

THE OPINION OF MANAGERS OF DISTRICT AND MUNICIPAL HOSPITALS REGARDING THE RELATIONSHIP BETWEEN THE ORGANIZATION AND PERFORMANCE OF THE AVIASAN SERVICE. QUANTITATIVE-QUALITATIVE, CROSS-SECTIONAL STUDY

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УДК 614.12:005.21
DOI <https://doi.org/10.32782/2411-9164.20.1-5>

ДУМКА КЕРІВНИКІВ РАЙОННИХ ТА МІСЬКИХ ЛІКАРЕНЬ ЩОДО ВЗАЄМОЗВ'ЯЗКУ ОРГАНІЗАЦІЇ ТА ВИКОНАННЯ СЛУЖБИ AVIASAN. КІЛЬКІСНО-ЯКІСНЕ, ПЕРЕХРЕСНЕ ДОСЛІДЖЕННЯ

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У Республіці Молдова медичні заклади в регіонах намагаються впоратися з проблемами, пов'язаними з пацієнтами зі складними патологіями або критичними станами. У зв'язку із цим виникає потреба в консультативно-міжлікарняній службі трансферу пацієнтів – республіканському AVIASAN-сервісі. За допомогою цієї послуги спеціалізовані консультанти надають дистанційні або виїзні клінічні консультації та сприяють транспортуванню пацієнтів до спеціалізованих закладів третинного рівня відповідно до медичних показань. Залишаються неясними деякі аспекти діяльності AVIASAN. Це дослідження було запропоновано для аналізу деяких із цих аспектів, пов'язаних із послугою AVIASAN.

Матеріал і методи. Кількісно-якісне перехресне дослідження думок керівників обласних і міських лікарень щодо взаємозв'язку між організацією та діяльністю служби AVIASAN. Дослідження було проведено на основі спеціального дизайну онлайн-опитувальника для цілей цього дослідження.

Результати. Загалом анкету заповнили 27 із 41 запрошених установ (65,85%). Респонденти (80%) вважають достатнім спектр медичних спеціальностей, які представляє сервіс AVIASAN. Діяльність медичних бригад, які беруть участь у місіях AVIASAN, високо оцінена (співпраця з лікарями – 60%, підтримка в прийнятті рішень – 80%). Однак респонденти (69%) повідомили, що AVIASAN втручається із затримками у вирішенні деяких справ. Були визначені такі бар'єри для функціонування AVIASAN: людські ресурси (недостатній і некваліфікований персонал, відсутність вузькопрофільних спеціалізованих фахівців), оснащення (відсутність обладнання та спецавтотранспорту), інфраструктура (стан на дорогах), організація (відсутність законодавчої бази, національний протокол, критерії транспортування / переміщення, погано визначений маршрут пацієнта, бюрократія) та інші фактори (відсутність чуйності, небажання, відсутність співпраці).

Пропоновані рішення орієнтовані на людські ресурси (наймання, винагорода, навчання, повноваження щодо прийняття рішень), обладнання (закупівля обладнання та спецавтотранспорту), організацію (створення правової бази, регіоналізація ефективних послуг, реформування медичної системи) і контроль якості.

Висновок. Нашою метою було проаналізувати думки споживачів послуг AVIASAN з точки зору організації, структури та функціональності. Результати дослідження свідчать про те, що в сервісі AVIASAN є можливості для вдосконалення. Для підвищення ефективності потрібно передати частину його функцій іншим закладам охорони здоров'я. Регіоналізація спеціалізованих лікарняних послуг і медичного обслуговування може призвести до кращої координації та розподілу ресурсів. Крім того, інвестиції в професійне навчання гарантують, що медичні команди, які беруть участь у місіях AVIASAN, будуть добре підготовлені та здатні надавати високоякісну допомогу. Ці запропоновані заходи спрямовані на підвищення загальної продуктивності й ефективності служби AVIASAN і в кінцевому підсумку на підвищення якості медичної допомоги, що надається пацієнтам у критичних станах.

Ключові слова: міжлікарняний транспорт, AVIASAN, санітарна авіація, важкохворий, дистанційна консультація.

UDC 614.12:005.21

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In the Republic of Moldova, the medical institutions in the regions are struggling to cope with the challenges posed by patients with complex pathologies or critical conditions. In this context, there is a necessity for a consultancy and inter-hospital transfer service for patients – the republican AVIASAN Service. Through this service, specialized consultants provide remotely or on-site clinical advices and facilitate the transportation of patients to specialized tertiary institutions, according to medical indications. Several aspects related to the AVIASAN's activity remain unclear. This study was proposed to analyze some of these aspects related to the AVIASAN service.

Material and Methods. Quantitative-qualitative, cross-sectional study of the opinions of managers of regional and municipal hospitals regarding the relationship between the organization and performance of the AVIASAN service. The study was conducted based on an dedicated online questionnaire design for the purpose to this study.

Results. In total, 27 out of 41 invited institutions participated in the study (65.85%) completed the questionnaire. The respondents (80%) believe that the range of medical specialties represented by AVIASAN service is sufficient. The activity of the medical teams involved in AVIASAN missions is highly appreciated (collaboration with doctors 60%, support provided in decision-making 80%). However, respondents (69%) reported that AVIASAN intervenes with delays in resolving some cases. The following barriers to the AVIASAN functioning were identified: human resources (insufficient and unqualified staff, lack of specialized narrow-profile experts), equipment (lack of equipment and specialized vehicles), infrastructure

(road conditions), organization (lack of legal framework, national protocol, transport/transfer criteria, poorly defined patient route, bureaucracy), and other factors (lack of responsiveness, reluctance, lack of cooperation).

The proposed solutions are focused on: human resources (hiring, remuneration, training, decision-making authority); equipment (procurement of equipment and specialized vehicles); organization (establishing a legal framework, regionalization of efficient services, medical system reform); and quality control.

Conclusion. Our aim was to analyze the opinions of AVIASAN service consumers from the perspective of organization, structure, and functionality. The study results suggests that there is room for improvement in the AVIASAN service. It is essential to transfer some of its functions to other healthcare institutions to enhance its effectiveness. Regionalizing specialized hospital services and medical care can lead to better coordination and allocation of resources. Additionally, investing in professional training will ensure that the medical teams involved in AVIASAN missions are well-prepared and capable of providing high-quality care. These proposed measures aim to improve the overall performance and efficiency of the AVIASAN service and ultimately enhance the quality of medical assistance provided to patients in critical conditions.

Key words: inter-hospital transfer, AVIASAN, Air Ambulance, critically ill patient, remote consultation.

Introduction. The healthcare system of the Republic of Moldova is organized based on principles of universal access to basic health services, equity, and solidarity. It ensures universal access to pre-hospital and primary medical care, as well as services related to public health issues such as HIV/AIDS, tuberculosis, and immunization, regardless of insurance status [1].

International studies conducted in recent years have consistently highlighted the poor state of hospital institutions in Moldova, particularly in terms of equipment, facilities, and the centralization of specialized healthcare services in Chisinau, capital region [2, 3, 4]. To access tertiary-level hospital services, the Moldovan population is compelled to seek medical care in the capital city.

In a situation where the hospital system struggles to meet the challenges posed by patients with complex pathologies or critical conditions due to the lack of advanced equipment (CT, MRI, angiography, echocardiography), inadequate infrastructure (medical gases, laboratories, interventional radiology service, intensive care, stroke, trauma, etc.), there arose a necessity for implementing a consultancy and inter-hospital transfer service for patients – the republican AVIASAN Service.

The AVIASAN “Air Ambulance” service has existed in the Republic of Moldova since 1966. Initially, AVIASAN’s role was to transport patients, medical materials, medications, etc., by air. However, after Moldova gained independence, the country faced severe economic challenges that significantly impacted the available financial resources for the healthcare sector [1]. As a consequence, the national “Air Ambulance” service ceased to function according to its primary purpose, despite all efforts to salvage and reactivate it.

At present time, the republican AVIASAN Service, in accordance with MoH orders no. 99 of 28.02.2006, no. 276 of 10.07.2006, no. 65 of 19.02.2007, and no. 256 of 23.06.2008, is an integral part of the Public Medico-Sanitary Institution Institute of Emergency Medicine. Through this service, specialized consultants provide advice and

guidance for peripheral hospitals, including: travel to regional institutions, and facilitation of assisted transportation of patients to specialized tertiary institutions, according to medical indications. However, the AVIASAN Service faces several challenges, such as implementing telemedicine at the national level, ensuring an adequate number of qualified medical personnel, work remuneration issues, and the absence of medical aircraft [5]. To carry out its operations, AVIASAN currently uses ground transportation, while aeromedical missions in the Republic of Moldova are supported by aircraft from SMURD, IGSU, Romania.

Thus, the evolution of the AVIASAN service after the 1990s represented a derogation from the "Air Ambulance" concept, the transport of patients being carried out by land instead of the air. Furthermore, due to the presence of an underdeveloped hospital system, the AVIASAN service was assigned improper functions, such as providing medical consultation, diagnosis, and treatment upon request from regional, municipal, and republican hospitals, necessitating the mandatory travel of consulting doctors. In this context, several aspects related to the activity of AVIASAN remain unclear. In this study, we set out to elucidate some of these aspects related to the activity of the AVIASAN service. Therefore, the following scope and objectives were outlined.

Scope: to evaluate the relationship between the organization and performance of the AVIASAN service, from the perspective of managers of regional and municipal hospitals.

Objectives:

1. Study of the opinion of managers of district and municipal hospital institutions regarding the organization and operation of AVIASAN.
2. Identification of impediments for the operation of AVIASAN from the perspectives of the respondents.
3. Identifying the ways to overcome the impediments from the perspective of the respondents.

The study intends to provide valuable insights into the AVIASAN service's functioning and its relationship with the hospital system, as perceived by the managers of regional and municipal healthcare institutions. The findings may help identify areas for improvement and pave the way for enhancing the service's performance to better serve the healthcare needs of the population.

Material and Methods. To achieve the objectives set within the research, a cross-sectional quantitative-qualitative study was conducted to evaluate the opinions of consumers of AVIASAN services. According to the normative acts, AVIASAN provides specialized consultation services, including the travel of specialists to regional institutions and the assisted transportation of patients to specialized tertiary institutions, according to medical indications. As a result, regional and municipal hospital institutions are the main consumers of AVIASAN services. Given this fact, the opinions of representatives from these institutions regarding the relationship between the organization and performance of the AVIASAN service are of utmost importance.

To collect this information, a specific cross-sectional quantitative-qualitative study was proposed. The study was conducted from February to August 2021. During the preparation phase of the study, a dedicated questionnaire was developed for this purpose. The questionnaire was created using the Google Forms application and consisted of 26 items (closed and open-ended questions). The final version of the questionnaire

was presented and approved by the board of the School of Public Health, Nicolae Testemitanu State University of Medicine and Pharmacy, Chisinau, Moldova.

The decision to conduct an online survey was made based on three considerations:

1. The survey period overlapped with the COVID-19 pandemic, making in-person data collection challenging and potentially risky.
2. Online surveys offer flexibility to respondents, allowing them to respond when they have time, without interfering with their work schedules.
3. Visiting all regional and municipal hospital institutions would have been a logistically challenging task. Conducting an online survey allowed for broader participation without the need for physical visits to each institution.

The invitation to participate in the survey was sent via email to all regional and municipal hospitals. In total, 41 hospital institutions were invited to participate in the questionnaire. Private, departmental, and monoprofile hospitals were not requested to respond to the questionnaire.

In order to encourage respondents' participation and obtain truthful answers, the survey was designed to be anonymous. However, not all institutions responded to the invitation to participate in the survey. As a result, the decision was made to send repeated invitations and contact the managers of medical institutions by phone, urging them to participate in the survey. A total of 8 rounds of invitations were carried out.

The responses to the questionnaire were collected and stored using the Google Forms application. Subsequently, the data was downloaded and statistically analyzed using Microsoft Office Excel 2007 SP3 MSO.

By following these procedures, the study aimed to ensure a comprehensive and representative analysis of the opinions and perspectives of managers from regional and municipal hospital institutions regarding the organization and performance of the AVIASAN service.

Result. Out of the total of 41 institutions invited to participate in the study, 27 responded, resulting in a response rate of 65.85%. According to the opinions of the respondents, 80% of them consider that the number of medical specialties represented by AVIASAN is sufficient for its activities. Furthermore, 60% of respondents rated the collaboration with AVIASAN doctors as good or very good. The support provided by AVIASAN in decision-making was appreciated as good or very good by over 80% of the respondents. Regarding the interaction with AVIASAN teams, 59% of the respondents rated it as good or very good, while 51% found it satisfactory.

Overall, the majority of respondents expressed positive opinions about the AVIASAN service, its medical specialties, and the support it provides, indicating a general satisfaction with the collaboration and interaction with the AVIASAN teams. These findings can provide valuable insights into the current functioning and effectiveness of the AVIASAN service from the perspective of managers in regional and municipal hospital institutions.

In respondents' opinion the AVIASAN service should fulfill the following tasks, including transportation, consultation, treatment, blood product transportation, assuming responsibility, and emergency medicine services. The majority of respondents (53.8%) believe that only some of these functions can be transferred to other entities.

The AVIASAN service's activities related to organization, availability, promptness, performance, efficiency, and satisfaction were modestly appreciated by the respondents (see fig. 1). Another important aspect highlighted for the AVIASAN service is the

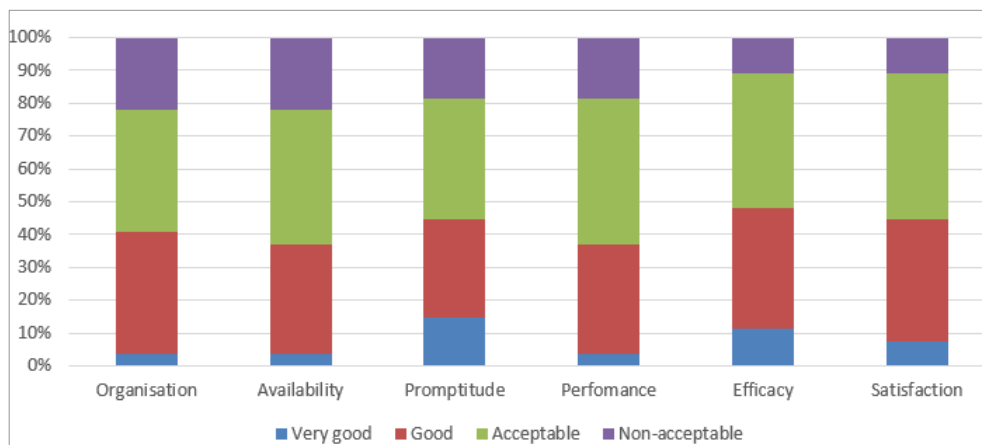


Fig. 1. Evaluation of organization and operation of the AVIASAN service

need for a rapid response. Out of all respondents, 69% stated that AVIASAN intervenes with delays in resolving cases.

Respondents identified the following barriers for the proper functioning of the AVIASAN service:

- a) Human resources: (insufficient personnel – intensive care providers, unqualified staff, lack of specialists of narrow profiles, such as endocrinologists);
- b) Equipment: lack of proper equipment and specialized vehicles;
- c) Infrastructure: issues related to roads;
- d) Organization: lack of well-defined legal framework, national protocols, transport/transfer criteria, poorly defined patient routes, and bureaucracy;
- e) Other factors: lack of responsiveness, reluctance, and lack of cooperation.

Surprisingly, there is a duality of opinions regarding the use of information technology/telemedicine for AVIASAN activities. Out of the total number of respondents, 57.7% believe that information technology/telemedicine will have a positive impact on the functionality of AVIASAN, while 42.3% have the opposite view.

To overcome the challenges facing the AVIASAN service, respondents proposed the following:

- a) Human resources: hiring of additional personnel, remuneration, training, and decision-making authority;
- b) Equipment: acquisition of proper equipment and specialized vehicles;
- c) Organization: development of a clear legal framework (protocols, regulations, criteria, standards), regionalization of efficient services, healthcare system reform, quality control;
- d) Informational system;
- e) Communication.

These proposals aim to address the identified barriers and improve the functioning of the AVIASAN service, ensuring better healthcare services and patient care.

Discussions. The data obtained from this study allows evaluation of the opinions of representatives from regional and municipal hospitals regarding the relationship be-

tween the organization and performance of the AVIASAN service, as they are the primary consumers of AVIASAN services.

The republican AVIASAN service encompasses 19 medical specialties. According to the respondents' opinions (80%), this number of medical specialties is considered sufficient for AVIASAN's activities. However, respondents also pointed out that insufficient, unqualified, or complete lack of certain specialized medical staff is a significant obstacle related to AVIASAN's functioning. One respondent remarked "The lack of specialists (e.g., endocrinologists), or insufficient numbers of other specialists (e.g., intensive care providers)." As a result, respondents suggested actions that address this deficiency, such as hiring additional staff, remuneration policy, and training of medical personnel. Training of medical staff, no matter how trivial it may seem, will be an ongoing necessity as patient complexity increases and medical technologies evolve. However, at present, there are no formal training options in the Republic of Moldova concerning the critical patient transport that would be accessible to doctors, nurses, paramedics, or emergency medical technicians. These findings emphasize the importance of addressing the shortage of qualified medical personnel in specific specialties and the need for continuous training to enhance the AVIASAN service's capabilities. Properly trained medical professionals play a crucial role in providing high-quality care and improving the overall performance of the AVIASAN service, ensuring efficient and effective medical assistance during critical patient transfers.

The overall performance of the AVIASAN medical teams is highly appreciated (collaboration with doctors 60%, support in decision-making 80%). However, there have been messages conveying the lack of responsiveness, reluctance, and absence of cooperation. It appears that these barriers can be overcome through training and professional development, improving communication skills, and developing standardized operational procedures and clinical protocols.

Numerous functions that the AVIASAN service should fulfill were highlighted, far exceeding those currently defined in official documents. These "official" functions include transportation, consultation, treatment, blood product transportation, assuming responsibility, and emergency services. One respondent mentioned that AVIASAN's function is "PATIENT SAVING...". Another respondent expressed expectations for AVIASAN, stating "Real involvement in solving severe cases, assuming risks and responsibilities as the 'last resort'." At the same time, one respondent believes that "The functions are well defined in the regulations but not fulfilled."

The survey results demonstrated a diversity of opinions regarding the AVIASAN service, indicating significant reservations and objections about its performance. There is a duality of positive and negative opinions. One respondent mentioned that "The organization and functioning of AVIASAN do not ensure an adequate response for critically ill patients within an optimal timeframe (therapeutic window)." Similarly, another respondent believes that "it's not successful, and it cannot make qualitative decisions; AVIASAN is merely a dispatcher. They are very arrogant and brutal. They are not aware of their obligations, nor do they know the established schedule. In other words, they are of little help." Another respondent stated, "Partially successful because AVIASAN is not equipped with advanced and modern ambulances and equipment to meet the requirements. Additionally, it cannot make transfer decisions without prior approval from the higher-level hospital administration where the transfer is needed." However, there are also diametrically opposed opinions, with one respondent stating, "Yes, because with

AVIASAN's help, we have saved many patients whom we couldn't have helped locally." These contrasting opinions reflect the complexity of the AVIASAN service and the varied experiences and perspectives of those involved with it. Addressing the concerns and challenges highlighted by the respondents can lead to improvements in the AVIASAN service and enhance its effectiveness in providing critical medical assistance to patients in need.

Respondents pointed out a prolonged response time of AVIASAN, resulting in the loss of the "golden hour." According to AVIASAN's activity regulations, the team should depart for the destination within 60 minutes of receiving the call. Therefore, AVIASAN is not able to intervene for the transfer of cardiac or neurological patients within the "golden hour." To achieve this goal, regulations and policies need to be introduced for the decentralization of clinical management for priority emergencies, including the concept of "nearest, most suitable hospital" and "bypassing of hospital."

As mentioned earlier, respondents identified numerous obstacles that obstruct AVIASAN's activity. One participant in the survey stated, "Insufficient specialists; few and old transport units; the need to coordinate transfers with multiple specialists from various institutions; each institution sets different conditions and requirements before agreeing to the transfer." Another colleague believes that the barriers are represented by "the lack of a well-defined legal framework, the absence of a national protocol that would establish concrete parameters for transportability, which would relieve AVIASAN doctors of direct responsibility." In the same vein, a respondent specified, "Insufficient number of properly equipped ambulances. Lack of specialists (e.g., endocrinologists) or insufficient numbers of other specialists (e.g., intensive care providers)."

Surprisingly, not all respondents are in favor of applying the concept of information technology and telemedicine in AVIASAN's activity. Opinions were divided between supporters: "Yes! Telemedicine will increase AVIASAN's capacity in guiding or even resolving cases remotely. It will also avoid unnecessary transfers," as stated by one respondent. And those with a skeptical vision: "Hypothetically, in the far future, with significant/unreal financial implications."

One of the objectives of this study was to identify the necessary actions to improve AVIASAN's activity. The multitude of impediments in AVIASAN's activity undoubtedly requires complex actions to address them. The entire spectrum of solutions encompasses the regulatory framework, human resources, equipment, infrastructure, and quality control. In this context, the opinion expressed by a respondent is suggestive: "Perfecting the legal framework of the AVIASAN service. Developing a national protocol for inter-hospital transfer. Investments in technical equipment. Full and sufficient provision of medical personnel." Another respondent mentioned, "Establishing specific transfer criteria, appropriate transportation means, clear transportation pathways, eliminating duplications/triplications of individuals with the authority to allow or prohibit patient transfers, often being unaware of the patient's real condition."

Finally, we would like to mention some limitations of this study: the online survey, respondents' subjectivity, the response period to the questionnaire, respondent motivation, and not all institutions responding to the survey.

Conclusion. We analyzed the opinions of AVIASAN service consumers from the perspective of organization, structure, and functionality. Often, AVIASAN is pushed to fill the gaps in the existing healthcare services provided by hospital institutions. The

impediments in AVIASAN's functioning include technical equipment, lack of human resources, and ambiguous regulatory framework.

The deficiencies in AVIASAN's regulatory framework can serve as obstacles in the decision-making process for a specific patient. The research results illustrate the opportunity to transfer some AVIASAN functions to other healthcare institutions, the necessity of regionalizing specialized hospital services, strengthening professional training capacities. Regionalization of specialized services and strengthening professional training can play a vital role in optimizing AVIASAN's operations and ensuring timely and appropriate medical care for critically ill patients.

The study identifies both positive aspects and challenges faced by AVIASAN, suggesting areas for improvement and potential solutions to enhance its performance and impact in providing critical medical services in the Republic of Moldova.

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