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THE INFLUENCE OF MEDICAL AND ORGANIZATIONAL FACTORS ON THE RISK OF REDUCING THE AVAILABILITY OF OTORHINOLARYNGOLOGICAL CARE FOR CHILDREN AND ADOLESCENTS

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ABSTRACT. ***Introduction.*** The article presents the results of a study conducted to develop new technologies for managing medical organizations to prevent unwanted risks of reducing the availability of otorhinolaryngological care for children and adolescents. Based on the fact that expert assessments and a sociological survey among patients (their representatives) make it possible to characterize the frequency, nature, direction and structure of the influence of medical, organizational and consumer factors on the quality and accessibility of medical care, we applied this approach to predict risk factors for reducing availability of this type of assistance. ***Purpose*** — to determine the prognostic significance of the influence of medical and organizational factors on the risk of decreased availability of otorhinolaryngological care for children and adolescents. ***Materials and methods:*** analytical, sociological, statistical methods, as well as the method of expert assessments were used. ***Results.*** Based on expert assessments, an analysis of the state of preparedness of the healthcare system to ensure the availability of otolaryngological care for children and adolescents was conducted, which, in turn, became the basis for an analysis of 10 medical and organizational factors. ***Conclusions.*** It was revealed that in the structure of the conditionality of the availability of otolaryngological care for children and adolescents, all medical and organizational factors are controllable. The five most significant of them included: low staffing of ENT doctors, a high level of conflict among staff, the lack of implementation of "lean technologies" and the "New Medical Organization" model in medical organizations, low communicative competence of personnel, low level of provision of equipment to perform the volumes of assistance.

KEYWORDS: otorhinolaryngological care, accessibility, children and adolescents, medical and organizational factors, prognosis

ВЛИЯНИЕ МЕДИКО-ОРГАНИЗАЦИОННЫХ ФАКТОРОВ НА РИСК СНИЖЕНИЯ ДОСТУПНОСТИ ОТОРИНОЛАРИНГОЛОГИЧЕСКОЙ ПОМОЩИ ДЕТЯМ И ПОДРОСТКАМ

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РЕЗЮМЕ. ***Введение.*** В статье представлены результаты исследования, проведенного в целях разработки новых технологий управления медицинскими организациями по предупреждению нежелательных рисков снижения доступности оториноларингологической помощи детям и подросткам. Исходя из того, что экспертные оценки и социологический опрос среди пациентов (их представителей) позволяют получить характеристику частоты, характера, направленности и структуры влияния медико-организационных и потребительских факторов на качество и доступность медицинской помощи, мы применили данный подход для прогнозирования риск-факторов снижения доступности данного вида помощи. ***Цель исследования*** — определить прогностическую значимость влияния медико-организационных факторов на риск снижения доступности оториноларингологической помощи детям и подросткам. ***Материалы и методы исследования.*** Применялись аналитический, социологический, статистический методы, а также метод экспертных оценок. ***Результаты.*** На основе экспертных оценок проведен анализ состояния подготовленности здравоохранения к обеспечению доступности оториноларингологической помощи детям и подросткам, что, в свою очередь, стало основанием для анализа по 10 медико-организационным факторам. ***Выводы.*** Выявлено, что в структуре обусловленности доступности оториноларингологической помощи детям и подросткам все медико-организационные факторы являются управляемыми. В пятерку наиболее значимых из их числа вошли: низкая штатная укомплектованность ЛОР-врачами, высокий уровень конфликтности персонала, отсутствие внедрения в медицинских организациях «бережливых технологий» и модели «Новой медицинской организации», низкая коммуникативная компетентность персонала, низкий уровень обеспеченности оборудованием для выполнения объемов помощи.

КЛЮЧЕВЫЕ СЛОВА: оториноларингологическая помощь, доступность, дети и подростки, медико-организационные факторы, прогноз

INTRODUCTION

Modern management in the health care system is focused on preventing the risks of adverse events [1–3]. That is why we applied a risk-oriented approach to assessing and improving the management of accessibility of otorhinolaryngological care for children and adolescents.

Expert assessments and sociological survey among patients (their representatives) allow us to obtain a characteristic of the frequency, nature, direction and structure of the influence of medical-organizational and consumer factors on the quality and accessibility of medical care [4–6]. In our study, this approach was the theoretical basis for the formation of the technology for predicting the risk factors of reducing the availability of otorhinolaryngological care for children and adolescents.

AIM

To determine the prognostic significance of the influence of medical and organizational factors on the risk of reducing the availability of otorhinolaryngological care for children and adolescents.

MATERIALS AND METHODS

Analytical, sociological, statistical methods, as well as the method of expert assessments were applied. The study was conducted in 2022. We analyzed 1,200 card extracts of information on the frequency and reasons for the decrease in the availability of medical care for children and adolescents in the field of otorhinolaryngology.

RESULTS

On the basis of expert assessments, an analysis of the state of preparedness of health care to ensure accessibility of otorhinolaryngological care for children and adolescents was carried out, which, in turn, became the basis for an analysis of 10 medical and organizational factors.

1. Analysis of the factor “staffing levels of ENT doctors” showed that the frequency of defects in access to care in the “low staffing level” of medical organizations (MOs) as a whole was 17.0 per 100 cases (including 21.5 in government MOs and 12.4 in private MOs per 100 cases) ($p < 0.05$), and 1.5, 2.0 and 1.0 per 100 cases ($p > 0.05$), respectively, in the “90–100% staffing level”. The most pronounced are deviations of accessibility in the gradation of the factor “low level of staffing”, which creates conditions for queues and increases the waiting time for a specialist’s appointment.

2. Analysis of the factor ‘staff training in “lean technologies” and the “New MO” model’ has shown that the frequency of defects in accessibility of care according to the gradation “low level of staff training” totaled 17.5 per 100 cases (including in public MOs 20.5 and private MOs 14.5 per 100 cases) ($p < 0.05$). For the gradation “the part of the staff trained” it was 4.3, 3.5 and 5.0 per 100 cases, respectively ($p > 0.05$). For the gradation “all staff trained” it was 3.3, 4.4 and 2.0 per 100 cases, respectively ($p > 0.05$). The most pronounced accessibility deviations were in the gradation of the factor “low level of staff training”, which is determined by the lack of necessary competences and the lack of effective communication with patients.

3. The analysis of the factor ‘digitalization of workplaces in MOs’ showed that the frequency of accessibility defects in the gradation “low level of digitalization of workplaces (75% or less of the number of workplaces)” was 13.6 per 100 cases (including in public MOs 16.5 and private MOs 10.6 per 100 cases) ($p < 0.05$), and in the gradation “high level of digitalization of 90–100% of workplaces” it was 2.8, 3.0 and 2.5 per 100 cases, respectively. The most pronounced deviations of accessibility are in the gradation of the factor “low level of digitalization of workplaces”, which creates barriers to the use of remote technologies, increases the share of “paper” work and increases the share of time losses.

4. The analysis for the factor “digital competence of staff” showed that the defect rate for the gradation “digital competence of staff is determined in 75% or less of the total staff” was 15.5 per 100 cases overall (including 17.5 in public MOs and 13.5 per 100 cases in private MOs) ($p < 0.05$), and 3.7, 5.1 and 2.2 per 100 cases ($p > 0.05$) for the gradation “competence among 90–100% of staff” respectively ($p > 0.05$).

5. The analysis of the factor “communicative competence of the staff” showed that the frequency of defects in the accessibility of care

according to the gradation "low level of competence is determined in 75% or less of the total number of employees" in general was 16.8 per 100 cases (including in public MOs 19.8 and private MOs 13.8 per 100 cases) ($p < 0.05$), according to the gradation 'competence of 90–100% of the staff' respectively 2.5, 3.0 and 2.0 per 100 cases. The most pronounced deviations of availability in the gradation of the factor "low level of communicative competence", which creates barriers to interpersonal communication and conditions for the conflict situations formation.

6. The analysis of the factor "staff's conflictivity" has shown that the frequency of defects in the accessibility of care according to the gradation "high level of conflictivity (refusal of cooperation tactics)" was 19.5 per 100 cases (including in public MOs 22.5 and private MOs 16.5 per 100 cases) ($p < 0.05$), according to the gradation "low level of conflictivity (the use of cooperation tactics)" 1.8, 7.4 and 3.5 per 100 cases respectively ($p < 0.05$). The most pronounced deviations of accessibility are in the gradation of the factor "high level of conflictivity", which creates tension in interpersonal communications, forms a negative attitude to the MO and health care, and forms psychological barriers to the availability of medical care.

7. The analysis of the factor "staff labor satisfaction" showed that the frequency of defects in the availability of assistance according to the gradation "low level of labor satisfaction" was 17.9 per 100 cases (including 21.3 in public MOs and 14.5 in private MOs per 100 cases) ($p < 0.05$), and according to the gradation "high level of labor satisfaction" 7.1, 8.6 and 5.5 per 100 cases, respectively ($p < 0.05$). The most pronounced deviations of accessibility in the gradation of the factor "low level of satisfaction", which creates tension in the labor collective, reduces labor motivation and forms psychological barriers to the availability of assistance.

8. Analysis of the factor "organizational culture of the MOs" showed that the frequency of defects in accessibility of care according to the gradation "organizational culture focused on solving immediate tasks" was 13.0 per 100 cases (including 13.5 in public MOs and 12.5 per 100 cases in private MOs) ($p < 0.05$), and according to the gradation "organizational culture focused on achieving indicators" 7.5, 12.8 and 5.5 per 100 cases, respectively ($p < 0.05$). For the gradation "patient-oriented organizational culture" 2.9, 3.6 and 2.2 per 100 cases, respectively ($p > 0.05$). The most significant deviations of availability in the gradation of the factor "organizational culture focused on solving immediate tasks", which creates barriers to the implementation of professional orientation towards attentiveness to the needs and requests of patients, taking into account their individual characteristics, and the lack of a personalized approach to solving emerging problems.

9. The analysis of the factor "availability of equipment to fulfil the scope of care" has shown that the frequency of defects in the availability of care according to the gradation "availability of equipment at 75% and below the need" in general was 15.0 per 100 cases (including 19.5 in public MOs and 10.5 in private MOs per 100 cases) ($p < 0.05$), with availability of 76–89% respectively 7.2, 7.5 and 7.8 per 100 cases; with availability of 90–100% respectively 2.3, 2.9 and 1.7 per 100 cases. The most significant deviations of accessibility in the gradation of the factor "availability of equipment at 75% and below the need", which creates barriers to the implementation of professional competence of medical staff, reduces the possibility of implementing new diagnostic and treatment technologies and realizing the needs of patients in them.

10. The analysis of the factor "Modern technologies of diagnostics and treatment of ENT diseases" showed that the frequency of defects in the availability of care according to the gradation "implementation of modern technologies of diagnostics at the level of 75% and below" was 14.0 per 100 cases (including 16.5 in public and 11.5 in private MIs per 100 cases) ($p < 0.05$), and according to the gradation "implementation of modern technologies of diagnostics at the level of 76–89%" 8.5, 10.5 and 6.5 per 100 cases, respectively ($p > 0.05$). For the gradation "implementation of modern diagnostic technologies to the extent of 90–100%" 2.5, 3.0 and 2.0 per 100 cases, respectively. The most significant deviations of accessibility in the gradation of the factor "implementation of modern diagnostic technologies at the level of 75% and below", which creates barriers to technological accessibility, forms the basis for untimeliness of care, errors in diagnosis, leading to a decrease in patient satisfaction with medical care.

Determination of the frequency of medical and organizational factors depending on the level

Table 1

Prognostic significance of medical and organizational factors in ensuring accessibility of otorhinolaryngological care for children and adolescents

Таблица 1

Прогностическая значимость медико-организационных факторов в обеспечении доступности оториноларингологической помощи детям и подросткам

Факторные характеристики / Factor characteristics	Уровень доступности / Availability level	Частота фактора (P ± m%) / Factor frequency (P ± m%)	ДИ (%)/ CI (%)	ОР / RR	НИП / NII	ПК / PC
Подготовленность кадров по «бережливым технологиям» и модели «Новой МО» / Personnel training in “lean technologies” and the “New MO” model	Имеется / Present	17,5 ± 0,9	15,1–19,3	5,30	0,70	3,71
	Отсутствует / Absent	3,3 ± 0,2	2,9–3,7		0,13	0,69
Укомплектованность штатов ЛОР-врачами / Staffing level of ENT doctors	Имеется / Present	17,0 ± 0,8	15,4–18,6	11,30	0,68	7,68
	Отсутствует / Absent	1,5 ± 0,3	1,2–2,1		0,60	6,78
Цифровая компетентность персонала / Digital competence of the staff	Имеется / Present	15,5 ± 0,8	13,9–17,1	4,19	0,62	2,59
	Отсутствует / Absent	3,7 ± 0,3	3,1–4,3		0,15	0,62
Коммуникативная компетентность персонала / Communicative competence of the staff	Имеется / Present	16,8 ± 0,7	15,4–16,6	6,72	0,67	4,50
	Отсутствует / Absent	2,5 ± 0,2	2,1–2,9		0,10	0,67
Конфликтность персонала / Staff conflict	Имеется / Present	19,5 ± 0,7	17,1–20,9	10,83	0,79	8,55
	Отсутствует / Absent	1,8 ± 0,3	1,5–2,4		0,07	0,76
Удовлетворенность трудом персонала / Staff job satisfaction	Имеется / Present	17,9 ± 0,8	16,1–19,5	2,52	0,72	1,81
	Отсутствует / Absent	7,1 ± 0,5	6,1–8,2		0,28	0,70
Организационная культура МО / MO organizational culture	Имеется / Present	13,0 ± 0,7	11,6–14,4	4,48	0,52	2,33
	Отсутствует / Absent	2,9 ± 0,2	2,5–3,3		0,12	0,53
Цифровизация рабочих мест / Digitalization of workplaces	Имеется / Present	13,6 ± 0,8	12,1–15,2	4,86	0,54	2,62
	Отсутствует / Absent	2,8 ± 0,2	2,4–3,2		0,11	0,53
Обеспеченность оборудованием для выполнения объемов помощи / Provision of equipment to carry out volumes of assistance	Имеется / Present	15,0 ± 0,9	13,2–16,8	6,52	0,60	3,91
	Отсутствует / Absent	2,3 ± 0,1	2,2–2,4		0,09	0,59
Современные технологии диагностики и лечения ЛОР-заболеваний / Modern technologies for diagnosing and treating ENT diseases	Имеется / Present	14,0 ± 0,7	13,6–15,4	5,60	0,56	3,13
	Отсутствует / Absent	2,5 ± 0,2	2,1–2,9		0,10	0,56

Note: CI — confidence interval; RR — relative risk; NII — normalized intensive indicators; PC — predictive coefficients.

Примечание: ДИ — доверительный интервал; НИП — нормированные интенсивные показатели; ОР — относительный риск; ПК — прогностические коэффициенты.

of accessibility of care made it possible to calculate their prognostic significance in relation to the risk of its reduction (Table 1).

Table 2 presents the medical and organizational risk factors for reducing the availability of this care. The top five most significant of them were: “staffing of ENT doctors” (CI=11.30), “staff conflict” (CI=10.83), “communicative competence of the staff” (CI=6.72), “equipment availability to fulfil the scope of care” (CI=6.52).

CONCLUSION

Thus, the analysis revealed that all medical and organizational factors are controllable in the structure of factor conditioning of access to otorhinolaryngological care for children and adolescents. The top five most significant among them are: low staffing levels of ENT doctors, high level of staff conflict, lack of implementation of “lean technologies” and the “New MO” model, low communicative competence of staff,

Table 2

Ranking of medical and organizational risk factors for reducing the availability of otorhinolaryngological care for children and adolescents

Таблица 2

Ранжирование медико-организационных факторов риска снижения доступности оториноларингологической помощи детям и подросткам

Факторные характеристики / Factor characteristics	Весовой индекс / Weight Index	Ранг значимости / Significance rank
Укомплектованность штатов ЛОР-врачами / Staffing level of ENT doctors	11,30	1
Конфликтность персонала / Staff conflict	10,83	2
Коммуникативная компетентность персонала / Communicative competence of the staff	6,72	3
Обеспеченность оборудованием для выполнения объемов помощи / Provision of equipment to carry out volumes of assistance	6,52	4
Современные технологии диагностики и лечения ЛОР-заболеваний / Modern technologies for diagnosing and treating ENT diseases	5,60	5
Подготовленность кадров по «бережливым технологиям» и модели «Новой МО» / Personnel training in “lean technologies” and the “New MO” model	5,30	6
Цифровизация рабочих мест / Digitalization of workplaces	4,86	7
Организационная культура МО / MO Organizational Culture	4,48	8
Цифровая компетентность персонала / Digital competence of the staff	4,19	9
Удовлетворенность трудом персонала / Staff job satisfaction	2,52	10

low level of equipment availability to fulfil the volume of care.

ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

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