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BIOLOGICAL SCIENCES

MEDICINALLY IMPORTANT PLANTS OF GARAGUSH MOUNTAIN

Novruzi N.A.
Nakhchivan Teachers Institution
DOI: 10.5281/zenodo.7696465

Abstract
The Garagush Mountain system, which is one of the highest peaks of the Deraleaz range, has rich vegetation. Garagush Mountain is of great importance as it hosts more than 800 plant species. Thus, the rich vegetation includes species of more than 80 families. These, in turn, are food, medicine, decorative, fodder, etc. includes important species. These plants, which can be used in folk medicine, in pharmacies, in the preparation of medicinal preparations, in the form of tea and infusions, are the "healing and care" that nature has given us. Medicinal plants widely used by the population in the study area were discovered by us. Among them, we can mention the species of *Berberis*, *Crataegus*, *Rosa*, *Thymus* and *Cephalaria*.

Keywords: Garagush Mountain, medicinal plants, Berberis vulgaris L., Crataegus pentagyna Waldst.&Kit., Rosa corymbifera Borkh., Thymus nummularius Bieb., Cephalaria nachiczevanica Borb..

The Garagush Mountain system, which is one of the highest peaks of the Deraleaz range, has rich vegetation. Garagush Mountain is of great importance as it hosts more than 800 plant species. Thus, the rich vegetation includes species of more than 80 families. These, in turn, are food, medicine, decorative, fodder, etc. includes important species. The direction I would like to draw your attention to is the medicinally important species of Garagush Mountain. This corner of Azerbaijan, which has a mysterious and colorful nature, is of special importance from both the economic and the medical point of view. These plants, which can be used in folk medicine, in pharmacies, in the preparation of medicinal preparations, in the form of tea and infusions, are the "healing and care" that nature has given us. These plants are useful and useful in the treatment of most diseases, even in the prevention of those diseases.

Medicinal plants widely used by the population in the study area were discovered by us. Among them, we can mention the species of *Berberis*, *Crataegus*, *Rosa*, *Thymus* and *Cephalaria*.

Berberidaceae Juss. familia´s 2 species of *Berberis* L. genus spread of in the Garagush Mountain area: *Berberis densiflora* Boiss.&Buhse and *B. vulgaris* L.. The mentioned species of *Berberis* grow in forests, thickets, riverbanks, slopes with mixed trees-shrubs-mixed-foot, roadsides and fences. It is widely used by people for its crimson, pink, whitish, black cluster fruits, attractive yellow flowers, attractive appearance, and most importantly, its edible fruits. The fruits of all types of *Berberis* are eaten by the population, they are dried and used as a spice at any time of the year, compote and jam are made, tea is brewed and used for blood pressure. However, the most industrially important of the species of *Berberis* is the common *B. vulgaris* L.

Berberis vulgaris L. is a shrub 2-3 m high. The bark of young branches is yellowish-brown or yellowish-gray, and the bark of old branches is gray. The leaves are usually three-crossed, 2 cm long. The thorns are hard, sharp and hard, sometimes they are located singly on the branches. The light-green leaves are thin, egg-shaped or inverted, sometimes lancet-shaped, shiny on the upper side, and clearly distinguished net veins on the lower side. The leaves are obtuse at the tip and wedge-shaped at the base, the edges are ciliated and saw-toothed. 15-20 flowers are light-yellow and collected in bunches. The berry is oblong, 12 mm long and reddish in color. The taste is very sour. It has 2-3 seeds. It blooms in May-June, and ripens in September-October.

In the area of Garagush Mountain, *Berberis vulgaris* L. is found in sparse forests, thickets and river valleys at altitudes of 1100 - 2300 m above sea level. It grows singly or in groups in areas where it spreads. Sometimes it forms dense forests. *Berberis vulgaris* L. is resistant to heat, cold and frost. *Berberis vulgaris* L. leaves, fruits and roots are used. It is a food, dye and medicinal plant. It is repellent and bloodthirsty. It increases blood clotting, lowers blood pressure, reduces the number of heart attacks and has a calming effect. *Berberis vulgaris* L. leaf is also given as part of "biliary tea". Its fruit juice is used in high fever, as a diuretic, in digestive disorders, in anorexia, and in the treatment of diabetes. *Berberis vulgaris* L. fruit is used in folk medicine to treat scurvy, rickets, anemia, fever, and gastrointestinal diseases. Jam is used in the treatment of jaundice. *Berberinum sulfate* preparation in tablet form is prepared from it. Unlike other species, the natural resource of *Berberis vulgaris* L. is relatively abundant.

5 species belonging to Rosa L. genus of Rosaceae family were found in the area. *Rosa sosnovskyana* Tamamsch. [VU A2cd; B1b(iii)c(ii)], *Rosa rapinii* Boiss. & Honey. (VU D1) and *Rosa tuschetica* Boiss. [VU B1b(iii,iv)c(ii)] is protected by statuses [4, p.17-18]. *Rosa canina L.* and *Rosa corymbifera* Borkh. the natural reserve of species is relatively abundant.

Rose is a perennial shrub that grows wild. People call it *wild rose*. The *Rose* bush can reach a height of 1.5 - 2.5 meters. Branches branch out from the sides of its trunk, and small leaves grow densely on top of the branches. *Rose* are located at the tip of baby green pods. Berries begin to form after the flowers of the rose fall. *Rose* flowers are light pink or pink in color, have five petals and measure 5 cm in diameter. It blooms in May-

June, and after the flowers fall, it is replaced by elongated berries with many small hairs. These berries ripen in September-October.

Rose seeds are rich in fatty acids and vitamins. Infusion of rose fruit or root is very useful for the body. This infusion is rich in polyvitamins. The infusion has a choleretic, diuretic, depressant effect on the body. Brewing strengthens the walls of blood vessels, increases the amount of red blood cells, increases immunity, improves metabolism, memory, stimulates the function of sex hormones, cures colds and flu, and relieves headaches. Rose are widely used in folk medicine. It is used in the prevention of avitaminosis, hypovitaminosis, infectious diseases. It has a bat healing effect. It is very useful to drink its infusion during burns and injuries. *Rose* eliminates the symptoms of atherosclerosis, accelerates the regeneration of damaged tissues. For these reasons, it is very useful to drink a decoction of *Rose* during dermatoses and trophic wounds.

Ripe *Rose* contain proteins, carbohydrates, fibers, free organic acids, a large amount of minerals (potassium, sodium, calcium, magnesium, phosphorus, iron, manganese, chromium, molybdenum, colbate, etc.), vitamins (B1, B2, B6, K , RE, PP, C), dyes, carotene, riboflavin, citric and malic acid, sugar, phytoncides and essential oils. The amount of vitamin C contained in rose is 5-10 times more than black currant and 40 times more than lemon. The infusion of rose cleans the blood-vascular system, improves metabolism, eliminates anemia, and cures kidney, bladder, and liver diseases. Rose infusion is very effective in treating scurvy. *Roses* are widely used in folk medicine for general strengthening, toning, reducing the symptoms of atherosclerosis, increasing the body's resistance to infectious diseases.

Another species belonging to the family of *Rosaceae* Juss. is the *Crataegus* genus, many species of which have been discovered by us in the area. Mainly *Crataegus meyeri* Pojark., *Crataegus monogyna* Jacq., *Crataegus orientalis* Pall.& Bieb., *Crataegus pentagyna* Waldst. & Kit. and *Crataegus pontica* C. Koch. species are abundant in nature.

Crataegus pentagyna Waldst.&Kit. is a small gray-barked, thin-thorned tree or shrub with a branched trunk. The leaves are egg-shaped, 3-7-lobed, the base is wedge-shaped, and the upper side is dark green. The flowers are collected in a complex flower group on the shield. The flower crown is white. The fruit is inside, the color turns black when ripe, the lat part is red, and it has 3-5 smooth kernels. The plant blooms in May, and fruits ripen in August-September. *Crataegus pentagyna* is common in forests, thickets, and river valleys. Sometimes it also forms dense forests. Flowers and fruits of *Crataegus pentagyna* are used medicinally. Its flowers are harvested in May, and its fruits are harvested in August-September when they are fully ripe [2, 80-81]. An infusion, tincture and extract are prepared from its fruits and flowers, and it is widely used as a medicine to regulate heart activity after acute angina and flu, as well as to reduce blood pressure in functional disorders of heart activity - angina pectoris, arrhythmia, hypertension, insomnia, cardiac neurosis. The substance "Kratemon" (Crataemon), obtained from *Crataegus pentagyna*, is used in the absence of coronary vessels. Liquid extract of hawthorn fruits is included in the composition of "Cardiovalen" drug. In the sources of Azerbaijani folk medicine, *Crataegus pentagyna* is used in the treatment of anemia, heart palpitations, blood pressure and measles.

Three species of *Thymus* of Lamiaceaee family were found in the area. These are *Thymus nummularius* Bieb., *Thymus rariflorus* C.Koch and *Thymus kotschyanus* Boiss.&Hohen. types. Its height is from 20 cm to 35 cm. It is a small, fragrant half-bush. The gills are thin, brown, creeping. The base is covered with a dark brown bark, often rooting and forming additional roots. The leaves are small, oblong or elliptical, short-stalked or sessile. The flowers are small, pink or purple-pink in color, double-lipped, sparsely gathered in a flower head. The fruit is dry, divided into four nuts. *Thymus* blooms in June-July, the fruit ripens in August-September. It reproduces by seeds and vegetatively. It can last up to 30 years.

The green above-ground part of *thymus* is harvested when the plant blooms or before. *Thymus* is widely used in cooking (especially canning), as well as in the cosmetics and pharmaceutical industries. One of the most widely used fields of *thymus* is medicine. *Thymus* helps to relieve lung, bronchial, stomach and intestinal problems. It is used in the form of tea and gargle for cough and inflammation of the upper respiratory tract. Regulates blood circulation, lowers blood sugar, plays an effective role against intestinal parasites. *Thymus*, which has an antiseptic effect, is also widely used in skin problems. It is widely used in skin, nervous disorders and muscle spasms. This substance is also very good for neuritis, seborrheic dermatitis and glossitis. This plant, which also has a diuretic effect, protects the body from aging and eliminates convulsions.

The genus *Cephalaria* of *Caprifoliaceae* Juss. family is a widely distributed medicinal plant in Azerbaijan. Most species of *Cephalaria* are perennial herbs with attractive yellow flowers. There are 60 species of *Cephalaria* in the world, 12 of which grow in Azerbaijan. *Cephalaria nachiczevanica* Borb. type was discovered in the area. The flowers and roots of the plant are widely used in folk medicine. The flowers of the plant have been used as an infusion (tea) since ancient times for colds, internal bleeding, as well as cardiovascular and kidney-urinary tract diseases. This flower is called "Solmaz flower" due to the fact that the bright yellow flowers retain their beauty for years after being collected. This plant has a choleretic effect. It also stimulates the secretion of pancreatic juice [6, p.301-302].

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DISTRIBUTION ROUTES OF THE INVASIVE ALIEN SPECIES *I. GLANDULIFERA* ROYLE IN THE ISKAR RIVER GORGE BETWEEN PLANA AND LOZENSKA MOUNTAINS (SOUTHWESTERN BULGARIA)

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DOI: 10.5281/zenodo.7696472

Abstract

The object of study is the spread of the invasive alien species (IAS) *Impatiens glandulifera* Royle in a section of the Iskar River and its tributaries near the capital Sofia. The study area is 400 km^2, of which about 0.2% is occupied by the *Impatiens glandulifera* populations. The investigation was conducted in the period 2019-2022. The beginning of the *I. glandulifera*'s spread in the studied territory is not through the main stream of the Iskar River, but through one of its tributaries - the Vedena River. At the current stage, this IAS is not distributed in Bulgaria through the commercial network, its populations are distributed naturally. A clearer legislative framework is needed regarding the prohibitions and measures related to the trade in IAS on the territory of the country.

Keywords: Invasive plants, spread, populations, river vegetation

Introduction

Invasive alien plant species (IAS) invade many ecosystems worldwide, often having substantial negative effects on ecosystem structure and functioning [1]. Research on the distribution of IAS and their pathways of introduction is essential for understanding and tackling the invasion process [2]. Our ability to predict the spread of IAS is largely based on knowledge of previous invasion dynamics of individual species [3].

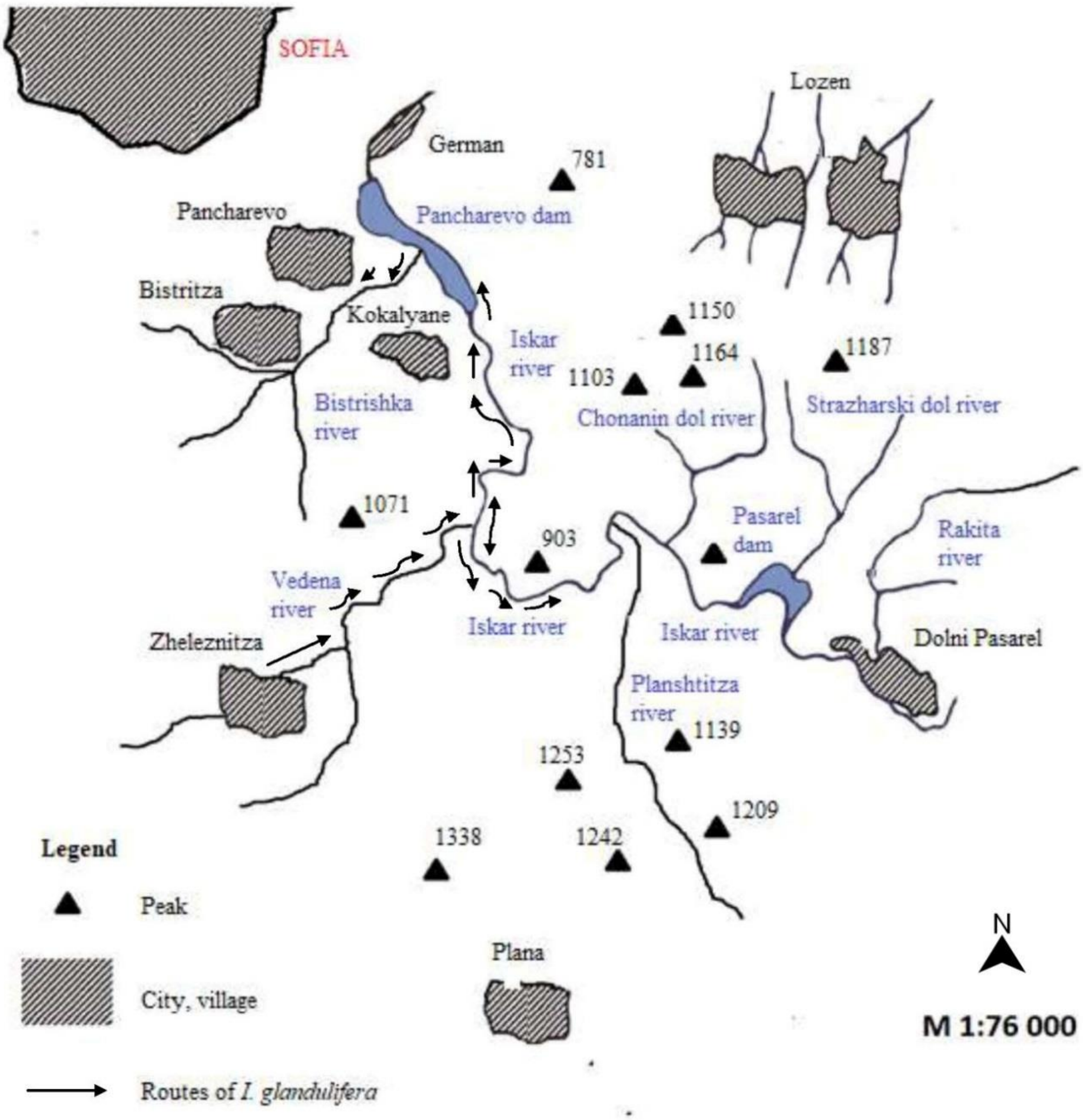
Himalayan balsam (*Impatiens glandulifera* Royle) is a highly invasive plant and considering the extend of its spread since its introduction to Europe from the Himalayas in 1839, there is an abundance of lessons which can be learned from studying the invasion of this IAS [4]. The species is in the list of Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of IAS.

In Bulgaria *I. glandulifera* was first recorded in 1978, and its distribution was subsequently established in the Forebalkan, Balkan Range (Central), Sofia Region, Vitosha Region, Znepole Region, Valley of River Struma, Valley of River Mesta, Rila Mts, Mt Sredna Gora, Rhodopi Mts, Thracian Lowland, up to about 1500 m a.s.l. [5].

The purpose of the present publication is to investigate the main distribution routes of the *I. glandulifera* populations in one of the biggest localities of this IAS in Bulgaria- the area of Iskar rıver gorge between Plana and Lozenska mountaıns.

Materials and methods

The investigation was conducted in the period 2019-2022. The object of study includes the section of the Iskar River and its tributaries between the villages of Pancharevo and Dolni Pasarel close to the capital Sofia (Southwestern Bulgaria) (Pic. 1). The study area is approximately 400 km^2, of which about 0.2% is occupied by the *I. glandulifera* populations [6]. The altitude is between 650-1100 m a.s.l. Средната годишна сума на валежите е 590.7 mm. Максималната средна месечна температура е през юли (21.5°C), а минималната през м. януари – 1.5°C. Soils are Fluvisols according to World Referent Base of Soil Resources [7].



Picture 1. Map of the study area

The Research methods include:

1. Reference based on literary sources, including scientific publications and citizen science data.

2. Field monitoring of the distribution of *Impatiens glandulifera* populations

3. Conversations with residents of the villages in the study area.

4. Filling out a questionnaire during the meetings with plant, landscape and horticulture business representatives (flower exchanges, garden centers and flower shops) in the study area and the capital located in the immediate vicinity. In addition, the most frequently sold IAS were identified from the catalogs and stands of the companies

Results and discussion

The results of the present study, which tracked the distribution of *I. glandulifera* populations along the Iskar River and its tributaries (Pic. 2.), show the following: Localities of the species were found in Zheleznitsa village and along the entire length of the Iskar tributary - the Vedena River (Pic. 1). The plant has not been found in the Bistritsa village, but its localities are observed in the lower part of other Iskar tributary- the Bistriska River near its mouth in the area of Pancharevo village.

Picture 2. Locality of I. glandulifera in the study area (photo: P. Glogov)

The distribution of *I. glandulifera* along the Iskar River is limited in the section Pancharevo-Devil's bridge (the mouth of the Vedena River). After the Dolni Pasarel village on the road to Samokov, along the Iskar river, no localities of this IAS are observed at the current stage. However, they are found on the banks of another of the tributaries of the Iskar river - the Okolska River, where they were most likely spread unintentionally by the cars of fishermen or turists.

In the end, it could be assumed with great probability that the spread of *Impatiens glandulifera* along the Iskar river in the study area started from its tributary- the Vedena river. Another evidence in favor of this statement is the fact that the first information about the presence of a population of *I. glandulifera* comes from a study by Assyov, Vassilev (2004) [8], who established the species in the Vitosha floristic region, on the banks of the Vedena River in the Zheleznitsa village.

The present survey on the distribution of *I. glandulifera* in the study area found that this species is rarely cultivated intentionally in the gardens of local villages and cottage areas. According to the local people, Hymalayan balsam has established itself using the river flow and has displaced valuable economic and ornamental plants. And every year most of them take measures individually to eliminate it. Tourists are encountered who in July and August (the months in which the plant bears fruit) pick the inflorescences for bouquets without knowing about the invasive influence of Hymalayan balsam and without realizing that in this way they are inadvertently helping its spread.

Meetings with questionnaire were conducted with 3 flower exchanges, 31 flower shops and 12 garden centers. The responses to the survey questions were as follows (Table 1):

Table 1.

Summary of questionnaire responses from local representatives of business with plants

Question	Yes	No
Do you currently sell *I. glandulifera?*	0%	100%
Have you ever sold this particular species of genus *Impatiens* before ? (incl. Was it ordered by a customer?)	0%	100%
Do you sell other *Impatiens* species?	100%	0
Have you heard of invasive alien plants?	67.4%	32.6%
Do you have any idea which of the plant species you sell are IAS?	23.9%	76.1%

Other result from questionnaire show that 81.1% of all companies included in the survey use internet for the purchase and sale of plants, which confirms the data of [9] that internet trade is the most preferred option for the import of seeds and the entry of IAS. In the assortment of companies engaged in the supply of decorative plants, there are other exotic species from the genus *Impatiens* (and their varieties), which at the present stage are not categorized as invasive, including *I. balsamina* L., *I. walleriana* Hook.f. , *I. parviflora* DC and *I. hawkeri* W.Bull. Some of the garden centers offer for sale other IAS that occur near the study area such as *Buddleja davidii* Franch., *Opuntia humifusa* (Raf.) Raf., *Lupinus poliphyllus* Lindl. and *Helianthus tuberosus* L.

It is striking the high percentage of surveyed traders who do not know (or do not accept the fact) that some of the plants they sell are invasive and threaten biological diversity. Another part of them emphasize the beneficial properties of IAS - for example, some agro-exchanges sell invasive foreign species such as *Amorpha fruticosa* L., because of their honey-bearing qualities.

I. glandulifera and other IAS included in the list of Regulation (EU) No 1143/2014 cannot be intentionally bred, transported, reproduced or released into nature. The regulation was transposed into the Bulgarian Biodiversity Act (created 2002 and last amended in 2022), but in its provisions, the issue of trade in IAS within the country is not specified in sufficient detail at this stage, which does not lead to specific sanctions for traders.

Conclusions

The beginning of the *I. glandulifera*'s spread in the studied territory is not through the main stream of the Iskar River, but through one of its tributaries - the Vedena River.

At the current stage, this IAS is not distributed in Bulgaria through the commercial network, its populations are distributed naturally.

A clearer legislative framework is needed regarding the prohibitions and measures related to the trade in IAS on the territory of the country.

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ECONOMIC SCIENCES

DUAL EDUCATION: FOREIGN EXPERIENCE AND PROSPECTS FOR ITS APPLICATION IN UZBEKISTAN

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Abstract

This article is devoted to the study of the possibilities of dual education in the current education system. In particular, the authors have revealed the prerequisites for creating dual education and the stages of its formation. Moreover, the article presents the outcomes of the comparative analysis of foreign practice in the application of dual education, as well as the prospects for using its elements under conditions of Uzbekistan.

Keywords: dual education, educational process, academic learning, internship, practice.

Currently when education is the most essential means of achieving success and a symbol of a person's social position, there is an active integration of all countries into the world education system. As it is known, the development rates of the education in all spheres of the country's life and its status in the international arena largely depend on the quality of education.

In today's Uzbekistan higher education is one of the most rapidly growing areas, since a strong state with an innovation-based market economy, a robust civil society, where all human rights and interests are ensured, cannot be built without creating a decent human resources potential. The training of highly qualified specialists in the most demanded professions with latest knowledge, critical thinking and proficiency in foreign languages is a paramount objective set by the government of the Republic of Uzbekistan.

An efficient solution to this problem requires the search for new approaches to the organization of the educational process, which main aim is to train educate qualified personnel demanded in the current labor market.

If the focus was on the individual development of the personality of each student in the effective organization of the educational process at the beginning of XXI century, nowadays the economy's need for qualified personnel required for the technological renewal of many industries dominates. In this regard, dual education contributes to the effective implementation of the interaction between the real sector and education.

Dual education is a type of education in which the theoretical part of the learning process takes place on the basis of an educational institution and the practical part is held at the workplace.

Enterprises place their orders to educational institutions for a specific number of specialists, as well as employers are engaged in working out the curriculum. Students do internships at the enterprise in combination with part-time education.

Germany is considered to be the ancestor of the system of dual education. The experience of this country serves as a model for the entire European Union. The German system of vocational education is distinguished by a developed institution of mentoring, practice-oriented training and the active participation of business in personnel training. Dual education in Germany is put in a strict legislative framework and is implemented with the help of chambers of commerce and industry and chambers of crafts.

One of the first statutory acts regulating the system of vocational education and training in Germany was the industrial code adopted in 1869. Compulsory education for minors was introduced in the North German lands with the aim of improving working skills and according to the first industrial code. Subsequent amendments to the educational process involved the chambers of qualified crafts, which were imposed with the responsibility of supervising vocational training [3]. Furthermore, already adopted under the pressure of the small business movement in 1897, the law regulating the activities of craftsmen became the basis of current legislation on the dual system of vocational education and training in Germany - the Law on Vocational Training. The document envisaged the qualifications of the lecturers, fixed a three-year apprenticeship system with an exam at the end, and a system of contracts extended to the entire handicraft sector. The law ordered the chambers and guilds to deal with issues of education, as well as examinations for apprentices and masters [2]. Thus, the adopted legislation laid down the basic principles of the dual corporate structure of vocational education and training in Germany.

It should be noted that on the cusp of XIX-XX centuries there was a gradual improvement in industry-based education in specialized educational institutions in Germany. Thus, in 1920 compulsory vocational training for commercial professions was introduced. However, the entire legislative framework in the field of vocational education and training remained fragmented until a certain point. Under a single federal document, the Vocational Training Law, the various (regional) regulations were merged in 1969. The foundations of legislation laid down at the end of XIX century were supplemented by provisions on the participation of the government and trade unions in the implementation of the dual system of vocational education and training. Since then, there has been a constant update of legislation in this area. So, 229 out of 375 education-based regulations were gradually updated in the period 1969-1990, and in 2005 the Vocational Training Act was generally updated, meaning that the dual system of vocational education and training, which has a long tradition in Germany, is constantly being updated.

As a result, in Germany, the dual system of vocational education and training has become an integral part of the general education and training system. Students have several opportunities to acquire a professional qualification after graduation: in a full cycle vocational school; within the framework of the dual system of vocational education and training/secondary vocational school; at the University of Applied Sciences, which also provides the opportunity to study in a dual system or at a regular university. And many choose training according to the dual system, which usually lasts 3 years (36 months) [5]. After all, in addition to relevant skills, the student receives a remuneration paid by the company, which is about one third of the salary of a skilled worker. The dual system of vocational education and training has a high reputation in Germany also with employers, since all apprentices are actively involved in many daily work processes. In Germany, 25% of enterprises participate in it. Thanks to the dual form of education, the student not only receives a diploma of vocational education, but also undergoes a long-term paid practice at the enterprise. After graduation, students receive guaranteed jobs.

Currently dual education is being successfully implemented in the Republic of Kazakhstan, the state that is the closest neighbor of Uzbekistan. The system of dual education in Kazakhstan has been introduced for more than 10 years. Initially, it was introduced in colleges, and in 2016 it was launched in higher education institutions.

In Kazakhstan, educational programs for technical and vocational education using dual learning process provide for theoretical training in educational institutions and minimum sixty percent of industrial training, professional practice on the basis of an enterprise (organization).

From the 2021-2022 academic year the colleges of Kazakhstan have been granted academic independence. Now they themselves, together with employers, determine the content of academic curricula and the terms of the learning process.

Academic curricula in dual education enable students to obtain the qualifications required and get a job in a shorter time, and if necessary, return and obtain additional qualifications. In addition, now the period of study in the dual format will be counted towards the seniority of students. Thus college graduates will be able to find jobs with existing work experience.

Participants in dual education in Kazakhstan can be:

1) educational institutions implementing academic programs of technical and vocational, post-secondary education regardless of the form of ownership;

2) enterprises (organizations) regardless of the form of ownership;

3) a learner - student (a trainee).

In Kazakhstan the enterprise participates in the development of working curricula and academic curricula of an educational institution, as well as learning and teaching support kits. Colleges, together with employers, determine the content of educational programs based on professional standards and regional characteristics, fix the timing, amount of learning time and introduce additional academic subjects (professional modules) if necessary. Thus, employers in cooperation with educational institutions have the opportunity to independently regulate the content of academic curricula in compliance with the needs of a rapidly changing economy [8].

Introduction of dual education into the educational process of Uzbekistan has occurred relatively recently. In this regard the Resolution of the Cabinet of Ministers № 163 “On measures to organize dual education in the vocational education system” was adopted on March 29, 2021.

This Resolution provided for the organization of dual education from the 2021/2022 academic year in the vocational education system in compliance with the Law of the Republic of Uzbekistan “On Education”, as well as in order to create broad opportunities to support the interest of young people in acquiring professions and specialties.

- In addition, the Regulation on the procedure for organizing dual training in the vocational education system was approved according to this Resolution. This Regulation envisages:
- organization of dual education and its stages;
- the order of the educational process and on-the-job training in dual education;
- determination of duties, rights and responsibilities of participants in dual education.

In reliance upon the study of foreign experience in the field of dual education, today its efficient implementation in the Republic of Uzbekistan is implemented within the framework of the following aspects:

- linking the learning process of an educational institution with the conditions of production at the enterprise (organization);
- organizing the practical part of training process at enterprises (organizations) and the theoretical part in educational institutions;
- enhancing investment attractiveness of the regions and improving the training of mid-level personnel with the account of the real needs of the economy;
- developing the formats and models of cooperation between enterprises (organizations) and educational institutions;
- developing the competencies in the implementation of educational programs in combination with the professional activities;

- improving the training program with the account of the requirements of employers and their technological innovations;
- financing implementation of training and educational programs;
- improving the forms and methods of industry-based cooperation between enterprises (organizations) and educational institutions;
- further expansion of the participation of enterprises (organizations) in the grading of alumni;
- meeting the needs of the population of different ages in acquiring qualifications in relevant professions (specialties).

It should be noted that the advantages of dual education are not only for students who can see with their own eyes how the theory works in practice. The dual education system becomes profitable for enterprises due to the following factors:

- personnel training is carried out for specific technological processes that exactly meet the requirements of the enterprise;
- increase in productivity, quality of services and products;
- reduction of terms of adaptation of alumni at the enterprise;
- achieving a greater return on invested capital as a result of their learning efforts in the long term;
- reduction of the cost of enhanced (extra) training.

In conclusion, it should be noted that successful implementation of dual education will contribute to the further integration of the educational process with practice and production. In addition, some activities will be organized to expand partnerships with leading specialized foreign research centres and educational institutions, optimize areas and specialties of education with the account of the prospects for the integrated development of regions and sectors of the economy, the needs of ongoing territorial and cross-industry programs of the Republic of Uzbekistan

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INNOVATIONS IN PERSONNEL MANAGEMENT MECHANISMS IN HIGHER EDUCATION INSTITUTIONS UNDER NEW CIRCUMSTANCES

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ИННОВАЦИИ В МЕХАНИЗМАХ УПРАВЛЕНИЯ ПЕРСОНАЛОМ В ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ ПРИ НОВЫХ ОБСТОЯТЕЛЬСТВАХ

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Abstract
In recent years, our country has seen a very rapid development of higher education, and the number of employees and composition of higher education institutions in our countries are more complex, which increases the difficulty of human resource management in higher education institutions and their number. In this context, higher education institutions are actively adapting and introducing information technology into personnel management. Nevertheless, in the current process of human resource management in higher education institutions, there are some problems with the application of information technology, which may have some impact on human resource management in higher education institutions. Based on this article, in the context of the new situation, research on human resource management information in higher education institutions should be conducted and a response strategy should be developed.

Аннотация
В последние годы в нашей стране наблюдается очень быстрое развитие высшего образования, а число сотрудников и состав высших учебных заведений в наших странах являются более сложными, что усиливает трудности управления персоналом в высших учебных заведениях и их количество. В этом контексте высшие учебные заведения активно приспосабливаются и вводят информационные технологии в управление персоналом. Тем не менее, в текущем процессе управления персоналом в высших учебных заведениях существуют некоторые проблемы с применением информационных технологий, которые могут иметь некоторое влияние на управление персоналом в высших учебных заведениях. На основе этой статьи в контексте новой ситуации следует провести исследование информационной информации о управлении персоналом в высших учебных заведениях и разработать стратегию реагирования.

Keywords: personnel management, higher education institutions, information technology, philosophy
Ключевые слова: управление персоналом, высшие учебные заведения, информационные технологии, философия

С 20 - го века быстрое развитие и огромные перемены в обществе привели к тому, что сложная организация университета должна была отказаться от модели выживания в стиле «башни из слоновой кости» и выполнять важную роль в сфере услуг общества. Одним из признаков развития сетевых технологий в новую эру является развитие и применение облачных технологий, которые трансформируют различные виды информации в большие данные, которые будут вести за собой развитие высокоэффективных и недорогих технологий обработки информации. Это также открыло новую главу в управлении образованием в высших учебных заведениях, а также в процессе обработки информации о персонале в эпоху больших данных. Инновации в механизмах управления персоналом высших учебных заведений являются одновременно и возможностью, и вызовом для современного управления высшими учебными заведениями. Данные свидетельствуют о Том, что в настоящее время в высших учебных заведениях насчитывается около двух миллионов преподавателей, что является дополнительным требованием для механизмов управления персоналом в высших учебных заведениях, которые срочно нуждаются в реформе и новаторстве механизмов управления персоналом.

1. Статус-кво и характеристики системы обслуживания персонала в высших учебных заведениях

Работа по управлению персоналом основана на объектах управления персоналом, субъектах управления персоналом, целях управления персоналом и ресурсах управления персоналом. Нормирова управлен персонал служб систем, использован многоступенчат интернет в больш Дан обстановк лучш использова оп, повыс качеств обслуживан оптимизац, обеспеч обществен служб систем и образован объект предложен персонализац, продвижен личн обм информац и оперативн скоординирова, обеспеч личн работник и школ менеджер основан. Принят решен.

Система управления персоналом является центральным элементом системы управления персоналом, в которой система управления персоналом использует гибкое развертывание на нескольких уровнях, управление на внутренних уровнях и доступ к ним, предоставляя стандартные открытые интерфейсы для совместного управления персоналом с различными секторами внешнего мира.

Университетская система: интегрированная идентификация с системой управления персоналом, которая взаимосвязана с системой управления факультетами, системой управления научно-исследовательскими институтами, системой архивного управления, центральными системами информации и финансовой системой управления, открывая одноместный доступ к зеленым каналам обслуживания. Когда дело доходит до комплексных услуг, бюро по персоналу ведет больше дел. Перечислять ряд проектов, в которых осуществляется работа с высокой частотой, таких как институциональные установки, сокращение персонала, мобилизация сотрудников, продвижение по службе, повышение квалификации, проверка на работу, обучение по социальному обеспечению, обмен опытом, предоставление данных, предоставление данных и взаимодействие с другими секторами школы.

За пределами школы: в рамках системы управления персоналом осуществляется единая координация задач, в которой высшие ведомства имеют управление по вопросам образования, управление по делам социального обеспечения и управление по вопросам образования, а также другие отделы по вопросам бизнес-регламентации, включая организаторы, управление по здравоохранению, градостроительный комитет и т.д., реализуют сетевые платформы, упрощают процедуры работы, сокращают циклы работы и экономит людские и материальные ресурсы.

Система услуг по управлению персоналом может обеспечить взаимосвязь и обмен данными на основе слияния данных, интеллектуальное управление персоналом, обмен платформами и улучшение решений на основе слияния данных, доступ к оперативным интерфейсам как внутри школы, так и за ее пределами, предоставление открытых связей и координацию данных по всем аспектам, а также попытка рационализации работы по управлению персоналом.

2. Конкретная практическая стратегия информационного строительства при управлении персоналом в высших учебных заведениях

3. Создание научно-эффективных идей управления персоналом и повышение информированности в управлении персоналом

В создании информационной структуры по управлению персоналом старшекурсники должны выбирать работу по управлению архивами, которая соответствует их реальной ситуации. Для информационного строительства необходимо создать соответствующие сетевые платформы, импортировать систему управления персоналом в киберпространство и стать главной основой для информационного строительства. В системе управления сетью должны быть инструменты анализа данных, вывода данных, бизнес-обработки и запроса, обработки изображений, сканирования и т.д. Загрузка информации по управлению персоналом в высших учебных заведениях на веб-платформу и возможность объединения с оцифрованными кампусами. Содержание информационного управления продолжает увеличиваться, а вместе с ним и стоимость приложений к программам, так что необходимо начинать в соответствии с реалиями школы. При наличии достаточных гарантий и экономических условий, школы могут начать с точки зрения долгосрочного спроса на развитие и создать совершенную систему управления сетью. В то время как некоторые из высших учебных заведений, которые только начали управление информацией, могут осуществлять управление с использованием более простых систем, которые могут удовлетворить потребности в работе, постепенно вводя более высокий уровень информационного управления после того, как они адаптируются к обработке данных с меньшими затратами.

4. Ввод информации по управлению персоналом в общее школьное планирование и повышение инвестиций в информационную сферу

Развитие школы включает в себя все аспекты, такие как повседневное управление, техническое обслуживание, профессиональное строительство и развитие талантов, что означает, что университеты должны заранее планировать совместное планирование, обеспечивать соответствующую планируемую защиту для развития школ и разумно распределять средства на развитие и строительство различных проектов. Внедрение методов информационной обработки в высших учебных заведениях является важным компонентом информационной и модернизации кампуса и требует соответствующего финансирования. Школы могут включить информационно-информационное строительство управления кадровым аппаратом в общее школьное планирование, например, часть средств и средств на техническое внедрение и строительство объектов, создание центров обработки данных в школах, в то время как более поздние фонды будут использоваться для приобретения системного программного обеспечения, необходимого для оцифровки. Школам необходимо увеличить финансирование информационного управления кадровым аппаратом в высших учебных заведениях, с тем чтобы обеспечить адекватное внедрение информационных технологий.

5. Создать совершенно новую концепцию управления персоналом

Основываясь на характере и статус-кво данных по управлению персоналом в высших учебных заведениях, инновационный механизм управления персоналом в высших учебных заведениях является предварительным условием. Для этого требуется, чтобы работники персонала уделяли повышенное внимание, синхронизировались с умственным развитием управления образованием и усилили исследования. Традицион личн основа на рабоч модел, постепен созда управлен адаптирова к больш Дан врем с мышлен, содейств нов управля ид формирован, основн проявля: управлен ид на "управлен стандарт" переход к "услуг стандарт", management парадигм разработа "принят решен управля Дан" переход к "Дан сформирова лидерств", management цел разработа «для повышен для эффективн управлен» «преподавател Преобразование стоимости в центр, а средства управления переходят от «управляемого господства» к «предсказанию преобладания».

6. Краткое изложение

В заключение, работа по управлению персоналом является важной частью работы по управлению образованием в высших учебных заведениях, занимая важное место в развитии и создании одноэтажного обслуживания в переходе в высшие учебные заведения. Большие данные также оказывают существенное влияние на управление образованием в высших учебных заведениях, которые могут существенно облегчить работу по управлению персоналом, не только повышая эффективность работы, но и предоставляя научные данные лидерам и функциональным секторам, непрерывно налаживая отношения между университетами и правительством, обществом и продвигая структурные реформы управления в университетах.

Культивировать таланты в области информации, создать управление интеллектуальным интеллектом в высших учебных заведениях, активно изучать, непрерывно практиковать, стремиться к предоставлению более качественных услуг, инновациям в механизмах управления персоналом и продвижению качественного развития высших учебных заведений.

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ANALYSIS OF RECRUITMENT AND TRAINING PROBLEMS AND COUNTERMEASURES IN HEILONGJIANG SCHOOL OF MEDICINE AND HEALTH

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АНАЛИЗ ПРОБЛЕМ НАБОРА И ОБУЧЕНИЯ ПЕРСОНАЛА И КОНТРМЕРЫ В ХЭЙЛУНЦЗЯНСКОЙ ШКОЛЕ МЕДИЦИНЫ И ЗДОРОВЬЯ

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Abstract

At present, when society is becoming more and more competitive, many enterprises need to update their personnel management system in a timely manner, improve the recruitment system and new personnel training mechanism in order to gain a foothold in the fierce competition. However, because the current recruitment system can only collect resumes, screen, interview and other links, it can not achieve the introduction of high-quality talents, and enterprise training mechanism is not perfect enough to fully unlock the potential of new employees and leave excellent workers at the expense of enterprise advantages, which greatly affects the development of enterprises. In this paper, we analyze the factors and ways of personnel recruitment management, combine the current development situation of Heilongjiang School of Medicine and Health and the existing personnel recruitment and training system, analyze the problems of personnel recruitment and training and make real suggestions for improvement.

Аннотация

В настоящее время, когда в обществе наблюдается все более жесткая конкуренция, многим предприятиям необходимо своевременно обновлять систему управления персоналом, совершенствовать систему подбора персонала и новый механизм обучения персонала, чтобы закрепиться в условиях жесткой конкуренции. Однако, поскольку нынешняя система набора персонала может только собирать резюме, проводить отбор, собеседование и другие звенья, она не может добиться внедрения высококачественных талантов, а механизм обучения предприятий недостаточно совершенен, чтобы полностью раскрыть потенциал новых сотрудников и оставить отличных работников за счет преимуществ предприятий, что сильно влияет на развитие предприятий. В данной работе мы анализируем факторы и способы управления подбором персонала, объединяем текущую ситуацию развития Хэйлунцзянской школы медицины и здоровья и существующую систему подбора и обучения персонала, анализируем проблемы подбора и обучения персонала и выдвигаем реальные предложения по улучшению.

Keywords: human resources; private schools; recruitment system; training system
Ключевые слова: человеческие ресурсы; частные школы; система найма; система обучения

Будь то зрелые учебные заведения и школы или небольшие начинающие предприятия, в настоящее время в Китае существует множество проблем в управлении человеческими ресурсами. Недостаток внимания со стороны руководства приводит к хаотичному процессу найма, потребностям в персонале, которые не соответствуют долгосрочному развитию предприятия, необоснованному укомплектованию штата, чрезмерно формализованным процессам обучения и так далее. Поэтому руководители должны улучшить процесс подбора и обучения персонала, решить первопричины проблем с человеческими ресурсами и устранить препятствия на пути развития предприятий.

1、Проблемы с подбором и обучением персонала

1. Условия и лечение не соответствуют потребностям. В связи с быстрым экономическим развитием нашего общества, перспективы трудоустройства молодых людей и людей среднего возраста изменились, и большинство из них при выборе места работы будут обращать внимание на условия работы, зарплату, страхование и медицинское обслуживание. Однако школа все еще находится на стадии развития и, возможно, не сможет удовлетворить потребности кандидатов в плане обстановки в кампусе и заработной платы, что кандидаты будут учитывать при подаче резюме.

2. Единый критерий набора. Из-за ограниченности самих частных школ они все еще недостаточно привлекательны для тех студентов, которые особенно хороши. При наборе многие школы делают упор на квалификацию и способности, но когда дело доходит до званий, они отдают предпочтение званиям, а не профессиям, а квалификация и

высокие звания кажутся единственными критериями. Когда речь идет о наборе, наибольшее значение придается академической квалификации, и чем выше квалификация, тем легче экзамен. Что касается методов проведения экзаменов, то в основном используются тестовые лекции и вопросы. Из-за субъективного и произвольного характера этих методов трудно добиться объективных, справедливых и научных результатов оценки, что несет много скрытых опасностей для будущего менеджмента.

3. Низкая мотивация сотрудников к участию в обучении привела к снижению эффективности обучения. В условиях современного рынка с растущей конкуренцией обучение на предприятиях является важным средством повышения жизнеспособности предприятий, воспитания и сохранения высококачественных высокотехнологичных талантов и повышения рыночной конкурентоспособности. Однако, если сотрудники предприятия относятся к обучению с прохладцей, без энтузиазма участвуют в тренингах или даже отказываются от них, эффективность обучения будет значительно снижена. Только когда сотрудники проявляют высокий энтузиазм и инициативу в участии в обучении, обучение может действительно превратиться в планирование карьеры и развитие сотрудников, стать внутренней потребностью и движущей силой устойчивого развития компании, принося тем самым больше пользы предприятию.

4. Не существует проверки и приемки после обучения. Оценка тренинга проводится редко, и нет набора фиксированных процедур. Хотя обучение проводится с большим успехом, оценка персонала в процессе обучения практически не проводится, поэтому содержание обучения усваивается недостаточно глубоко и эффективность обучения не ясна. В частности, за техническими аспектами обучения не следует оценка.

2、Рекомендации по вопросам подбора и обучения персонала

1. Оптимизировать процесс найма. В дополнение к традиционным процессам составления резюме, письменных тестов, собеседований и презентаций, школы должны внедрить новый механизм оценки талантов. Например, помимо проверки профессионализма учителя, уровня его знаний, философии преподавания и коммуникативных навыков, необходима комплексная оценка стресса, времени, творческих способностей и карьерного потенциала, чтобы оценить способности работника всесторонне и системно. Не следует упускать из виду и оценку психологических качеств: во время собеседования можно лучше изучить вербальные и мыслительные навыки, а также понимание учительской этики и основных ценностей. К кандидатам следует относиться так, чтобы не заострять внимание на броском внешнем виде высокой академической квалификации и дипломов в ущерб их реальному образованию и личной ухоженности. Некоторых докторов наук можно не принимать, поскольку они обладают прекрасными исследовательскими навыками, что скажется на исследованиях и достижениях всего факультета, но у них мало опыта преподавания и они не обладают достаточной квалификацией для преподавания. Некоторые любят зарывать голову в песок, не ладят друг с другом, обладают замкнутыми личностями и не участвуют в групповых мероприятиях, что не способствует сплочению коллектива и здоровью факультета.

2. Улучшите процесс оценки после найма. Оценка и обратная связь с сотрудниками может сделать процесс найма и отбора более значимым и ценным для компаний. С одной стороны, можно прогнозировать и оценивать эффективность отбора персонала, а с другой стороны, по обратной связи можно определить, насколько сотрудники соответствуют целям процесса найма и отвечают ли они основным требованиям должности. Если оценка неудовлетворительна или не дает желаемых результатов, то школа должна внести соответствующие коррективы в план набора персонала или провести отбор подходящих талантов. Индивидуальное планирование карьеры, беседы о психическом здоровье и распределение на должности преподавателей основываются на стратегических целях развития школы и на их собственных потребностях в профессиональном развитии. Осуществление перехода от пассивного к активному, от обучения к передаче, от усвоения к распространению. Непрерывное образование и обучение не только формирует у новых сотрудников хороший психологический портрет, но и совершенствует их профессиональные навыки и знания, раскрывает их карьерный потенциал, повышает конкурентоспособность и способствует их устойчивому развитию. Кроме того, учебные заведения должны проводить оценку и анализ эффективности обучения, чтобы понять, насколько они подходят для работы, какова база знаний и уровень владения навыками. Наконец, необходимо уделять внимание повседневной жизни сотрудников, чтобы они чувствовали себя людьми, о которых заботятся, и были интегрированы в школьную семью.

3. Разумное распределение времени тренинга. Разумность распределения времени обучения напрямую влияет на участие слушателей и конечные результаты обучения. Следует придерживаться цикла обучения более 3 дней и более 7 дней, а также в соответствии с методом обучения. Например, метод обучения, заключающийся в выезде на инспекцию, может привести к увеличению времени обучения в связи с поездкой и количеством пунктов назначения. Обучение организуется в соответствии со степенью важности и срочности содержания обучения, и пункты обучения, которые являются особенно срочными и временно проверяются, могут освободить рабочее время для обучения. Обучение, которое не является особенно срочным, но важным, может быть отложено на один или несколько часов в день вне перерыва, но не настолько долго, чтобы это повлияло на эффективность обучения. Некоторые регулярные программы обучения могут быть организованы путем общения и переговоров с персоналом, но должна существовать система, которую нельзя откладывать снова и снова.

Три перерыва в работе тренинга должны быть разумно развернуты, чтобы не дать персоналу выработать психологию скуки.

4. Создайте полную систему оценки обучения. Отзывы обучаемых оцениваются с помощью анкет, интервью и наблюдений, всесторонних бесед и телефонных интервью. Оценка проводится по всему процессу обучения, включая учебные планы, учебные материалы, инструкторов по обучению, преподавание, эффективность обучения и работу обучающего персонала. Качество обучения всесторонне улучшается, а целевая подготовка персонала проводится устойчиво и эффективно.

3、Заключение

В условиях все более жесткой рыночной конкуренции то, как привлечь и удержать таланты и наилучшим образом их использовать, будет иметь прямое влияние на то, сможет ли компания поддерживать свое развитие или даже дальнейшее существование. Подбор талантов - это ключ к управлению и развитию талантов, это ключ к обучению, управлению и развитию талантов. А культивирование талантов имеет фундаментальное значение для развития человеческих ресурсов на предприятиях. В данной диссертации в качестве примера рассматривается Хэйлунцзянская школа медицины и здоровья. Ее внедрение талантов не в полной мере отражает корпоративную стратегию, ее рекрутеры не могут адаптироваться к потребностям компании, ее процессу найма не хватает дальновидности, стандартизации и научности, а система обучения персонала нуждается в улучшении. На основе анализа текущей ситуации с подбором и обучением персонала в данной статье анализируются причины проблем и даются некоторые реальные предложения. Она направлена на создание команды научных талантов, эффективное повышение эффективности подбора и обучения персонала, снижение затрат на человеческие ресурсы, всестороннее развитие кадровой работы и, в конечном счете, содействие достижению стратегических целей университета.

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HISTORICAL SCIENCES

WOMEN ACADEMICS AND THEIR SCIENTIFIC CONTRIBUTIONS IN ISLAMIC CIVILIZATION

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Abstract

Contrary to common opinion, Muslim women have had a significant historical presence. Muslim women are not undervalued as educators, scholars, hadiths, sufis, orators, preachers, mujahideen women, philanthropists, poets, authors, and administrators.

Hatice, the prophet Muhammad's first wife, was the first Muslim woman to be revered and accepted in social life. Aisha, on the other hand, might be regarded the first example of a woman who had a societal impact through education and engagement in political matters of the day, as well as religious information transmission. We have the information of a significant number of Muslim women with varying degrees of understanding who have been participating in the learning and teaching pattern since the Age of Bliss. There were female Companions in particular who distinguished out for their expert knowledge on certain areas. As previously said, the ability to read and write was an uncommon and immensely valued talent at the time. During the Companions, the Prophet's daughter Fatima, as well as Kuaybe and Rufeyde bint Sad. Women specializing in medical services, such as Utbe al-Aslemiyye (d. 7/628) and Umm Sinan, as well as various occupations, may be identified. From the first century, ladies from the Ahl-i Beyt have held positions in scientific circles. Women learnt hadith and fikh among Ali-offspring, Fatimah's especially in the household, and passed it on to science students.

It is possible to obtain information about several women who were documented as hadith narrators or hadith narrators during the Tabiun, tebeu't-Tabiun, and subsequent centuries.

According to the Quran, the difference between men and women is an objective truth, thus Muslims cannot account for or reject it, neither in the Quran nor in the Prophet's practice, the inherent difference between men and women is more spiritual, moral, or intellectual than the other. There is no evidence that it is on a lower level.

Keywords: Muslim women, scientist females, religion, Islam, knowledge

The embrace of knowledge and its superiority over supererogatory devotion, the fact that scholars are regarded successors, the student also has the task of teaching, and the necessity of the integration of knowledge and deeds are among the issues that our Prophet highlighted. Unquestionably, Muslims are interested in science since "learning information is vital for every Muslim." That is an essential need, according to his order. Muslim women, contrary to common belief, have had a substantial historical presence. Muslim women are respected for their contributions as educators, scholars, hadiths, sufis, orators, preachers, mujahideen women, philanthropists, poets, authors, and administrators.

Hatija, Muhammad's first wife, was the first Muslim woman to be venerated and welcomed in society. It wouldn't be out of place to bury him as Hatice. In addition to his ancestry, character, and trade repute, Muhammad's first mentor can be evaluated. Hatije and Aisha, on the other hand, might be regarded the earliest examples of women who had a societal impact via education and engagement in political matters of the period, as well as religious information transmission.

We have the knowledge and experience of a large number of Muslim women of all levels of understanding who have been active in studying and teaching since the Age of Bliss. There were some female companions who stood out for their specialized expertise in specific areas. As previously said, being able to read and write was a rare and extremely valued talent at the time. Again, Fatima, at the companions' time. Women who specialize in medical services, such as Utba al-Aslemiyye (d. 7/628) and Umm Sinan, may be found in poetry, such as Aisha, Kuaybe, and Rufeyde bint Sad, and in some careers. Aisha is the one thing that all companions, male and female, have in common. Its mission was to learn and transmit the Prophet's words, actions, and approvals [Aydar, Atalay, 2014, p. 13]. There are various female companions from whom hadiths have been reported in this respect. Without a doubt, Aisha was the companion with the most advanced scientific equipment among the companions. He related over 2200 hadiths. Aisha was instrumental in the founding of the Medina school, answering questions and finding answers to problems. She also mentored women in the scientific community [Nahwi, 2007, p. 22-30).

Ladies from the Ahl-i Beyt have held scientific posts since the first century. Women learnt hadith and fikh among Ali's descendants, particularly Fatimah's, and passed it on to science students. Among these are et-Tahire el-Hurretu't-takyye es-Seyyide and et-Tahire el-Hurretu't-takyye e Nefise bint el-Hasen b. Zayd b. Hasan b. Ali b. Ebi Talib died in 208/824. Nefise bint al-Hasen, who came to Egypt with her family, lived in the governor's residence and had guests twice a week [Nahwi, 2007, p. 273-276].

Bishr al-Hafi, Ahmed b. Hanbal, and Imam Shafii are among his guests. When Imam Shafii was in Egypt, he had regular meetings with our Mother Nafise and learned hadiths from her. When Imam Shafii died, his body was taken to Sayyide Nefise's house, where he conducted his funeral prayer. Muslims now consider Nefise bint al-grave Hasen's to be a pilgrimage site.

Literate women are Shifa bint Abdillah and Hafsa bint Umar. Shifa bint Abdillah taught women in addition to teaching them to read and write. Reading rukye also allowed her to cure a variety of diseases. Allah's Messenger had requested that Hafsa teach this method of healing (Khayat M.H. (2003). Woman in Islam and her role in human development, p. 13).

Sumeyye, Umm Ayman Bereke, Umm Salama, Fatima bint Muhammad, Semra bint Nuhayk, who was an inspector of the bazaar and established herself in the fields of health and administration, Shifa bint Abdullah, who was appointed governor of the bazaar administration by Umar, come to mind as the first Islamic martyrs.

Zuhri, in particular, claims to have learned from Amre bint Abdirrahman, whom he describes as a "sea of wisdom." It should be mentioned that Amre was recognized as sika and hujjat in terms of jerh and ta'dil. As a result of this, Caliph Umar b. Abdulaziz issued an injunction demanding the drafting of Amre's narrations during the compilation of the hadiths. Umm Imran Aisha bint Talha b. was one of the renowned females. Ubeydullah et-Tamimiyya (d. 101/719) should be mentioned. Aisha bint Talha Arabic history and literature, particularly Hz She is a female scholar who rose to fame due to her understanding of the constellations, which she learned from Aisha.

It is possible to gather information on various women who were documented as hadith narrators or hadith narrators during the Tabiun, tebeu't-Tabiun, and following centuries. These ladies are a link in the line of hadith certificates that dates back to the companions. Emetu'l-Vahid bint el-Huseyn b. Smail el-Mehamili (d. 377/987), Kerime bint Ahmed b. Muhammed b. Hatim el-Merveziyye (d. 463/1070), Shühde bint Ahmed ed-Dineveriyye (d. 574/1178) and others [Hermansen, 2013, p. 45-59].

The companions also included the first Muslim women to actively participate in battle, carrying water, nursing, and fighting. Safiye bint Abdulmuttalip, Umeyye bint Kays, the Ben-i Gfar tribal ladies, Azde bint el Haris, and Havle bint el Ezver, also known as Kara Shuvari, are among them. Nusayba bint Kaab el Ensariye is the Prophet. The Prophet praised her valor at the Battle of Uhud, saying, "Wherever I glanced left or right in the Battle of Uhud, I saw him fighting." These are not the only problems they face in a male-dominated sector. On the other hand, Aisha el Makzumiye scales the city walls and unlocks the city gate, allowing Tark Bin Ziyad to conquer Cordoba.

Throughout history, many Abbasids, Turkish, Persian, Mongolian, and Indian Muslim women wielded political power. Shegeb, who temporarily governed the Abbasid realm, investigated public hunts submitted before him by administrators and judges. Radiye Begum, who controlled Delhi and supervised the administration, commanded the army and was well-known for her diplomacy. Sakandar Begum and his daughter governed the Principality of Bopal in Central India until 1901. Yemeni Queen Al-Udar led a full and busy life, from political administration to school building and management, from Yemeni security to charitable work, and even fighting for Egypt's defense.

Among the charitable females were Tuekan Hatun, Melik Shah's wife, Nur Cihan, Cihangir Shah's wife, Fatima Fahriyya, Benefshe er-Rumiya, who rejuvenated Baghdad, Bazm-i Alem Valida Sultan, and the Ottoman sultans who established foundations in their own time. Zubayda bint Jafer-i Mansur, the wife of the world's most powerful man, Harun Rashid, is one of the most powerful Muslim women known for their immense generosity and even inventions.

In the previous century, important figures included the Egyptian Zeynab al-Ghazali, the author Meryem Cemile, the Secretary General of the World Union of Muslim Women Hatice Hafaje, and the international name in the area of Islamic Social Services Hatije Hafaje. Academician and activist Ingri Mattson, as well as social sciences and economics specialist academic Maha Genaidi, are two of the most important and polar carriers of recent times. Muslim girl names that are popular.

Women were prominent and adored in Islam's early years, especially during the companions and Tabin eras. Men approaching them and learning from them is considered natural. Muslims are not hesitant to respect women and learn from them. Such intelligent and learned females' names may be found in every aspect of Islamic science.

Sayyide Sara bint al-Sheikh Umar, for example, is a female scholar who lived in Damascus seven centuries ago in the study of kalam (theology). Amat el-Vahid is an outstanding Shafii female jurist in the subject of fikh (his death in the 377th year of Hijrah). His father, Ismail al Varak, and other experts taught him hadith and fikh. Amat, a Quran memory, is recognized as a specialist in inheritance, particularly in Shafii fikh. El-Barkani has compiled a list of fatwas. Fatima bint Abbas, who died in 714 Hijri, was a female jurist whose intellectual background astounded the famed theologian Ibn Taymiyya.

Women, especially in Syria and Egypt, benefited greatly from their lessons. He is depicted in the works as a jurist, scholar, promoter of lofty charges, mufti, incorrect, and unique for his period. He addresses numerous female poets and intellectuals while quoting al-great Suyuti's Arabic lexicon, al-Kamus, from six well-known Arab ladies. Aisha bint Abdullah al-Mekkiye, who authored a book on her family's history, and Safiya bint al-Murtada, a linguist, are among them. Safiye, who lived in the eighth century Hijri, is one of the names that has endured due to the numerous works she authored.

Another notable character is Fatima bint Suleyman b. Abdilkerim al-Ensariyye ed-Dimashkiyye (d. 708/1308). Her father educated Fatima the topic of recitation and hadith from an early age. Around a hundred hadiths from Damascus, Iraq, and the Hejaz areas, as well as his father, are said to have benefited Fatima bint Suleyman. Fatima, who dedicated her life to research, spent her money building madrasahs and lodges along this road [Siddiqi, 1993, p. 120-121].

Certainly, demonstrating women's distinctive place in Islam and Islamic cultural life, which is not well recognized today, does not do so in the framework of today's fashion discourses, western paradigms, and feminist methods. In short, the current modernization of Islam is not about westernizing Islam, but about its purpose. She also emphasizes that the participation of these women in science and social life, who played an important role in transmitting Islamic resources to future generations, does not contradict Islamic values, but rather that they live in accordance with Islam, do not oppose Islamic rules and values, and do not neglect the personal virtue required by religion while performing a social function.

In the notion that the Quran indicates a distinction between men and women, Muslims cannot explain or refute this difference, neither in the Quran nor in the Prophet's behavior. There is no indication that it is on a lesser level since he reminds us that women were equally interested in what Muhammad taught, that women were always there when he addressed the audience or pledged allegiance, and that they even wanted special sessions for women's particular queries. As a result, several hadiths can only be recited by women. Several hadiths were first passed down by female companions, notably Muhammad's wives.

Aishe was the first Muslim scholar lady to address an audience and gather pupils around her. It is known that Hafsa, Umm Darda, and Amra bint Abdurrahman were held in high regard during the companions' time, primarily as significant hadith transmitters, and Umm Darda's Caliph Muawiya's son Iyas was designated an arbitrator on hadiths, favoring even the period's giants like Hasan Basri and Ibn-i Sirin.

We can see that female hadith scholars played an important role in the development of contemporary hadith knowledge, accounting for a quarter of the hadith corpus and the bulk of books written in the last centuries based on hadiths transmitted via women.

She notes that, theoretically, Islam does not ban women from receiving and educating women, and that women's scientific learning and teaching take place within the context of Islamic values rather than the rules imposed by other systems.

These ladies continued to teach science and were active everywhere they went, even when traveling. Fatima bint Saad al Hayr, who died in 600 Hijri, was one of them. He was schooled by his father, Sa'd, and afterwards by Abu Galip, Kadi Abu Bakr, and Yahya bin Banna, and he taught pupils in Damascus and Egypt. Zeyneb al-Makdisiyye was born in Kasyun, one of Imam Zahabi's instructors in the 8th century, and became a student of notable hadith scholars, giving lectures in cities such as Jerusalem, Egypt, and Medina.

One of the eight thousand Muslim female academics is Seyidet Nefise, a hafiz of Quran, tafsir, and hadith scholar who is considered as one of the great saints. Seyidet Nefise, one of Islam's most renowned women, was born in Mecca, grew up in Medina, went to Egypt, and passed down hadiths to Imam Shafii [Aydar, Atalay, 2014, p. 25].

In addition, there are also famous Muslim women like Ziyb an-Nisa Begum al-Hindiyye (d. 1702), Nusret Begum Emin (d. 1983), Aisha Abdurrahman Bintush-Shati (d. 1998), Zaynab al-Gazali (d. 2005), Naile Hashim Sabri, Semra Kurun Chemegil, Nedjla Yasdiman, Fevkiyye Ash-Shirbini, Kamile binti Muhammad al-Kevari, Keriman Hamza, Hannan al-Lahham, Angelika Neuwirth, Miyade binti Kamil, who have spoken in the science of Quranic interpretation [Aydar, Atalay, 2014, p. 3-22].

Women's effort and intensity, notably in the science of hadith, were observed in all times, not just one. He went on to say that women have specialized in hadith throughout history, but they were not heard enough since they were not as regularly recorded in biographical dictionaries as their male counterparts. As a result, false assumptions were made that there were no female intellectuals and researchers in Islamic studies.

When we look at female hadith experts from the nineteenth century, we discover that some of them were given the designations Sittulvuzera and Sittularab: Umm Medjduddin Sittularab bint Abdulmedjid b. Hasan al-Adjemi (d. 675/1276), Ummul-Hayr Sittularab bint Yahya b. Kaymaz al-Kindiyye ed-Dimaskiyye (d. 684/1285), Sittulvuzera bint Ebul-Fazl Yahya b. Muhammed et-Taglibiyye ed-Dimaskiyye (d. 715/1316), Ummu Muhammed Sittulvuzera bint Umar b. Asad b. al-Munadjja ed-Dimaskiyye (d. 716/1316), Umm Muhammed Sittularab bint Seyfeddin Ali b. Radi Abdurrahman al-Makdisiyye (d. 734/1333), Umm Muhammad Sittulvuzera bint Muhammed b. Abdulkerum b. Osman el-Mardiniyye el-Mizziyye (d. 736/1336), Ummul-Hayr Sittularab Aishe bint Ali b. Ömer el-Himyeriyye es-Sanhadjiyye al-Misriyye (d. 739/1338), Umm Muhammad Sittularab bint Shemsiddin Muhammed b. Fahriddin Ali es-Salihiyye (d. 767/1366), Sittularab bint Ibrahim b. Muhammad al-Halebiyya (d. IX./XV) [Hermansen, 2013, p. 45-59].

Aisha bint Yusuf b. Ahmed b. Nasir al-Bauniyye ed-Dimashkiyye (d. 922/ 1516) is an important figure. Aisha bint Yusuf learnt the Quran and received mystic training from Sayyid Ismail al-Harizmi and Muhyiddin Yahya al-Urmevi when she was eight years old. Aisha bint Yusuf, a jurist, was given permission to give fatwas and lectures in Cairo. In Cairo, he exchanged poetry with Abdurrahim el-Abbasi, one of the city's most recognized authors.

Fatima bint Muhammad b. Ahmad es-Samarkandiyye of the VI. (XII.) century comes to mind as a faqih woman. Fatima bint Muhammad was born in Samarkand and received her education from her father, the Hanafi jurist Alaeddin es-Samarkandi (d. 539/1144). She is also skilled in calligraphy. He very certainly continued to issue fatwas after marrying Kasani. Another example of administrators' interest in female academics is Fatima bint Muhammed. The Atabeg of Aleppo and Damascus, Nureddin Mahmud Zengi, revered, conferred with, and consulted Fatima bint Muhammad for his fikh ideas.

Because women's modesty and isolation are prized more highly in Islamic morals, knowledge about women is not as prevalent as that of men, even if they are academics. This feature of Islamic civilization also limits the recording of numerous facts regarding women's private life and social activity. Their accomplishments in intellectual and social life are overlooked due to a lack of information in biographical resources. In places like as Baghdad, Damascus, and Cairo, there are many female academics and researchers. Ladies like Amat al-Gafur, a fikh and hadith scholar, and his father, Imam Ishaq al-Dihlawi, are significant in the field of hadith and jurisprudence in India. Hafiz Ibn Hajar lists one hundred and seventy well-known hadiths in the eighth century alone, whereas Ibn Fahd al-Makki mentions one hundred and thirty well-known hadiths in the ninth century.

Female transmitters are frequently seen to be more reliable than males in hadith transmissions; men are seldom assailed with multiple claims, but women are few. Women scholars have demonstrated their competence in every branch of science, which is the foundation of Islamic civilization, from recitation to fikh, literature to mathematics, and they have brought their gains, knowledge, and experiences to life in education and training by educating themselves to the best of their ability. At the same time, women who established madrasas, dervish lodges, hospitals, and libraries contributed significantly to Islamic civilization.

The acts of female intellectuals and jurists who lived during the time of the infallible imams were sanctioned by the Ahl al-Bayt. Rijal's writings mention a treatise of jurisprudence produced by Imam Zaynulabidi's daughter.

Saida, a maidservant of Imam Jafar Sadiq, and Ummi-Ahmed, the daughter of Imam Musa Kazim, were both regarded intellectual women at the time. Imam Sadiq advised women of his day to seek religious guidance from Hamideyi-Musaffat, also known as "The Golden Lady."

Zurara ibn Ayu's sister, Ummi-Aswad, joined Imam Sadiq's disciples long before her brother, and she subsequently utilized evidence to persuade Zurara to follow in his footsteps (the position and fame of Zurara is known in the hadith science). Kulsum, Salim's daughter, who lived during Imam Reza's period, wrote a whole book on him.

Throughout the subsequent centuries, skilled academics and mujtahid women grew up in the homes of significant religious experts. Ummi-Ali, the wife of Muhammad ibn Makki Amuli, was a religious figure for women. She was also known as "Shahidi-awwal" ("The First Martyr"). His daughter, Ummul-Hasan Fatimah, passed down hadith from her father and others. Her contemporary monikers were "Lady Sheikh" and "Sattul-Mashaikh" (Lord of Masters). Shahidi advised women to use their Umm-Ali and Umm-Hasan knowledge. Daughters of eminent Islamic scholars Sadruddin Amuli, Dearullah Madjlisi, and Sharif Ruydashti produced and taught commentary on canonical hadith and fikh texts.

Amina Beyim was the wife of prominent scientist Muhammadsaleh Mazandarani and the sister of Allama Muhammadbagir Majlis, the creator of the "Biharul-Anwar" encyclopedia. According to legend, he helped his brother compile the Bihar al-hadiths. Anwar's When his wife encountered problems in her scientific studies, she would seek the assistance of Amina Bey.

Several renowned Islamic thinkers considered learning from women as both a deficiency and a source of pride. The great hadith scholar, Ibn Jawzi, reported various hadiths from his master, a lady named "Shahda." While Khatib Baghdadi stayed in Mecca, he spent five days reading Bukhari's "Sahih" in the class of an erudite woman named Karima Marwaziyya.

Mujtahid lady Seyyida Nusrat Beyim (1887-1984), often known as "Banu Amin," was widely recognized as one of the best scientists of our time. Banu, who resided in Isfahan, studied under Ayatollah Seyyid Muhammadali Najafabadi, one of the most eminent academics of the period, and wrote nine books on akeeda, law, history, morality, knowledge, and interpretation. When she was 40 years old, she received ijtihad authorization from the late Ayatollahs Seyyed Muhammadkazim Shirazi, Sheikh Abdulkarim Hairi, Seyyid Muhammadali Najafabadi, Ibrahim Istehbanati, Sheikh Muhammadreza Najafi, and others. The late Ayatollah Istahbanati observed of Banu Amin in the authorisation letter he wrote for her, "If women are like this lady, they would surely be superior to men."

It should be noted, however, that in the Islamic world for many centuries, a woman was not authorized to judge or act as a mujtahid for others.

According to Jafari jurisprudence, a woman might attain the position of mujtahid by studying religious studies. No one else has the authority to imitate him (i.e., to follow his rulings and fatwas). According to Islamic law, only a male mujtahid should be copied.

In the present world, Muslim women continue to contribute to research. Such instances are as follows:

Rehab Iman, a Muslim scholar with a bachelor's degree in architectural engineering and a master's degree in Sharia, claims that her Islamic beliefs pushed her to succeed in science.

Professor Samira Ibrahim Islam was named UNESCO Scientist of the Year in 2000. She contributed significantly to the growth of narcology. This woman has a number of significant academic positions in her own country of Saudi Arabia, in addition to working for the World Health Organization. Samira Shah recently presented at the International Conference on Machine Learning in Canada a new computer assisted learning approach developed at the Delhi Research Institute.

Prof. Dr. Bina Shaheen Siddiqi has made significant contributions to health and agriculture by researching local plant resources. She has over 250 scientific articles and many patents for the production of anti-carcinogenic pesticides. Bina Shaheen Siddiqi graduated from the University of Karachi with a PhD and a Master's degree (Pakistan).

To recapitulate, Islam has never denied women the freedom to learn and participate in specified activities. He, on the other hand, encouraged women to be educated like men and to take an active role in social and political life. It is also clear from the examples in the article that women have always had a presence in political and social life and continue to operate in a range of fields in the modern world. Nowadays, limiting or restricting women's rights to education and labor in many communities is not due to religion, but rather to the contemporary political context and traditions.

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MATHEMATICAL SCIENCES

WEYL'S CIRCLE AND POINT FOR TWO-PARAMETRIC SYSTEM OF STRUM-LIOVILLE DIFFERENTIAL EQUATION

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Abstract

We introduce analogues of Weyl's circumferences and circles for the system of equations [1] with two parameters.

It is proved that the deficiency index of the two-parameter system (1) in the singular end $b=(b_1,b_2)$ is not less than one.

If one of two-parametric equations (1) has the case of limit circumference, then the deficiency index of the problem (1) is not less than two. But if both of the equations of the two-parameter system (1) has the case of limit circumferences, then the deficiency index of the problem (1) equals four.

Keywords: Circle and point, two –parameter equations, deficiency index, limit circumference, problem (1), differential equation, continuous, interval (a_i,b_i), complex valued functions, not self-adjoint operators, discrete spectrum.

Introduction:

We consider a two –parameter system of Sturm-Liouville equations

$$\left.\begin{aligned} &-y''(x_1)+q_1(x_1)y_1(x_1)+[\lambda_1 a_{11}(x_1)+\lambda_2 a_{12}(x_1)]y_1(x_1)=0 \\ &-y''(x_2)+q_2(x_2)y_2(x_2)+[\lambda_1 a_{21}(x_2)+\lambda_2 a_{22}(x_2)]y_2(x_2)=0 \end{aligned}\right\} \qquad (1)$$
$$-\infty\le a_i<x_i<b_i\le\infty \quad (i=1,2).$$

Assume that $a_{11}(x_1),a_{12}(x_1),a_{21}(x_2),a_{22}(x_2)$ and $q_1(x_1),q_2(x_2)$ are arbitrary complex-valued functions, continuous on the interval (a_i,b_i), and $P_i=\operatorname{Re}q_i, r_i=\operatorname{Im}q_i \quad (i=1,2).$

We introduce analogues of G. Weyl's circumferences and circles for the system of equations (1) with two parameters.

G. Weyl's theory on limit circumference for Sturm-Liouville operators with real potentials (see [1], [2]) is extended also for the case of complex potentials as was noted by V.B. Lidsky [3] when constructing theory of not self-adjoint Sturm-Lioville operators with discrete spectrum.

We will use the denotations and reasonings of the works ([3],[4]).

Let us introduce the following function

$$S_i(x_i,\lambda)=\sum_{k=1}^{2}\operatorname{Im}(\lambda_k a_{ik}(x_i))+r_i(x_i),\ (i=1,2)$$

and consider the following two subsets of C^2:

$$\Lambda_i^+=\{\lambda\in C^2; S_i(x_i,\lambda)>0, x_i\in(a_i,b_i)\},$$
$$\Lambda_i^-=\{\lambda\in C^2; S_i(x_i,\lambda)<0, x_i\in(a_i,b_i)\}.$$

Introduce the basis $\varphi_i(x_i,\lambda),\theta_i(x_i,\lambda)$ of the space of solutions of the equation (1) satisfying the following initial conditions at the fixed point $\alpha_i\in(a_i,b_i)$:

$$\varphi_i(\alpha_i,\lambda)=1,\quad \varphi_i'(\alpha_i,\lambda)=0,$$
$$\theta_i(\alpha_i,\lambda)=0,\quad \theta_i'(\alpha_i,\lambda)=1.$$

Let $\lambda\in\Lambda_i^+\bigcup\Lambda_i^-$.

Then there exists the sequence $(b_i^{(m)})_{m\ge1}\subset(a_i,b_i)$ converging to b_i as $m\to\infty$ and posing the properties:

The solution of the form

$$\psi_i(x_i,\lambda)=\theta_i(x_i,\lambda)+l_i\varphi_i(x_i,\lambda)$$

of the equation (1) at the point $b_i^{(m)}$ satisfies the boundary condition

$$\operatorname{Im}\psi_i^{'}(x_i,\lambda,l_i)\overline{\psi_i}(x_i,\lambda,l_i)\Big|_{k_i=b_i(m)}=0, \tag{2}$$

(where l_i is still an arbitrary parameter) if and only if l_i lies on the circumference $C_{b_i^{(m|)}}(\lambda)$:

$$\int_{\alpha_i}^{b_i^{(m)}} S_i(x_i,\lambda)\left|\psi_i(x_i,\lambda,l_i)\right|^2 dx_i=\operatorname{Im} l_i \tag{3}$$

centered at the point

$$O_{b_i^{(m)}}(\lambda)=\Delta\left[\theta_i,\overline{\varphi}_i\right]_{x_i=b_i^{(m)}}\left(2i\int_{\alpha_i}^{b_i^{(m)}} S_i(x_i,\lambda)\left|\varphi_i(x_i,\lambda,l_i)\right|^2 dx_i\right)^{-1} \tag{4}$$

and with a radius equal to

$$R_{b_i^{(m)}}=\frac{1}{2}\left(\left|\int_{\alpha_i}^{b_i} S_i(x_i,\lambda)\left|\varphi_i(x_i,\lambda)\right|^2\right|dx_i\right)^{-1}. \tag{5}$$

With increasing *m* circumference, the circumferences $C_{b_i^{(m)}}(\lambda)$ are contracted and as $m\to\infty$ refract either to the limit point $m_{b_i^{(m)}}(\lambda)$, or to the limit circumference $C_{b_i^{(m)}}(\lambda)$.

The point $b_i^{(m)}$ lies on a closed limit circle

$$\overline{K_{b_i}(\lambda)}=K_{b_i}(\lambda)\bigcup C_{b_i}(\lambda)$$

or coincides with the limit point $m_{b_i}(\lambda)$ if and if the following relation is fulfilled:

$$\int_{\alpha_i}^{b_i}\left|S_i(x_i,\lambda)\right|\left|\theta_i(x_i,\lambda)+l_{b_i}(\lambda)\varphi_i(x_i,\lambda)\right|^2 dx_i\le\left|\operatorname{Im} l_{b_i}(\lambda)\right| \tag{6}$$

It is easy to see that the Wronskian

$$\Delta(\varphi_i,\theta_i)=\varphi_i(\alpha_i\lambda)\theta_i^{'}(\alpha_i\lambda)-\theta_i(\alpha_i\lambda)\varphi_i^{'}(\alpha_i\lambda)=1$$

and

$$\Delta(\overline{\varphi}_i,\varphi_i)\Big|_{x=\alpha_i}=0,\Delta(\overline{\theta_i+l_i\varphi_i},\theta_i+l_i\varphi_i)\Big|_{x_i=\alpha_i}=-2i\operatorname{Im} l_i.$$

Now, multiplying the equation (1) by $\overline{y}_i$, integrating the obtained relation in the interval $\left(\alpha_i,b_i^{(m)}\right)$ and isolating the imaginary part, we obtain:

$$\Delta\left(\overline{y}_i,y_i\right)\Big|_{x=b_i^{(m)}}=\Delta\left(\overline{y}_i,y_i\right)\Big|_{x=\alpha_i}+2i\int_{\alpha_i}^{b_i^{(m)}} S_i(x_i,\lambda)\left|y_i(x_i)\right|^2 dx_i. \tag{7}$$

We now note that the condition

$$\operatorname{Im}\psi_i^{'}\overline{\psi}_i\Big|_{x_i=b_i^{(m)}}=0$$

is equivalent to such a selection of the values of l_i for which the values of the linear fractional mapping

$$z=\left.\frac{\theta_i^{'}+l_i\varphi_i^{'}}{\theta_i+l_i\varphi_i}\right|_{x=b_i^{(m)}}$$

is real.

And this is also equivalent to the fact that the point l_i belongs to the image of the real line under the linear-fractional mapping

$$z - l_i(b_i^{(m)}, \lambda, z) = \left.\frac{\theta_i z - \theta_i}{-\varphi_i z + \varphi_i^{'}}\right|_{x=b_i^{(m)}} \tag{8}$$

in other words, to the belonging of the point l_i of the circumference

$$C_{b_i^{(m)}}(\lambda) = l_i(b_i^{(m)}, \lambda, R).$$

and this circumference has the equation

$$\Delta\left(\overline{\theta_i + l_i y_i} + \theta_i + l_i y_i\right)\Big|_{x_i=b_i^{(m)}} = 0.$$

The center of the circumference $C_{b_i^{(m)}}(\lambda)$ is the image of the point with the pole of the function

$$l_i\left(b_i^{(m)}, \lambda, z\right) = \left.\frac{\theta_i z - \theta_i^{'}}{-\varphi_i z + \varphi_i^{'}}\right|_{x_i=b_i^{(m)}}.$$

Therefore,

$$O_{b_i^{(m)}}(\lambda) = \left.\frac{\Delta(\theta_i - \overline{\varphi}_i)}{\Delta(\overline{\varphi_i}, \varphi_i)}\right|_{x_i=b_i^{(m)}}.$$

The length of the radius $R_{b_i^{(m)}}(\lambda)$ of the circumference $C_{b_i^{(m)}}(\lambda)$ is found by the formula

$$R_{b_i^{(m)}}(\lambda) = \left|l_i(b_i^{(m)}, \lambda, 0) - O_{\alpha_i}(\lambda)\right| = \left|\Delta(\overline{\varphi_i}, \varphi_i)^{-1}\right|_{x_i=b_i^{(m)}}$$

Let us find the equation of the circle $K_{b_i^{(m)}}(\lambda)$.

Obviously, the imaginary part of the pole of the linear fractional mapping (8) equals the expression

$$\frac{\left.\frac{1}{2i}\Delta(\overline{\varphi_i}, \varphi_i)\right|_{x_i=b_i^{(m)}}}{\left|\varphi_i(b_i^{(m)}, \lambda)\right|^2}.$$

If $\lambda \in \Lambda_i^+ \bigcup \Lambda_i^-$, then from formula (7)

$$\Delta(\overline{\varphi_i}, \varphi_i)\Big|_{x_i=b_i^{(m)}} \neq 0,$$

therefore $\varphi_i(b_i^{(m)}, \lambda) \neq 0$ and $\varphi_i^{'}(b_i^{(m)}, \lambda) \neq 0.$

By means of formula (7) we deduce that

$$\operatorname{Im} z = \frac{1}{\left|\varphi_i(b_i^{(m)}, \lambda)\right|^2}\int_{\alpha_i}^{b_i^{(m)}} S_i(x_i, \lambda)\left|\varphi_i(x_i, \lambda)\right|^2 dx_i.$$

Hence it is seen that if $\lambda \in \Lambda_i^+$, then the point l_i belongs to the circle $K_{b_i^{(m)}}(\lambda)$ if and only if $\operatorname{Im} z < 0,$ i.e.

$$\frac{1}{2i}\Delta\left(\overline{\theta_i + l_i y_i} + \theta_i + l_i y_i\right)\Big|_{x_i=b_i^{(m)}} < 0$$

and this in its turn is equivalent to the inequality

$$\int_{\alpha_i}^{b_i^{(m)}} S_i(x_i, \lambda)\left|\theta_i(x, \lambda) + l_i\varphi_i(x_i, \lambda)\right|^2 dx_i < \operatorname{Im} l_i. \tag{9}$$

If $\lambda \in \Lambda_i^+$, we obtain the inequality

$$\int_{\alpha_i}^{b_i^{(m)}} S_i(x_i, \lambda)\left|\theta_i(x, \lambda) + l_i\varphi_i(x_i, \lambda)\right|^2 dx_i > \operatorname{Im} l_i. \tag{10}$$

From formulas (9) and (10) we obtain the circle $K_{b_i^{(m)}}(\lambda)$ for al $\lambda \in \Lambda_i^+ \bigcup \Lambda_i^-$ in the form of

$$\int_{\alpha_i}^{b_i^{(m)}} |S_i(x_i,\lambda)| |\theta_i(x,\lambda)+l_i\varphi_i(x_i,\lambda)|^2 dx_i < |\mathrm{Im}\, l_i|. \qquad (11)$$

Hence, if is obvious that if $\lambda \in \Lambda_i^+$ then $\mathrm{Im}\, l_i > 0$ i.e. for all the circles $K_{b_i^{(m)}}(\lambda) m = 1,2,\ldots$ are on the upper (l) half-plane . And if $\lambda \in \Lambda_i^-$ then i.e. for al the circles $K_{b_i^{(m)}}(\lambda) m = 1,2,\ldots$ are on the lower (*l*) half-plane. ???

From the inequality (11) it is seen that the circles $K_{b_i^{(m)}}(\lambda)$ are and therefore refract to the limit point $m_{b_i}(\lambda)$, or to the limit circle $K_{b_i^{(m)}}(\lambda)$ (with limit circumference $C_{b_i}(\lambda)$.)

If $C_{b_i}(\lambda) = m_{b_i}(\lambda)$, then the relation (11) holds.

We now note that there exists the solution to the equation (1) of the form

$$\psi_i(x_i,\lambda) = \theta_i(x_i,\lambda) + l_i\varphi_i(x_i,\lambda)$$

that for each values of $\lambda \in \Lambda_i^+ \bigcup \Lambda_i^-$ belongs to the space $L^2([\alpha_i,b_i],|S_i|dx_i)$ of complex valued functions $y_i(x_i)$, summed with a square with respect to the weight $|S_i(x_i,\lambda)|$ in the vicinity of the point b_i :

$$\int_{\alpha_i}^{b_i} |S_i(x_i,\lambda)| |y_i(x_i)|^2 dx_i < \infty.$$

In the case of limit circumference, for each value of $\lambda \in \Lambda_i^+ \bigcup \Lambda_i^-$ all the solutions of the equation (1) belong to the space

$$L^2([\alpha_i,b_i],|S_i|dx_i).$$

Indeed, on one hand

$$\psi_i(x_i,\lambda) = \theta_i(x_i,\lambda) + l_{b_i}(\lambda)\varphi_i(x_i,\lambda) \in L^2([\alpha_i,b_i],|S_i|dx_i).$$

on the other hand, in the case of limit circumference we have

$$\lim_{m\to\infty} R_{b_i^{(m)}}(\lambda) \neq 0.$$

Therefore, from formula (5) we deduce that the solution $\varphi_i(x_i,\lambda)$ of the equation (1) belongs to the space $L^2([\alpha_i,b_i],|S_i|dx_i)$

In the case of limit point, for each value of $\lambda \in \Lambda_i^+ \bigcup \Lambda_i^-$ there exists only one linearly independent solution of the equation (1) belonging to the space $L^2([\alpha_i,b_i],|S_i|dx_i)$.

Thus, we have: either all the solutions of the equation (1) lie in the space

$$L^2([\alpha_i,b_i],|S_i|dx_i)$$

(the case of limit circumference), or only one linearly independent solution of (1) belongs to this space (the case of limit point)

We can show that (see V.B Lidsky [2] and G.A. Isayev [4], that for the constructed solution $\psi_i(x_i,\lambda) = \theta_i(x_i,\lambda) + l_{b_i}(\lambda)\varphi_i(x_i,\lambda), (l_{b_i} = l_{b_i}(\lambda) \in C_{b_i}(\lambda)$ or $l_{b_i} = m_{b_i}(\lambda)$) the following limit relation is valid:

$$\lim_{x_i\to b_i} \mathrm{Im}\{\overline{\psi_i(x_i,\lambda)}, \psi_i'(x_i,\lambda)\} = 0, \quad \lambda \in \Lambda_i^+ \bigcup \Lambda_i^-.$$

We now study all-possible cases of belonging and not belonging of he products $y_1(x_1,\lambda)y_2(x_2,\lambda)$ to the space $L^2(I_b, B(x)dx)$ i.e. determination of the condition

$$\int_{I_b} B(x)|y_1(x_i,\lambda), y_2(x_2,\lambda)|^2 dx < \infty, x_i \in [\alpha_i,b_i], I_b = [d_1,b_1][\alpha_2,b_2].$$

Here $y_1(x_1,\lambda)$ and $y_2(x_2,\lambda)$ one the solutions of the system (1)

$$B(x) = \det\{a_{ik}(x_i)\}_{i,k=1}^2$$

We call the amount of products $y_1(x_1,\lambda)y_2(x_2,\lambda)$ belongs to $L^2(I_b, B(x)dx)$ a deficiency index of two-parameter problem (1) in the singular end b (corresponding to the point λ)

Let $\lambda \notin R^2$ and $\operatorname{Im}\lambda_1 \neq 0.$ Then

$$
\begin{aligned}
&\int_{[\alpha,b^m]} B(x)\left|y_1(x_1,\lambda),y_2(x_2,\lambda)\right|^2 dx = \\
&= \frac{1}{\operatorname{Im}\lambda_1}\int_{\alpha_1}^{b_1^{(m)}} S_1(x_1,\lambda)\left|y_1(x_i,\lambda)\right|^2 dx_1 \cdot \int_{\alpha_2}^{b_2^{(m)}} a_{22}(x_2)\left|y_2(x_2,\lambda)\right|^2 dx_2 - \\
&- \frac{1}{\operatorname{Im}\lambda_1}\left(\int_{\alpha_2}^{b_2^{(m)}} S_2(x_2,\lambda)\left|y_2(x_2,\lambda)\right|^2 dx_2\right)\int_{\alpha_1}^{b_1^{(m)}} a_{12}(x_1)\left|y_1(x_1,\lambda)\right|^2 dx_1 - \\
&- \frac{1}{\operatorname{Im}\lambda_1}\int_{\alpha_1}^{b_1^{(m)}} r_1(x_1)\left|y_1(x_i,\lambda)\right|^2 dx_1 \cdot \int_{\alpha_2}^{b_2^{(m)}} a_{22}(x_2)\left|y_2(x_2,\lambda)\right|^2 dx_2 + \\
&+ \frac{1}{\operatorname{Im}\lambda_1}\int_{\alpha_2}^{b_2^{(m)}} r_2(x_2)\left|y_2(x_2,\lambda)\right|^2 dx_2 \int_{\alpha_1}^{b_1^{(m)}} a_{12}(x_1)\left|y_1(x_1,\lambda)\right|^2 dx_1.
\end{aligned}
\tag{12}
$$

and

$$
\int_{[\alpha,b^m]} \widetilde{B}_1(x)\left|y_1(x_1,\lambda),y_2(x_2,\lambda)\right|^2 dx =
$$

$$
\begin{aligned}
&= \left(\int_{\alpha_1}^{b_1^{(m)}} S_1(x_1,\lambda)\left|y_1(x_1,\lambda)\right|^2 dx_1 \cdot \int_{\alpha_2}^{b_2^{(m)}} a_{22}(x_2)\left|y_2(x_2,\lambda)\right|^2 dx_2\right) - \\
&- \left(\int_{\alpha_2}^{b_2^{(m)}} S_2(x_2,\lambda)\left|y_2(x_2,\lambda)\right|^2 dx_2 \int_{\alpha_1}^{b_1^{(m)}} a_{12}(x_1)\left|y_1(x_1,\lambda)\right|^2 dx_1\right).
\end{aligned}
\tag{13}
$$

Now, in the equality (12) assuming $y_1(x_1,\lambda)=\varphi_1(x_1,\lambda), \quad y_2(x_2,\lambda)=\psi_2(x_1,\lambda)$ and taking into account formulas (3) and (5), we obtain (considering $r=1$):

$$
\begin{aligned}
&\int_{[\alpha,b^m]} B(x)\left|\varphi_1(x_1,\lambda),\psi_2(x_2,\lambda)\right|^2 dx = \\
&= \pm\left(2\operatorname{Im}\lambda_1 R_{b_1^{(m)}}(\lambda)\right)^{-1}\int_{\alpha_2}^{b_2^{(m)}} a_{22}(x_2)\left|\psi_2(x_2,\lambda)\right|^2 dx_2 - \\
&- \left(\int_{\alpha_1}^{b_1^{(m)}} a_{12}(x_1)\left|\varphi_1(x_1,\lambda)\right|^2 dx_1\right)\frac{2\operatorname{Im} l_2^{(m)}(\lambda)}{\operatorname{Im}\lambda_1} - \\
&- \frac{1}{\operatorname{Im}\lambda_1}\int_{\alpha_1}^{b_1^{(m)}} r_1(x_1)\left|\varphi_1(x_i,\lambda)\right|^2 dx_1 \cdot \int_{\alpha_2}^{b_2^{(m)}} a_{22}(x_2)\left|\psi_2(x_2,\lambda)\right|^2 dx_2 + \\
&+ \frac{1}{\operatorname{Im}\lambda_1}\int_{\alpha_1}^{b_1^{(m)}} a_{12}(x_1)\left|\varphi_1(x_1,\lambda)\right|^2 dx_1 \cdot \int_{\alpha_2}^{b_1^{(m)}} r_2(x_2)\left|\psi_2(x_2,\lambda)\right|^2 dx_2.
\end{aligned}
\tag{14}
$$

Here $l_2^{(m)}(\lambda) \in C_{b_2^{(m)}}(\lambda),$ and the sign $"+"("-")$ corresponds to the case $\lambda \in \Lambda_i^+ \bigcup \left(\Lambda_i^-\right)$ In all the addends of the right hand side of the equality (13), the second factors have finite limits as $m \to \infty$ if only the following conditions are fulfilled:

$$
\lambda = (\lambda_1,\lambda_2) \in (\Lambda_1^+ \bigcup \Lambda_1^-) \bigcap (\Lambda_2^+ \bigcup \Lambda_2^-), \quad \operatorname{Im}\lambda_1 \neq 0,
$$

and

$$\lim_{x_2\to b_2}\sup\left|\frac{a_{22}(x_2)}{S_2(x_2,\lambda)}\right|<\infty, \lim_{x_2\to b_2}\sup\left|\frac{r_1(x_1)}{S_1(x_1,\lambda)}\right|<\infty.$$

Assume that for the first equation in two-parameter problem (1) we have the case a of limit circle, and furthermore, let

$$\lim_{x_1\to b_1}\sup\left|\frac{a_{12}(x_1)}{S_1(x_1,\lambda)}\right|<\infty, \lim_{x_1\to b_1}\sup\left|\frac{r_1(x_1)}{S_1(x_1,\lambda)}\right|<\infty.$$

Then all first factors of all addends of the right hand side of the equality (13) have finite limits as $m\to\infty$. Thus, subject to the mentioned conditions, the function $\varphi_1(x_1,\lambda)\psi_2(x_2,\lambda)\in L^2(I_b,B(x)dx),$ i.e. deficiency index of two-parameter problem (1) is not less than two.

In a similar way we can show that

$$\varphi_2(x_1,\lambda)\psi_1(x_2,\lambda)\in L^2(I_b,B(x)dx),$$

if for the second equation in two-parameter problem (1) we have the case of a limit circle and the coefficients of equations satisfy the same conditions, only the order in which there terms are presented, changes.

Thus, in the case of a limit circle for both equations the products

$\psi_1(x_1,\lambda)\psi_2(x_2,\lambda), \varphi_1(x_1,\lambda)\psi_2(x_2,\lambda)$ and $\psi_1(x_1,\lambda)\varphi_2(x_2,\lambda)$

belong to the space $L^2(I_b,B(x)dx)$. It is easy to see that on this case, the products also belong to the space $L^2(I_b,B(x)dx)$ i.e. the deficiency index of the problem (1) is precisely four $\varphi_1(x_1,\lambda)\varphi_2(x_2,\lambda)$.

Thus follows from the equality (12) for $y_i(x,\lambda)=\varphi_i(x_i,\lambda), i=1,2.$ On the other hand, it is easy to see that if only for one of the two-parameter system of equations (1) we have the case of a limit point, then the deficiency index of the problem (1) can be equal to two or four, as a result of dominating near the singular end $b=(b_1,b_2)$ of the addend in the right hand side of formula (12), or as a result of mutual paying if features of separate addends.

For example if for the first equation from the two-parameter system (1) we have the case of a limit point, circle, and for the second one we have the case of a limit point, then it is easy to see that the product $\psi_1(x_1,\lambda)\varphi_2(x_2,\lambda)$ does not belong to the space

$$L^2(I_b,B(x)dx)$$

subject to the conditions

$$\lim_{x_1\to b_1}\sup\frac{|a_{12}(x_1)|+|r_1(x_1)|}{|S_1(x_1,\lambda)|}<\infty,$$

$$\int_{\alpha_2}^{b_2}\max\{|a_{22}(x_1,\lambda)|,|r_2(x_2)|\}|\varphi_2(x_2,\lambda)|dx_2<\infty.$$

Summarizing all the arguments related to the system of equations (1) we arrive at the following statement

Theorem. Let

$$\lambda\in(\Lambda_1^+\bigcup\Lambda_1^-)\bigcap(\Lambda_2^+\bigcup\Lambda_2^-), \quad \lambda\notin R^2.$$

Assume that if $\lambda\notin R^2$, the following condition is fulfilled:

$$\lim_{x_1\to b_1}\sup\frac{|a_{i2}(x_i)|+|r_i(x_i)|}{|S_i(x_i,\lambda)|}<\infty, \quad i=1,2$$

but if $\lambda\notin R^2$, then

$$\lim_{x_1\to b_1}\frac{|a_{i1}(x_i)|+|r_i(x_i)|}{|S_i(x_i,\lambda)|}<\infty, \quad i=1,2\,.$$

Then the deficiency index of two-parameter problem (1) in the singular end $b=(b_1,b_2)$ is not less than a unit.

If for one of two-parameter equations (1) we have the case of a limit circumference, then the deficiency index of the problem (1) is not than two.

But if for the both equations of two-parameter system (1) we have the case of limit circumferencesm then the deficiency index of problem (1) is equal to four.

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MEDICAL SCIENCES

EPIDEMIOLOGICAL AND CLINICAL ASPECTS OF ANTIBIOTIC-INDUCED DIARRHEA

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Abstract

Antibiotic-induced diarrhea (AID), also known as antibiotic-induced intestinal flora imbalance, is a frequent complication of antibiotic therapy, which occurs shortly or up to 8 weeks after the start of drug therapy and is reported in 5-30% of cases [1]. Antibiotics cause significant disruption of the normal composition and functional attributes of the gut microbiome [2]. The damage to this ecosystem, especially by reducing its diversity of microorganisms, can occur in the long term [3]. AID developed with a higher prevalence in women in the age category 61-70 years, on the background of viral Pneumonia (48.9% of cases) caused by the SARS-CoV-2 virus, independent of the number of antibiotics previously administered. Diarrhea and abdominal pain are the most common manifestations appreciated in the clinical picture, in contrast fever is less common. Aim of our study was to evaluate the epidemiological and clinical aspects of antibiotic-induced diarrhea.

Keywords: antibiotic-induced diarrhea, Clostridium difficile, SARS-CoV-2 virus, intestinal microflora, stool, fever, abdominal pain, antibiotics, hospitalization.

Introduction

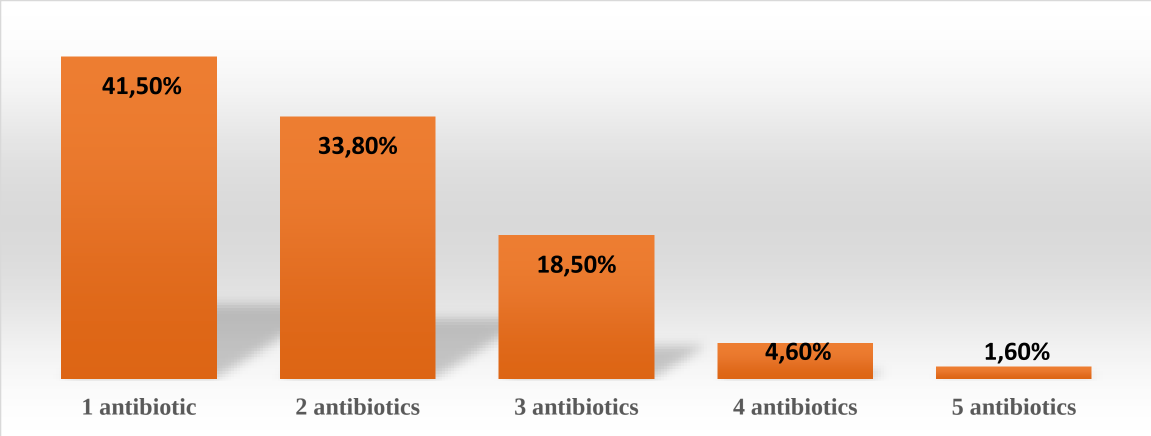
The intestinal microflora has a crucial role in maintaining both metabolic and immune homeostasis [4]. Among the major functions it performs, the following stand out: maintaining the integrity of the intestinal epithelium, digestion and absorbtion of ingested nutrients, efficient regulation of carbohydrate and lipid metabolism, prevention of pathogenic invasion, control of the immune system [5, 12]. Disturbance of the microbiome is the main factor favoring the development of inflammatory and infectious processes in the gastrointestinal tract [6]. Currently, AID is a medical problem with an important epidemiological impact. The clinical picture can take both mild manifestations, such as moderate diarrhea, and a severe evolution that includes pseudomembranous colitis, ileus or toxic megacolon [7, 8, 9]. Coinfection with bacterial pathogens during COVID-19 leads to the administration of broad-spectrum antibiotics, which might severely disturb the normal function and composition of intestinal microflora [11]. Thus, gut dysbiosis caused by high exposure with antibiotics favorizes association with Clostridium difficile infection [10].

Materials and methods

The study included 92 de novo patients with the diagnosis of Enterocolitis caused by Clostridium Difficile, treated in the gastroenterology department of the "Timofei Moşneaga" Republican Clinical Hospital, Republic of Moldova, during the years 2020-2021. The average age of the patients is 57.23±3 years (26-82 years). The Enterocolitis caused by Clostridium Difficile developed more frequently in women - 49 (53.2%), compared to men - 43 (46.8%). The database of the selected material was processed statistically using Microsoft Excel, EpiInfo 7.2.2.6 and EpiMax Table programs.

Results

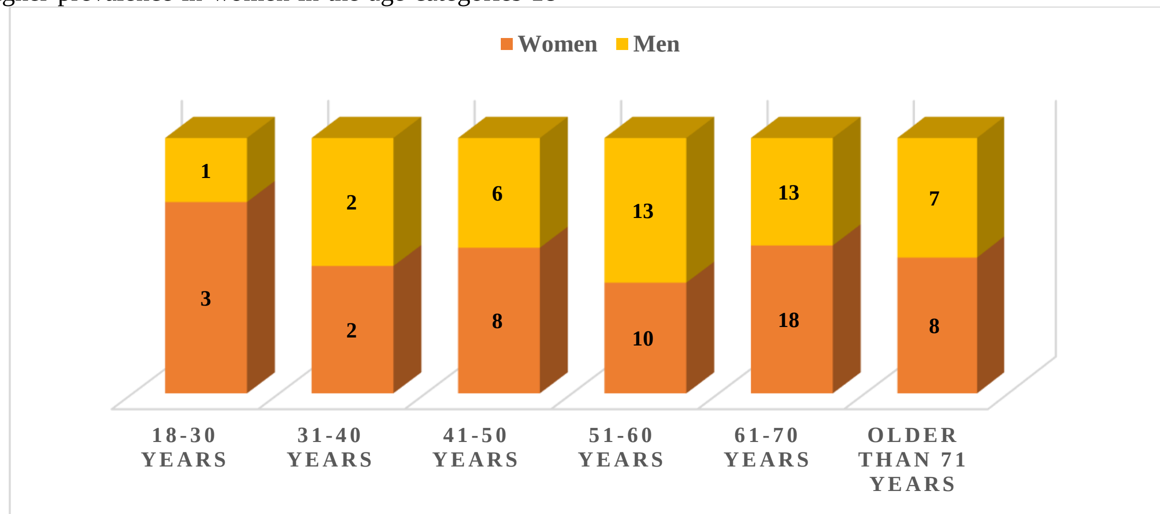
Following the analysis of the inpatient records of 92 patients included in the study with the diagnosis of Enterocolitis caused by Clostridium difficile, it was identified the antibacterial therapy administered prior to hospitalization. AID was found to develop following both antibiotic monotherapy 27 (41%) cases and antibiotic polytherapy 38 (59%) cases. The previous administration of 2 antibiotics was appreciated in 22 (34%) patients, of 3 antibiotics in 12 (18%) patients, of 4 antibiotics – 3 (5%) patients and extremely rarely 5 antibiotics were administered, respectively they induced Enterocolitis caused by Clostridium difficile only in 1 (2%) case.



Pic. 1.
Distribution of patients with Enterocolitis caused by Clostridium Difficile according to the number of antibiotics.

The most frequently administered Meropenem, Imipenem, Ciprofloxacin and Ceftriaxone. More rarely, Enterocolitis caused by Clostridium Difficile has been caused by administration of Cefoperazone, Gentamicin, Amoxacillin, Azithromycin.

According to our study, AID developed with a higher prevalence in women in the age categories 18-30 years, 41-50 years, 61-70 years and over 71 years. Men in the age category of 51-60 years developed AID more frequently. With the same frequency, regardless of gender, the disease was recorded in patients whose age was 31-40 years.



Pic. 2. DAI frequency distribution according to age and gender.

In our study, we found that AID developed most frequently on the background of viral Pneumonia (48.9% of cases) caused by the SARS-CoV-2 virus, both considered as major healthcare issues. Patients also presented comorbidities including chronic diseases of gastrointestinal tract (n=60), ischemic cardiomyopathies (n=53), type 2 diabetes (n=21), but also oncological affections (n=9). Association of comorbidities with older age and prolonged hospitalization leads to a higher risk of complicated evolution of Clostridium difficile infection [11].

Diarrhea manifested by increasing the frequency of defecation acts and/or the fluidity of faecal matter was appreciated as the most frequent symptom appreciated in the patients included in the study. In most patients it was one of the causes of alteration of the quality of life and reason for seeking medical assistance. According to the results of the coprological exam, in 45 (90%) cases stool malfunction was mentioned: in 31 (62%) patients the stool was unformed, in 14 (28%) patients the stool was slurry and only in 3 (10%) cases the stool was formed.

Abdominal pain was also one of the specific symptoms of AID, being appreciated in 84 (91.3%) patients, but of different intensity from discomfort to intense pain. Other clinical manifestations that accompanied diarrhea and abdominal pain in patients with antibiotic induced diarrhea where abdominal bloating (65.2%), nausea (14,1%) and ascites (13%).

In contrast to the previously presented clinical manifestations, fever at the time of hospitalization was present in only 13 (20%) patients. In 5 patients, the temperature of 37.6-38.5^0 was maintained. Fever higher than 38.6^0 was present in 8 patients.

Conclusion

Antibiotic induced diarrhea developed with a higher prevalence in women in the age category 61-70 years, on the background of viral Pneumonia (48.9% of cases) caused by the SARS-CoV-2 virus, independent of the number of antibiotics previously administered. Diarrhea and abdominal pain are the most common manifestations appreciated in the clinical picture, in contrast fever is less common.

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SYMPTOMS OF PATIENTS IN THE FIRST HOURS AFTER THE ONSET OF ACUTE CORONARY SYNDROME

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Abstract

The study involves the evaluation and determination of patient's symptoms that appear in the first hours after the onset of acute coronary syndrome with the aim of raising the level of health culture that is the basis of the primary prevention of cardiovascular diseases. The research was conducted on a group of 100 patients diagnosed with acute myocardial infarction with ST-segment elevation, acute myocardial infarction without ST-segment elevation and unstable angina pectoris.

Keywords: acute coronary syndrome, acute myocardial infarction with ST-segment elevation, acute myocardial infarction without ST-segment elevation, unstable angina pectoris.

Introduction

Cardiovascular diseases are the pathologies with the highest risk of mortality, reaching 7.5 million deaths annually. Worldwide, ischemic heart disease ranks first in this category, with 1.8 million deaths annually. In the European countries the incidence reaches between 43-144 per 100.000 inhabitants per year [2, 3, 8, 9].

The symptoms preceding the onset of acute coronary syndrome (ACS) are the main trigger for patients who request emergency services. Recent studies demonstrate that typical symptoms in female patients are more predictive of an ACS event compared to male patients [4, 6].

According to studies, the most common reason for referral to the emergency department and hospitalization in case of ACS is chest pain [1].

At the same time, the age of patients has a particular importance in the appearance of symptoms in case of ACS, being also an important predictor of mortality, given the fact that approximately 80% of all deaths following an episode of ACS occur in individuals over 65 years of age. According to the studies carried out, it is stated that patients older than 65 years may have associated symptoms and not just the presence of the pain syndrome. Therefore, it is very important to know and identify the symptoms of patients with ACS from the multitude of associated symptoms, as quickly as possible [5, 7].

The continuous increase in the number of population suffering from cardiovascular pathologies is largely due to the indifference towards one's own health and primary prevention.

The medical education of patients regarding the responsibility for their own health constitutes one of the extra-medical functions of the medical staff. It is necessary that early intervention and preventive checks dominate the causes of referrals to doctors. Prevention instead of treatment must be cultivated in the patient's consciousness [10].

Materials and methods

The study was conducted on a group of 100 patients including 30 patients with ST-segment elevation acute myocardial infarction (STEMI), non-ST-segment elevation acute myocardial infarction (NSTEMI) and unstable angina pectoris (API). Of these patients, the onset symptoms of ACS were analyzed, including: precordial pain, dyspnea, pain in the neck and mandible region, as well as palpitations.

Results

The patients included in the study are aged between 40-89 years, being divided into 5 groups. The first group is represented by patients aged 40-49 (8%), of which 5% patients with STEMI, 1% – with NSTEMI and 2% – with API. In the group of patients aged 50-59 years (18%), the highest rate is represented by patients with API (7%), followed by NSTEMI (6%) and STEMI (5%). The group with the largest number of registered patients is the one in the 60-69 age range (38%) where 15% are patients with API, 13% – with NSTEMI and 10% – with STEMI. The group of patients aged 70-79 years (21%) recorded STEMI in 7% cases, NSTEMI in 4% and API in 10%. The last group of 80-89 years (15%) recorded the highest value in patients with NSTEMI and API (6%), then STEMI (3%).

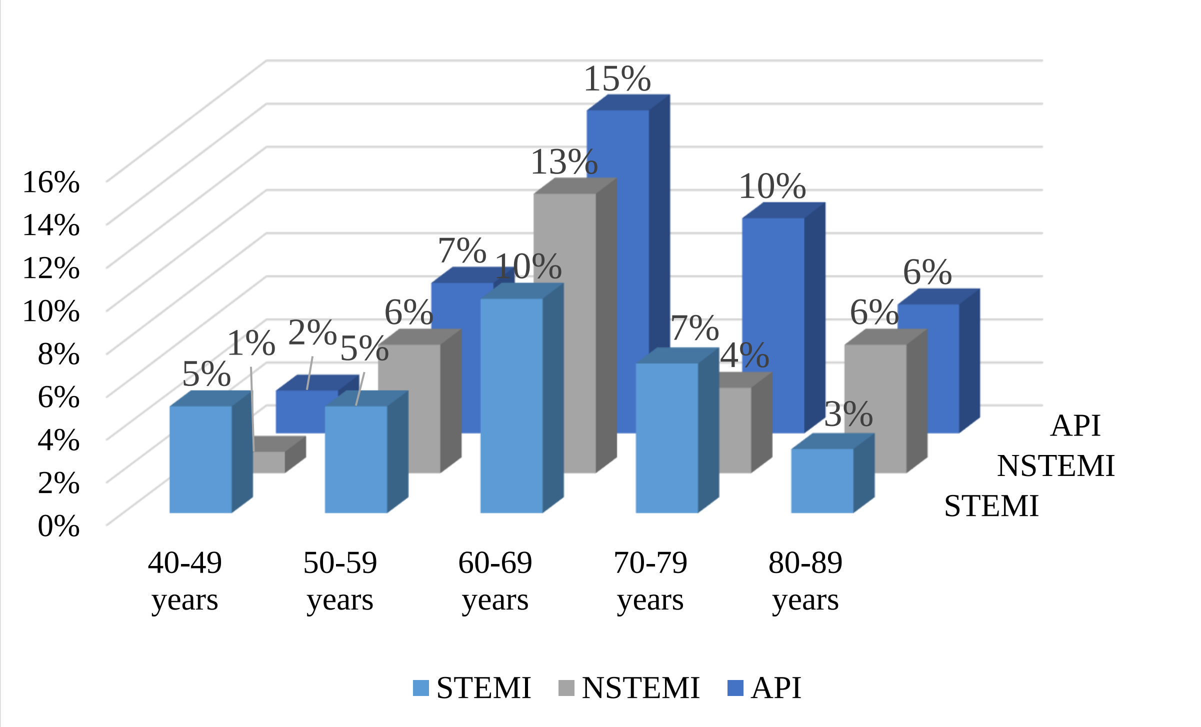

Fig. 1. Distribution of ACS patients according to age group.

According to the analyzed data, the onset of ACS was predominantly anginal type in 92 cases, and asthmatic type in 8 cases. In the 92 cases, patients with STEMI were included - in 29%, patients with NSTEMI - in 26% and patients with API - in 37% of cases. And the asthmatic type was detected with the lowest value of 1% in the case of STEMI patients, 3% – with API and 4% – with NSTEMI.

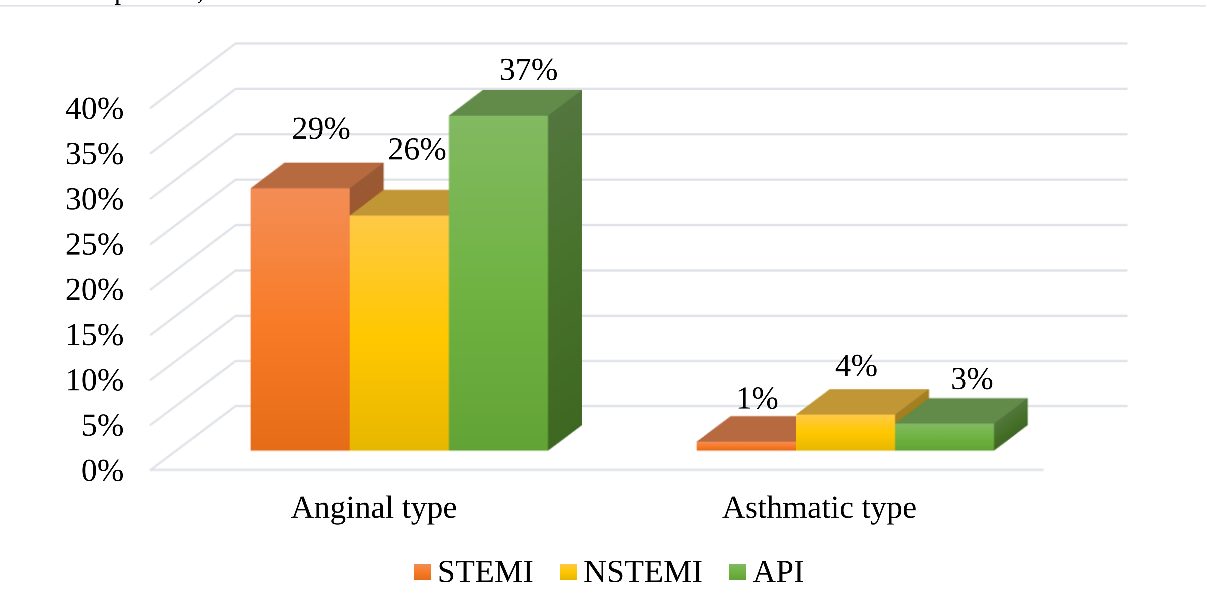

Fig. 2. Type of onset of ACS.

Early detection of ACS symptoms is vital. The symptoms encountered in the patients during the study were: precordial pain in 92% of cases, dyspnea - in 62%, palpitations - in 18%, pain in the neck and mandibular region - in 6%, syncope - in 1%, respectively.

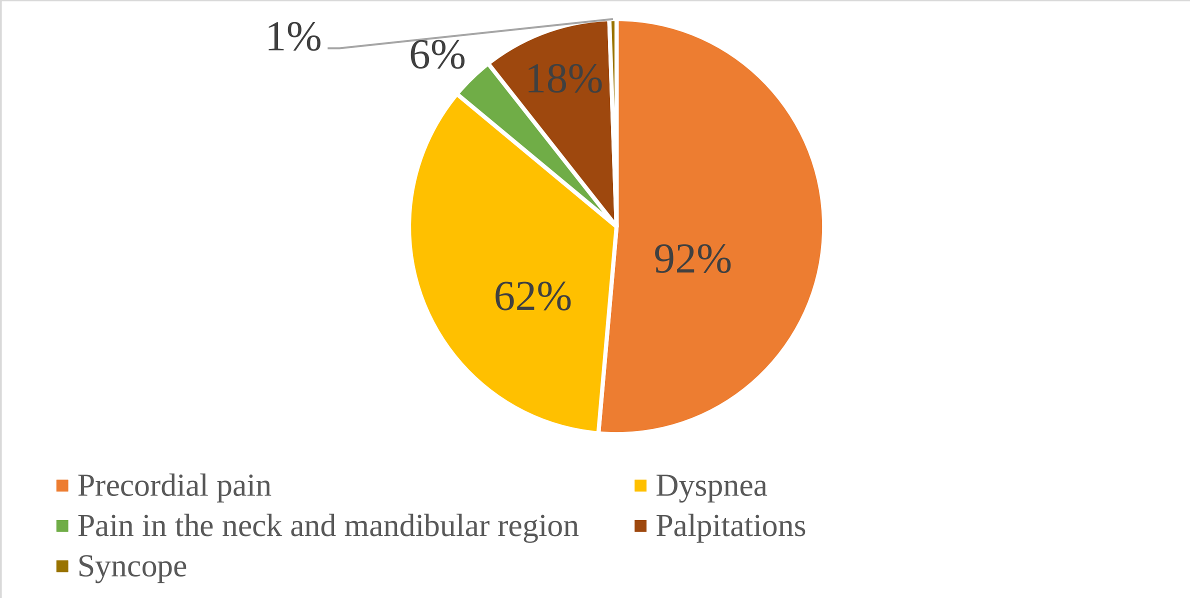

Fig. 3. The presence of symptoms on patients with ACS.

Precordial pain as the predominant symptom was recorded in 30% of patients with STEMI, 25% – with NSTEMI and 37% – with API. Dyspnea was highest in patients with API (30%), NSTEMI (19%) and STEMI (13%). Pain in the neck and mandibular region was found equally in patients with STEMI and NSTEMI (3%). Palpitations were present in patients with API (14%) and NSTEMI (4%). Syncope was present in only 1% of patients with NSTEMI.

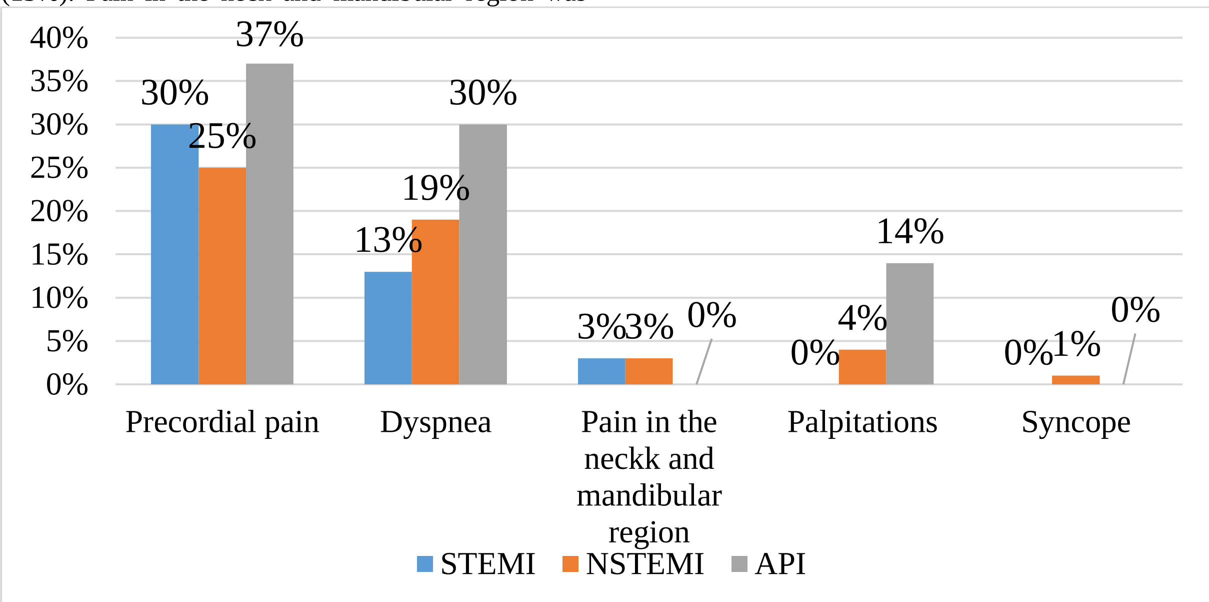

Fig. 4. Distribution of symptoms according to the diagnosis of ACS.

References

1. Among patients with ACS, the most common symptom is retrosternal pain. Thus, in the study we evaluated which type of onset is most frequently registered in patients with ACS, this being the anginal type (92%). In the case of patients with STEMI, they presented 29%, with NSTEMI – 26% and with API – 37% cases.

2. In the case of patients with ACS, the present symptoms are of major importance and very useful in detecting the pathology and formulating the diagnosis. The predominant symptoms present in patients with ACS were chest pain (92%) and dyspnea (62%). Precordial pain with the highest rate was present in patients with API (37%), STEMI (30%) and NSTEMI (25%), and dyspnea had the highest values in patients with API (30%), NSTEMI (19%) and STEMI (13%).

3. The highest mortality rate is for patients over 65 years of age. Patients with the highest risk of an ACS episode were those aged 60-69 years (38%), followed by the group of patients aged 70-79 years (21%).

Reviewer

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COMPLICATIONS AFTER LIVER RESECTIONS- POST-RESECTION LIVER FAILURE

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Abstract

Liver surgery is historically one of the "youngest" areas in abdominal surgery, but at the same time it marks very rapid progress and continuous development, which continues even today.

Development of liver resection surgery has been linked to a parenchymal dissection techniques and reliable hemostasis and biliostasis,

The International Study Group of Liver Surgery (ISGLS) provides definitions and criteria for The assessment of Specific pastresection complications.

Keywords: liver resections, complications after liver resections, liver failure.

Introduction:

Prerequisites for the rapid development of liver resection surgery are the established anatomical knowledge of segmental hepatic anatomy, the improvement of techniques for parenchymal dissection and definitive hemo- and biliostasis, the improvement of hepatoprotection methods and means, the development of anesthesia and resuscitation care for operated patients.

Objective:

Determination of a possible prognostic role of the type of liver resection (anatomic or atypical) for the risk of occurrence, frequency and severity of postoperative specific complications- liver failure.

Materials and methods:

For the period from January, 2007 - March, 2018 in Clinic of liver, biliary pancreatic and general surgery, Acibadem City Clinic Tokuda Hospital ,1021 interventions were performed on the liver*:*

Cases of intervention other than liver resection by definition were excluded ISGLS, "removal of part of the liver parenchyma due to involvement by a disease process or traumatic injury resulting in devitalization of the parenchyma".

Thus, the study did not find the cases of:

- hepatotomy;
- cystotomies and cyst resections, practically without removal of functioning or pathologically altered liver parenchyma;
-liver biopsies, alcoholization of tumors. liver biopsies, alcoholization of tumors;
- interruption of trunk branches of the hepatic artery and/or portal vein with the aim of hypoperfusion of a given area (segments, lobe);
- suture of the liver in trauma;

Thus, a total of 852 cases of liver resections were included in the series

Results:

In modern liver resection surgery, acute liver failure is a major cause of fatal outcome. In our study, we found signs of liver failure in 17 patients, of whom 10 were after Anatomic liver resection, as a stand-alone procedure (2.6%) or as part of multivisceral resection (6.1%) compared to Atypical liver resection (0.5% as stand-alone and 1.5% in multivisceral resections) (Table 1).

Our criteria for the occurrence of acute liver failure were based on the definition of ISGLS (2011) - "disturbance in the synthetic, excretory and detoxification function of the liver manifested by an increase in INR and hyperbilirubinemia recorded on or after the 5th postoperative day this'.

Table 1.

Incidence of post-resection acute liver failure after Anatomic and Atypical liver resections

Another operation	acute liver failure	Statistics	Anatomic resection	Atypical resection	Total	P
No	No	N	113	218	331	0,122
		%	97,4%	99,5%	98,8%	
	Yes	N	3	1	4	
		%	2,6%	,5%	1,2%	
Yes	No	N	107	398	505	0,011
		%	93,9%	98,5%	97,5%	
	Yes	N	7	6	13	
		%	6,1%	1,5%	2,5%	

All patients after liver resection received a hepatoprotector as an element of resuscitation therapy, as well as Human albumin 20%, 100ml and a proton pump inhibitor.

In 4 patients, we found acute liver failure as Grade A, not requiring a change in the therapeutic scheme.

The remaining 13 cases had more severe violations. Nine of them were Grade B, which necessitated a change in resuscitation therapy. In 4 patients, hemofiltration was included as an invasive procedure (Grade C). 5 of the 13 patients with Grade B and C were excited, and in all five we reported the "50-50 criteria" of Balzan and Belghiti: the "intersection" of the prothrombin index <50% and serum bilirubin >50 μmol/L on the 5th postoperative day', i.e. these criteria indeed proved to be an early and accurate predictor of mortality.

Discussion:

Five patients in our series developed acute liver failure, leading to a fatal outcome. Post-resection hemorrhage Grade B was registered in two of them, and Grade C in two. Hemorrhage with tissue and organ hypoperfusion, as well as liver hypoperfusion is a prerequisite for hepatocellular failure with a negative impact on the final result.

We registered two other exits after internal bilirubin, peritonitis, sepsis and MODS, which necessitated reoperation

Conclusion:

Liver resection surgery should be performed in centers with sufficient experience in this field, working according to established standards and algorithms.

Acute liver failure is a typical specific post-resection complication after anatomic liverresections - as a stand-alone procedure and as part of a multivisceral resection,

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