

Article

The Influence of medical and social factors on the incidence of nasal cavity and paranasal sinuses.

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Abstract: the statue is about the effect of medical and social factors on the development of nasal cavity and paranasal sinuses diseases, the degree of patient's satisfaction with the medical care provided, and the analyzed approaches to patients care in prehospital and hospitals treatment.

Keywords: the nasal cavity and paranasal sinuses diseases, specialized medical care, medical and social characteristics of patients.

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1. Introduction

In the general structure of the ENT organs diseases, the pathology of the nasal cavity (NC) and paranasal sinuses (PNS) in recent years has firmly taken first place both among outpatients and in the group of patients undergoing inpatient treatment [1,2].

Currently, one of the priorities is to develop measures to improve the provision of medical care to patients in hospitals for NC and PNS at outpatient and inpatient faculties, taking into account the incidence of this pathology and the identified socio-economic and hygienic characteristics of the behavior of this group of patients, which predetermined the practical the feasibility of this study [3,4].

The aim of the work is to analyze the influence of medical and social factors on the development of NC and PNS diseases and the effectiveness of the treatment of this pathology in outpatient and inpatient institutions [5].

2. Patients and Methods

The study was carried out in several stages. At the first stage (from 2007 to 2011), an analysis was made of the hospitalized morbidity of patients with pathology of ENT organs in the ENT department of the SBHI "City Clinical Hospital No. 4" of the Moscow DH and an analysis of the work of ENT rooms of outpatient institution of the SWD of Moscow by studying the summary annual reports of the district otorhinolaryngologist on the incidence of the adult population and clinical examination [6,7]. (Fig.1).

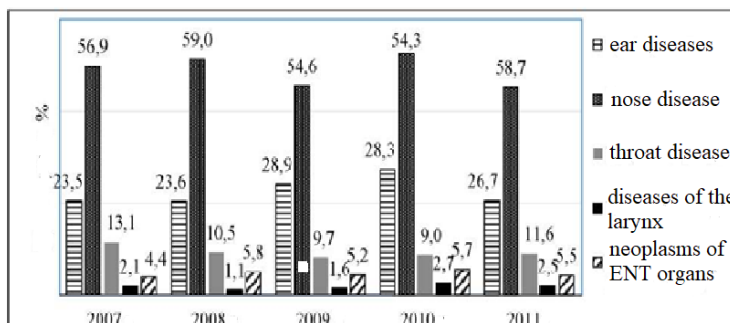


Figure 1. The structure of hospitalized morbidity of ENT organs in 2007-2011

The second stage (2012-2013) is based on the analysis results of a survey of 400 patients with nasal cavity and paranasal sinuses diseases who were hospitalized in the ENT Department of the City Clinical Hospital No.4 SBHI SP No. 68 DHM branch No. 1 CAD of Moscow social and hygienic characteristics, age and sex characteristics of the examined, the moral and psychological



climate in the family, satisfaction with the medical care provided, patient awareness of medical services were studied (questionnaire of a selective group of patients) [8,9].

To implement the second stage, the Department of Otorhinolaryngology, together with the Department of Public Health, Healthcare and Hygiene, of the Federal State Autonomous Educational Institution of Higher Education "Peoples' Friendship University of Russia" developed two types of questionnaires for a comprehensive medical and social characteristic of the treatment and diagnostic process in the clinic, hospital and family health.

The questionnaires consist of two parts:

1. Comprehensive medical and social characteristics of the treatment and diagnostic process in a hospital (city clinic) and family health. This part of the questionnaires was filled in by the patients themselves (questionnaire for the hospital - 47 questions, for the polyclinic - 38 questions).

2. A map of copying information from the medical history (outpatient card) and an expert assessment of the organization and quality of medical care for the patient (19 questions for the hospital and 15 questions for the polyclinic).

The card contains information related to a specific disease with which the patient was treated by a polyclinic ENT doctor or in a hospital, which allows, at the third stage of the study, to evaluate: the quality of the examination, the quality of the treatment (volume, timing, combination of treatment methods, duration), the outcome of the disease, the duration of the general temporary disability. The final stage included the development of measures to improve medical care for patients with NC and PNS diseases at the outpatient and inpatient levels, taking into account the incidence of this type of pathology and the identified medical and social characteristics of this group of patients.

3. Results

In exceptional cases of the nose and paranasal sinuses diseases, purulent paranasal sinuses diseases prevailed: acute sinusitis 32.0% and chronic sinusitis - 25.0% (average over 5 years). In second place, by choice, were the curvature of the nasal septum - 19.0%, nose and paranasal sinuses diseases - 7.0%, boils, nasal abscesses and other skin disease and subcutaneous tissue - 7.0%, rhinitis (all forms) - 6%, nosebleeds - 2%.

When analyzing the incidence according to the statistical reports of the SWD of Moscow, it was revealed that diseases of the pharynx were in the first place - an average of 26,531 cases per year (38.8%), and NC and PNS diseases were in second place - 19,146 cases per year (28.0%), diseases of the ear - 17520 cases (25.6%) and larynx - 5192 cases per year (7.6%) (Fig. 1).

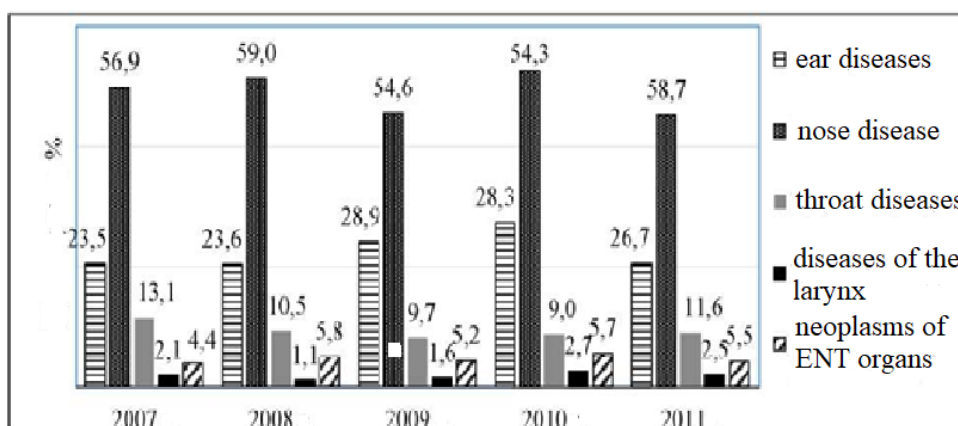


Figure 1. Morbidity of the attached population according to the data of appeals to outpatient clinics of the district for 2007-2011

Among the isolated diseases of the nose and paranasal sinuses, acute rhinitis prevailed - in 6479.8 cases, which was detected 33.9% of all infections with the NC and PNS diseases, chronic rhinitis - 4173.6 (21.8%), acute sinusitis - 3332.8 (17.4%).

If we consider the number of visits for each year of the study, then the largest number of visits with nasal cavity and paranasal sinuses diseases (19728 people) and the pharynx (26865



people) occurred in 2008, with ear pathology - in 2007 (19080 people), larynx - in 2009 (5846 people).

The first place in the structure of the temporary loss cause was occupied by acute ENT organs pathologies, among which the share of ear pathologies and mastoid process was 31.3-33.1%, the nasal cavity and paranasal sinuses - 29.5-30.3%, pharyngeal cavity - 24.1-24.6%. Chronic the ENT organ's diseases in terms of disability case number occupied the second place in the structure of temporary disability causes. In this group, the nasal cavity and paranasal sinuses diseases were in the lead - 41.4 (42.2%), pharynx - 29.1 (30.2%), ear and mastoid process - 18.6 (19.6%). In general, despite the decrease in the total cases number of disability from 2007 to 2011, the number of days of disability remained practically unchanged due to an increase in the average duration of the disease from 9.5 to 9.7 days.

According to the study, the treatment duration of patients with nasal cavity and paranasal sinuses diseases at the outpatient stage varies from 5 to 65 days - 7 days (21%), 10 days (18.5%), 14 days (12.8%). The number of days of temporary disability (TD) varied from 5 to 14 days - 7 days of TD in 81.4% of cases, no more than 7 days of TD - 89.2%, no more than 9 days of TD - 92.3%.

Out of 400 inpatients, 53.5% were hospitalized as planned by the polyclinic, 29.5% were urgently hospitalized by the polyclinic, 9.8% by emergency medical care, and 7.0% independently. The period from the onset of the disease to hospitalization, allows us to divide patients into 3 groups: the first - these are patients hospitalized within 1 month after the onset of the disease (51.2%); the second - hospitalized within 1 month to 1 year - 7.8%, the third - hospitalized later than 1 year from the onset of the disease - 41.0.

The average number of days after the onset of the disease until the moment of hospitalization (up to 1 month, long periods - months and years are not considered) is 7.6 ± 5.2 days and varies from 1 to 30 days. The period of hospitalization, equal to 7 days, is 21.6%, 10 days - 16.5%, 5 days - 14.6%, 3 days - 8.0%.

Surgical intervention was performed in 97.0% of patients, including 56.3% on the first day, 40.0% on the second. The average number of days elapsed from the moment of hospitalization to surgery is 1.4 ± 0.7 days in the range from 1 to 8.

The total length of stay in the hospital is 7.9 ± 1.6 days (from 2 to 16 days), the duration of the diagnostic period is 1.0 ± 0.0 , the treatment period is 7.3 ± 1.8 days (from 1 to 16 days). Recovery occurred in 73.7%, improvement - in 26.0%, no change - in 0.3%. The total length of stay in the hospital for recovered patients is 7.7 ± 1.2 days, with improvement - 8.3 ± 2.5 ; the duration of treatment for recovered patients is 7.2 ± 1.3 days, with improvement - 7.8 ± 2.6 .

Inequality in respondents' assessment of their health manifests itself in the analysis of various socio-economic indicators, such as education, professional level, income, ownership, wealth, etc. According to our study, 14.2% of respondents rated their health as "excellent", 41.8% as "good", 35.9% as "satisfactory", 6.6% as "bad", and "very bad" - 0.1%. Among polyclinic patients, the share of those who rate their health as "excellent" is 3.2 (21.8%) times higher than among hospital patients (6.8%).

Patients with higher education generally rate their health higher ($p=0.002$). Among them, there are a few more who rate their health as "excellent" (13% versus 11%). This trend is more pronounced in assessing health as "good" (45.2% of people with higher education versus 32.2% of people with secondary education and 39.0% of people with secondary specialized education).

The level of education of respondents is also related to the assessment of their family members health. It has been established that with an increase in education level of the respondent, the proportion of families where all its members are healthy increases linearly by almost 10% from 60.9% for respondents with secondary education and up to 70.7% for those with higher education.

The distribution of respondents with different social status according to their families health ($p=0.000$) shows that students are the most prosperous from this point of view. Especially in this social group the largest proportion of people with healthy families is noted (92%), in contrast, the ranked series ends with a minimum level - 34.6% of pensioners with healthy families. It is natural that pensioners more often than others note the presence of chronic patients in families (29.9%) against representatives of small businesses (0%), students (1.8%) and intellectuals (1.9%).

The family's health and the patient's health can be attributed to the phenomenon that are interrelated and mutually influencing, when it is difficult to identify the cause and effect. Thus, the relationship between the fact that the respondent is being treated in a polyclinic or in a hospital and the family's health is significant. However, the most eye-catching fact is the following: in healthy families, 51% are outpatients, 49% are inpatients (the distribution is almost equal); more



than half, namely, 67.3% of respondents are treated in a hospital if there are alcoholics or drug addicts in the families and 58.2% - if family members are often sick; but with chronic patients in families, only 31.9% are treated in a hospital. It follows that social and medical problems in the family make patients more likely than in healthy families to resort to inpatient care; the presence of chronic patients, on the contrary, forces the patient to avoid hospitalization, remaining in the family, and use polyclinic medical care.

The ranking of the causes that caused the nasal cavity and paranasal sinuses disease at the moment made it possible to identify the leading ones among them (Fig. 3): the state of the environment and neuropsychic stress are absolutely in the lead - they were indicated by almost 52% and 27% of respondents, respectively. In third place (17%) a complex of external causes, including medical ones, among which injuries, operations, medications, allergic reactions, dental treatment and weather are indicated. Unfavorable working conditions as the disease's cause were emphasized by about 15% of respondents. The least significant causes of diseases are smoking and alcohol (2.8%), living conditions (2.9%) and diet (3.3%).(Fig. 2.).

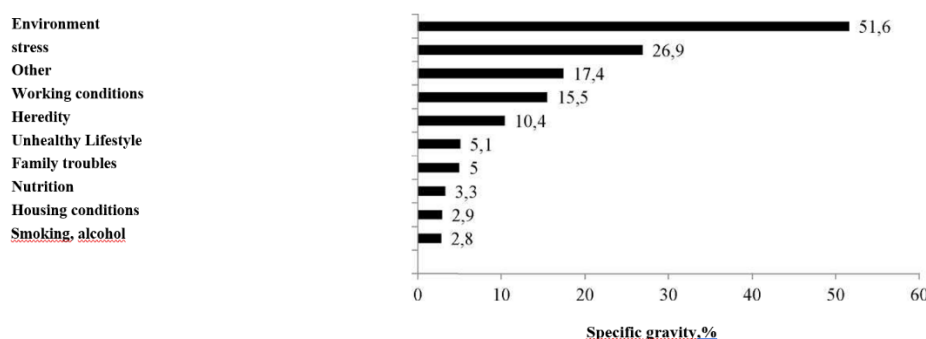


Figure 2. Causes contributing to the occurrence of diseases of the nasal cavity and paranasal sinuses (according to respondents)

The majority (71.2%) of patients prefer to receive medical care in state organizations, 27.2% also use private commercial organizations (PCOs), 1.6% - only PCOs, and the predictors of choice are age, family composition and social status of the patient.

It was found that the half of patients (50.8%) receive the necessary medical care "as a rule", only a quarter (25.2%) - "always", slightly less than a quarter (23.1%) - "periodically" and 0, 9% - "never". The very fact of the lack of perseverance of the respondents in obtaining the necessary medical care testifies to the non-compliance with the standards of diagnostics and treatment when it is provided by medical institutions, which ultimately reduces the quality of medical care.

Estimates of state insurance medical care (SIMC) include: "good" (40.8%), "satisfactory" (41.5%), "bad" (8.0%), "very bad" (1.6%), "they can't say anything about SIMC" 8.1%. The primary factor is the availability of medical care, as well as whether the patient is an outpatient or inpatient, self-reported health and the cause of the disease - external factors, both related to medical care - injuries, operations, dental care, and weather. 82.8% are satisfied with the medical service in their polyclinic or hospital, 4% are partially satisfied, 4.4% are not satisfied (plus 7.4% cannot decide, 1.4% are indifferent). However, it has been found that among inpatients the share of those who are fully satisfied with medical care is slightly higher than among outpatients (88.0% versus 77.5%), partially satisfied is also higher (8% versus 0%), which the total is 96% of hospital patients and 77.5% of outpatients. There are no dissatisfied medical services in the hospital, and in polyclinics they make up 8.8%. Among polyclinic patients, 77.5% are completely satisfied with medical care.

Patients rate the highest level of professionalism, courtesy and attention of the staff in providing medical care in medical institutions. Three characteristics have been identified that make outpatient and hospital care different: professionalism (in favor of the hospital), courtesy and attention of the staff (in favor of the hospital), good conditions (service) (in favor of polyclinics).

The greatest risks of negative assessment by patients - respondents interviewed in the polyclinic of the city and in the hospital, polyclinic relative to the hospital (the ratio of a negative assessment of the polyclinic relative to the hospital) were identified according to the following characteristics: 1) the cost of medical care, 2) the attitude of staff to patients (politeness, attention, etc.), 3) high professional level of staff.



In the city polyclinic, the most significant shortcomings are queues, worn-out equipment and inattentive attitude. The greatest differences (27.1%) between polyclinic and hospital patients were revealed on the issue of "unsatisfactory treatment conditions in the city polyclinic", the smallest (9.3%) - "queues". Hospital patients more often note the poor quality of the medical services provided, high cost, lack of trust, self-medicate more often, do not have time for treatment in medical organizations, but less often indicate queues, although these reasons are related, and the severity of movement to a medical institution.

4. Discussion

The analysis of the incidence of nasal cavity and paranasal sinuses pathology allows us to conclude that this category of patients prevails among all hospitalized ENT morbidity [10]. Outpatient also make up a significant percentage of all otorhinolaryngological patients (28.0%), although they are inferior to the number of patients with pharynx diseases (38.8%) [11,12]. A significant relationship was found between the appeal for otorhinolaryngological care and medical and social characteristics: age, gender, family composition, social status, the presence of chronic diseases, self-assessment of health, treatment in an outpatient clinic or hospital [13].

The medical and social characteristics of patients with diseases of the nasal cavity and paranasal sinuses, identified in the course of the study, form the basis of the developed methodological recommendations for improving medical care for this group of patients [14,15].

A sociological study conducted among patients with permanent nose and paranasal sinuses revealed the occurrence of cases in the process of delivery and medical care organization in a hospital (lack of service, poor equipment and lack of medical facilities), in a city clinic (queue, worn-out equipment), inattentive attitude of staff) and the development of recommendations for improving the quality of the medical organization of otorhinolaryngological care, ways to solve the state of observation, consumption of therapeutic and preventive diseases of the cardiovascular system, medicinal diseases of patients with nose and paranasal sinuses pathologies [16].

5. Conclusions

The study of the structure of hospital morbidity of ENT organs (according to statistical data) in the ENT department of the City Clinical Hospital No. 4 of Moscow showed that a large nosological group had nasal cavity and paranasal sinuses diseases throughout the entire study period - more than 50.0%. In second place is ear pathology - about 25.0%, in third place - diseases of the pharynx - about 10.0%.

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Conflicts of Interest: The authors declare no conflict of interest.

References

1. Shisheva, A.K. Socio-economic aspect hospital help optimization for patient with pathology of nose and paranasal sinuses in the conditions of large industrial city. *Rossiiskaya otorinolaringologiy.* 2011;4:171-174 (in Russian).
2. Pal'chun, V.T.; Mikhaleva, L.M.; Gurov, A.V.; Muzhichkova A. V. Specific features of the development of chronic inflammation in the maxillary sinus. *Vestnik otorinolaringologii* 2011;2:5-7 (in Russian).
3. Jankowski, R.; Nguyen, D.T.; Poussel, M.; Chenuel, B.; Gallet, P.; Rumeau, C. Sinusology. *Eur Ann Otorhinolaryngol Head Neck Dis* 2016;133(4):263-8.
4. Soler, Z.M.; Schlosser, R.J.; The role of fungi in diseases of the nose and sinuses. *Am J Rhinol Allergy* 2012, 26(5):351-8.
5. Yazici, D. The Analysis of Computed Tomography of Paranasal Sinuses in Nasal Septal Deviation. *J Craniofac Surg* 2019, 30(2):e143-e147.
6. Peters, A.T. The pathophysiology of sinonasal conditions and novel therapeutic options. *Am J Rhinol Allergy* 2014, 28(3):185-6.
7. Dzhambazov, K.B.; Kitov, B.D.; Zhelyazkov, H.B.; Traykova, N.I.; Kehayov, I.I.; Kitova, T.T. Mucocele of the Paranasal Sinuses - Retrospective Analysis of a Series of Seven Cases. *Folia Med (Plovdiv)* 2018, 60(1):147-153.
8. Becker, D.G. Sinusitis. *J Long Term Eff Med Implants* 2003;13(3):175-94
9. Melén, I. Chronic sinusitis: clinical and pathophysiological aspects. *Acta Otolaryngol Suppl* 1994, 515:45-8.
10. Rimmer, J.; Andrews, P.; Lund, V.J. Eosinophilic angiocentric fibrosis of the nose and sinuses. *J Laryngol Otol* 2014, 128(12):1071-7.
11. Weinberger, M. Whither Sinusitis? *Clin Pediatr* 2018, 57(9):1013-1019.
12. Palmer, O.; Moche, J.A.; Matthews, S. Endoscopic surgery of the nose and paranasal sinus. *Oral Maxillofac Surg Clin North Am* 2012, 24(2):275-83.
13. Strauss, G.; Limpert, E.; Fischer, M.; Hofer, M.; Kubisch, C.; Krüger, A.; Dietz, A.; Meixensberger, J.; Trantakis, C.; Strauss, M.; Preim, B. Virtuelle Echtzeit-Endoskopie der Nase und Nasennebenhöhlen. Surgical-Planning-System "Sinus Endoscopy" (SPS-SE) [Virtual endoscopy of the nose and paranasal sinuses in real-time. Surgical planning system "Sinus endoscopy" (SPS-SE)]. *HNO* 2009, 57(8):789-96.
14. Soler, Z.M.; Schlosser, R.J. The role of fungi in diseases of the nose and sinuses. *Am J Rhinol Allergy* 2012, 26(5):351-8.
15. Eggesbø, H.B.; Søvik, S.; Dølvik, S.; Eiklid, K.; Kolmannskog, F. CT characterization of developmental variations of the paranasal sinuses in cystic fibrosis. *Acta Radiol* 2001, 42(5):482-93.
16. Wang, B.; Xu, X.; Jin, Z.; Zhang, Y. The clinical research of aviatric nasal diseases with medical evaluation prevention and control intervention. *Lin Chung Er Bi Yan Hou Tou Jing Wai Ke Za Zhi* 2015, 29(5):433-6, 440.

