advanced – taking into account the challenges of modernity, international best practices, the use of scientific and methodological support, modern computer technology, interactive teaching methods, distance learning opportunities and testing the level of knowledge.

RQ3 The effectiveness of the process of formation of deontological culture of future pharmacists provides a set of organizational and methodological conditions such as organizational and pedagogical, specialized, mutual and formative, and cognitive and advanced.

The implementation of these conditions is provided for the continuity of pedagogical influence on the acquisition of deontological knowledge and skills, instilling in future pharmacists the obligation, responsibility and quality of professional action, the development of virtuous qualities and characteristics. This provided incentives for students to manifest universal moral values through the solution of moral and ethical dilemmas in the field of pharmacy. With the use of case technologies, the competencies of future pharmacists, their ability to transform "terminal and instrumental values" [15] into stable moral and legal norms of professional activity were formed and tested. The development of self-awareness of each student was carried out through the development of algorithms for providing pharmaceutical care, taking into account mercy, attentiveness and confidentiality. Constant monitoring of the level of formation of deontological culture of future pharmacists was introduced, which involved teachers, curators, psychologists, heads of internship.

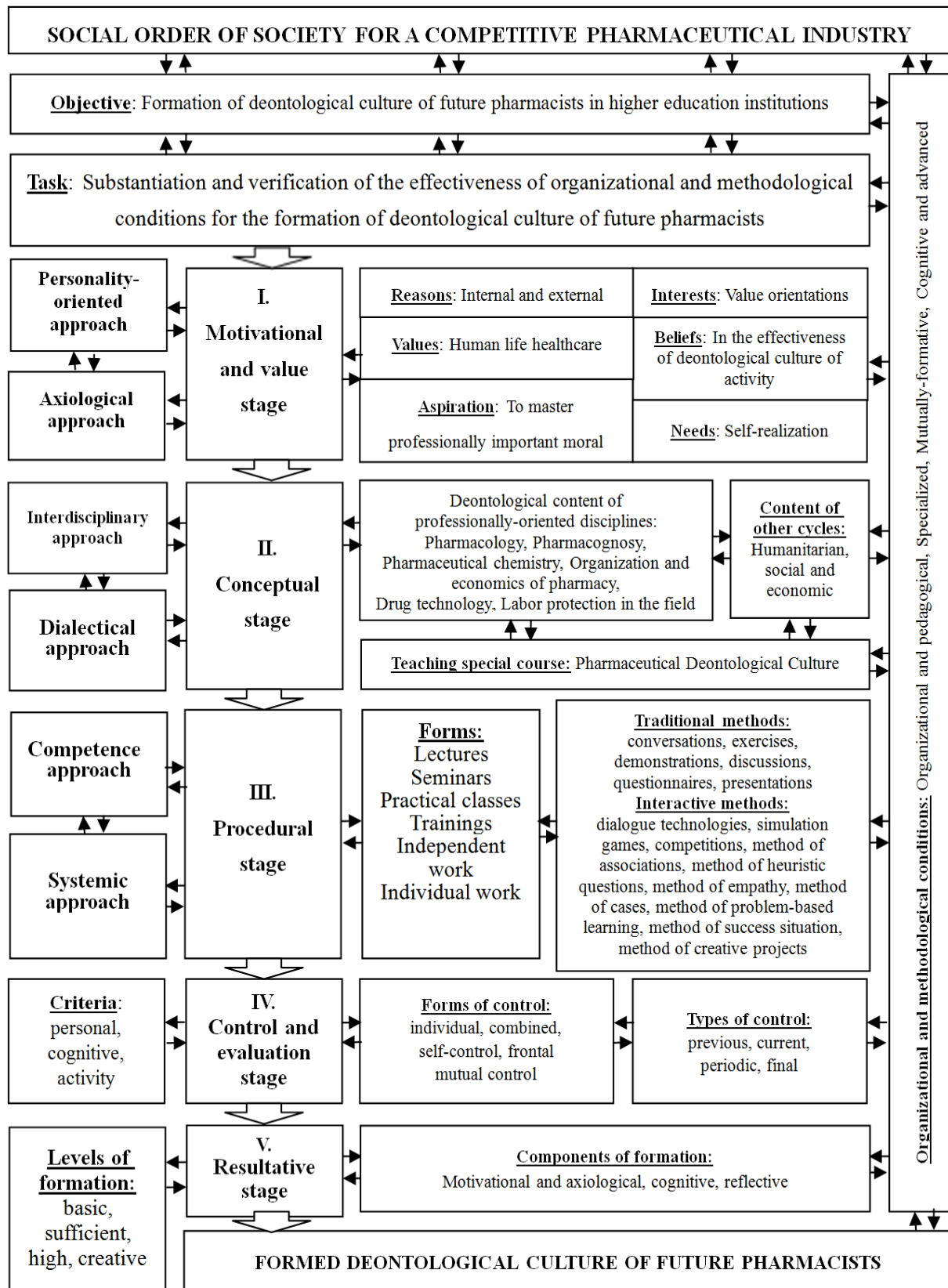


Figure 2. Structural model of formation of deontological culture of future pharmacists

Motivational-value, conceptual, procedural, control and evaluation and effective stages are singled out as components of the formation of deontological culture of future pharmacists.

At the motivational and value stage, the diagnosis of the initial level of formation of deontological culture was carried out and the personal characteristics of students, their motives, needs, aspirations, interests, values and beliefs were determined. The core of the conceptual stage of formation of deontological culture of future pharmacists was the teaching of a specialized course "Pharmaceutical deontological culture". At the same time, the deontological content was enriched by professionally oriented disciplines and disciplines of the humanitarian and social and economic cycles. The procedural stage of formation of deontological culture of future pharmacists provided realization of various forms, traditional and interactive methods, means of training and education. The control and evaluation stage includes components of the formation of deontological culture of future pharmacists, forms, types and methods of control. Manifestation and formation of deontological culture of future pharmacists is attributed to the effective stage, at which its further correction and self-correction was carried out.

The process of professional training was carried out in such forms of interaction among applicants for higher education and teaching staff as lectures, seminars and practical classes, trainings, independent and individual work. The methods of forming the deontological culture of future pharmacists were conversations, demonstrations, presentations, discussions, exercises, surveys, competitions, creating a situation of success, problem-based learning and creative projects. Improving the interaction of all subjects of the pedagogical process was ensured by the introduction of dialogue technologies, simulation games, methods of associations, heuristic questions, cases, as well as modeling of professional situations.

In addition to educational and methodological complexes of disciplines, the means of forming the deontological culture of future pharmacists were provisions and recommendations for practical and independent work, collections of codes of ethics, paper flowcharts and presentations of deontological content, cards of algorithms for proper pharmaceutical care,

graphical analysis of pharmacy prescription forms of prescription drugs with appropriate and incompatible components, webinars of deontological content, online discussion, etc.

The formation of deontological culture involved the introduction of a specially designed system of tasks for independent work of students. The peculiarity of this system of tasks was that, on the one hand, their content was aimed at the proper acquisition of knowledge, mastery of the necessary skills and abilities, and on the other hand, independent work required not only independence but also ethical and deontological traits and characteristics of a future specialist. The formulation and implementation of tasks were aimed at ensuring high personal interest of students, positive emotional coloring of their educational activities, which, in the end, contributed to the achievement of training goals.

#### **4.3. Experimental Verification of the Effectiveness of the Model of Formation of Deontological Culture of Future Pharmacists**

To establish the compliance of the results of professional training of future pharmacists with the requirements for the formation of their deontological culture, criteria and indicators were determined that correspond to each of its components – motivational and axiological, cognitive, reflective (Table 1).

Determining the levels of formation of deontological culture of future pharmacists was carried out on the basis of an integrative indicator, the use of which allowed to generalize the distribution of students by creative, high, sufficient and basic levels. According to the results of the secondary diagnosis of the levels of formation of this personal phenomenon, data were obtained that indicate significant positive dynamics in all criteria, namely personal, cognitive and activity (Table 2).

The statistically significant difference among the integrative indicators of deontological culture of future pharmacists before and after the introduction of formative measures, as well as comparing these values with students of experimental and control groups, indicates the effectiveness of the presented model and its corresponding organizational and methodological conditions.

**Table 2.** Consolidated dynamics of levels of formation of deontological culture of future pharmacists by all criteria

Levels	Experimental group (n = 30)					Control group (n = 31)				
	input		output		dynamics	input		output		dynamics
	number of students	percentage of students	number of students	percentage of students		number of students	percentage of students	number of students	percentage of students	
Total	30	100	30	100		31	100	31	100	
<i>by personal criterion:</i>										
Base	11	36,7	1	3,3	- 33,4	12	38,7	9	29	- 9,7
Sufficient	14	46,7	16	53,3	+ 6,6	14	45,1	15	48,4	+ 3,3
High	4	13,3	11	36,7	+ 23,4	4	12,9	6	19,3	+ 6,4
Creative	1	3,3	2	6,7	+ 3,4	1	3,3	1	3,3	0
<i>by cognitive criterion:</i>										
Base	5	16,7	1	3,3	- 13,4	4	12,9	3	9,7	- 3,2
Sufficient	10	33,3	3	10	- 23,3	12	38,7	11	35,5	- 3,2
High	12	40	20	66,7	+ 26,7	12	38,7	13	41,9	+ 3,2
Creative	3	10	6	20	+ 10	3	9,7	4	12,9	+ 3,2
<i>by activity criterion:</i>										
Base	12	40	2	6,7	- 33,3	11	35,5	9	29	- 6,5
Sufficient	4	13,3	6	20	+ 6,7	4	12,9	5	16	+ 3,1
High	11	36,7	16	53,3	+ 16,6	14	45,1	15	48,5	+ 3,4
Creative	3	10	6	20	+ 10	2	6,5	2	6,5	0

## 5. Conclusions

The need for proper formation of deontological culture of future pharmacists is due to the social demand of society to form a comprehensive and harmoniously developed personality of a specialist in the pharmaceutical industry, able to effectively solve various professional problems, be successful and competitive.

Deontological culture is a stable integrative entity that provides a link between the moral principles and beliefs of the individual and the quality of their professional duties. Its essence is revealed by the system of values, personal formations and professional characteristics of the pharmacist. As an ethic of duty, deontological culture regulates the activities of the specialist and provides their reflection.

The model of formation of deontological culture of future pharmacists includes a set of interconnected components that determine the semantic structure of this purposeful process, and its effectiveness is ensured by the implementation of organizational and methodological conditions such as organizational and pedagogical, specialized, mutually formative and cognitive and advanced.

In our opinion, the materials of the article will help to better understand the importance and complexity of the

pharmacy profession, emphasize the importance of building the training of future professionals on deontological principles, which will ultimately help to solve the problem of training in Ukraine for the pharmaceutical industry.

## 6. Limitation

The As the learning process and data collection was held in Ukraine, the key limitation is that the content of experimental work revealed and analyzed the possibilities of the professional training of future pharmacists in higher education establishments in this country. However, the proposed model provides some guidelines for the formation of deontological culture of future pharmacists in different regions and countries, and its main principles can be relatively easily adopted or adapted to any national system of higher education.

## Conflict of Interest

The authors have declared that no competing interests exist.



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