

# GAS DISCHARGE VISUALIZATION – HISTORICAL DEVELOPMENTS, RESEARCH DYNAMICS AND INNOVATIVE APPLICATIONS

Denitsa Grozdeva<sup>1,2</sup>, Tsanka Dikova<sup>3</sup>

<sup>1</sup>*Department of Conservative Dental Treatment and Oral Pathology,  
Faculty of Dental Medicine, Medical University of Varna*

<sup>2</sup>*University Centre of Eastern Medicine, Medical University of Varna*

<sup>3</sup>*Department of Dental Material Science and Propaedeutics of Prosthetic Dental Medicine,  
Faculty of Dental Medicine, Medical University of Varna*

## ABSTRACT

**INTRODUCTION:** Gas discharge visualization (GDV) is a method for a complete diagnosis, which is based on natural physical phenomena in human body. Since the invention of GDV, till present, there has been an increasing interest in its application in different areas of life. The most important use of GDV is in medicine. GDV provides the possibility for quantitative measurement of human physical and psychological well-being. It is used in medicine, psychology and sports for diagnosis, prevention and treatment.

**AIM:** The aim of this article is to summarize and present to the public health research community the historical developments and the dynamics of the scientific interest in GDV application in conventional and alternative medicine, psychology and sports and to introduce current concepts and innovative techniques of GDV-application in alternative medicine.

**MATERIALS AND METHODS:** We have applied a historical approach and conducted a literature review of the published works on the application of GDV in medicine, psychology and sports during the last 70 years.

**RESULTS:** We observed an increase of scientific interest in GDV - application in medicine, alternative medicine, psychology and sports with progression for each decade, from 1950s – till now. GDV is in the focus of a large number of clinical studies in the three dimensions of medicine – prevention, diagnosis and treatment, with culmination of publishing activity in all of the fields during the last year.

**CONCLUSION:** Although GDV is not well known in Bulgaria, the results of the presented survey are proving the uniqueness of GDV as a device for diagnosis, prevention and monitoring of diseases. The application opportunities or the application itself of this method in conventional and alternative medicine, psychology and sports, are a chance for further developments of personalized healthcare.

**Keywords:** *gas discharge visualization, medicine, alternative medicine, psychology, sports*

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### Address for correspondence:

Denitsa Grozdeva  
Faculty of Dental Medicine  
Medical University of Varna  
84 Tzar Osvoboditel Blvd  
9000 Varna  
e-mail: denitsa.grozdeva@mu-varna.bg

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## INTRODUCTION

Gas discharge visualization (GDV) is a method for diagnosis, based on the natural bioelectricity of the human body, which could be measured in state of health or illness. The essence of GDV consists electron flows capturing from the surface of the skin, induced by short voltage pulses. This phenome-

non is researched and well known in physics and biophysics as “photoelectron emission”. The excited particles, emitted and accelerated in the electromagnetic field, occur as electronic avalanches on the surface of the glass electrode causing a “sliding gas discharge”. The discharge of molecules causes natural glow due to their excitement in medium with hydrogen. The electronic emission and gas discharge are amplified by short human electrical stimulation, which is completely safe, without causing any pathological changes. The glow is being measured by the GDV method in real time and gives information about the status of body organs and systems (1-3).

The objects of measurement are the fingertips on both hands, similar to fingerprint scanning. The parameters of electrophotonic emission to be quantified are: intensity, fractality and area of the captured image. The visualization of organs and systems is based on the principles of their acupuncture projection. The image, captured from each of the fingertips is automatically divided into several sectors, similar to the iridogram (4, 5).

The registration and measurement of photo-electronic emission from human body is due to its thousand times amplification. This makes the application technique possible without any preparations for the object. The imaging of electron and photon extraction consists of two phases. In the initial stage the electrons from the outer tissues are extracted. The second phase includes capturing of the electron flows from the deepest tissues (1).

Researches have determined the main role of central nervous system in the formation of the fluorescent glow surrounding fingertips. They discovered that adenosine triphosphate (ATP) molecules acts as a neurotransmitter in the autonomous neuromuscular structures. In cases of functional balance and normal operation, the ATP exchange and the electron flow are expected to be regular. Therefore, GDV detects the balance and dysfunction of the central and autonomic nervous system (6).

Healthcare is likely to become more tailored to the individual. The holistic approach to health needs to look towards the balance between the dimensions of human personality: physical, social and psychological (7). GDV has been set up for real time measurement of entropy – the balance between health

and illness. The method can also detect the impact of different types of stress (chemical, biological, emotional, physical) on personal health status (8). The effect of sympathetic nervous system and psycho-emotional factor on the whole body can be measured without filter. The parasympathetic nervous system affects the general physiological status of all the systems and this process is registered with the use of filter (9-12).

GDV can be applied in many fields of conventional and alternative medicine, psychology and sports for prevention, early diagnosis and monitoring of therapy. We found evidences for the application of GDV in oncology, surgery, allergology, internal medicine, physical medicine and rehabilitation, acupuncture and homeopathy. GDV also helps with the assessment of the impact of the environment on human health status (13-22).

### AIM

The purpose of this paper is to summarize the dynamics of scientific interest in GDV application in medicine, psychology and sports and to present current concepts and techniques in the use of this device in alternative medicine.

### MATERIALS AND METHODS

A literature review of publications in the Google Scholar scientific platform was conducted for the period of 1950-2018 using the main key-words: “gas discharge visualization”, and the additional words: “medicine”, “psychology”, “sport”, “alternative medicine”, “prevention”, “diagnosis”, “treatment”, “acupuncture”, “yoga”, and “homeopathy”. The software Microsoft Excel was used for data analysis.

### RESULTS AND DISCUSSION

#### *History and development of gas discharge visualization*

The beginning of the development of gas discharge photography is from XVI-XVII centuries when the first publications for electricity and magnetic fields were published. After a number of inventions and series of studies, in the years 1891-1892, D'Arsonval – a French physician suggested a new method of treatment with high frequency electrical currents. The electricity sent to the skin via glass electrodes ignites the gas inside. Mixing of room air

*Table 1. Historical timeline of the application of GVD in medicine in the end of 20<sup>th</sup> century (23)*

Year	Fact
1981	Visualization of internal organs of human body by high frequency photography
1982	Early diagnosis of mental disorders by high frequency photography Observation of the physical processes, visualized by GVD
1983	Development and first use of a visual camera for diagnosis of human internal organs with standards for normal and pathological images Development of an original method for medical diagnosis by fingertip imaging, based on the correlation with internal organs and determination of the state of diseases
1995	The first GVD test device was designed

with the thermal effect of the electrode results in creating ozone. In fact, the electrical stimulation seemed to cause unexpected benefits such as killing bacteria in the surface of the skin. He pioneered the device to deliver this treatment. Some years later, in 1898, electrophotographic images of different objectives were taken via the Narkevich – Yodko method (23).

In 1949 Semyon Kirlian and his wife Valentina Kirlian began a large investigation of the GDV method, adapting it for application in different spheres of every-day life. In the same year S. Kirlian obtained copyrights of the method - Photography and visualization by high frequency currents. During the 1960s twenty studies were carried out focused on the verification of the effectiveness of Kirlian photography in criminalistics. In 1969, S. Kirlian in collaboration with R.S. Stepanov developed a method for express diagnosis of stomach cancer, based on the Kirlian photography. Ten years later, Paulo de Castro Teixeira – a Brazilian homeopathic doctor, used a Kirlian photography device to observe the therapeutic effect of homeopathic medicines on humans. In the 1970s the book „Psychic Discoveries behind the Iron Curtain” was published in the USA. It presents a pseudoscientific explanation of Kirlian effect. That event triggered an increase of the interest to GDV. First conferences of Kirlian effect with a participation of psychologists were held in the years 1972-1973. At the same time the first book describing the application of Kirlian effect in acupuncture was published. At the end of the 1970s, the diagnostics with GDV were successfully validated, after a number of studies of NASA (23).

GDV use in medicine has been developing since 20-th century (Table 1) and especially in the recent years. The visualization of internal organs was performed by Erasov in 1981. After that Mangana and Zachariadi used high frequency visualization for the diagnosis of mental disorders. At the same time Korotkov passed the dissertation called “Observation of the physical processes visualized by GDV of different objects in nature”. The first visual camera for diagnosis of human internal organs and standards for normal and pathological images was developed a year later. In the same year Korotkov developed an original method for real time internal diagnosis by fingertip imaging. He designed the first GDV test device in 1996 (23).

#### *Publishing activity*

The fast development and extensive applicability of GDV in medicine, psychology and sports are well presented with the research of literature, including the last 7 decades.

Fig. 1 shows the expanding publication activity during last 70 years on the application of GDV in 4 fields of medicine published during last 70 years. The research found a small number of articles from the first two decades of the whole period, while at the same time this number reaches 2225 for psychology and 3589 for alternative medicine during the last decade. However, there is a tendency toward equal rates of publishing activity in all of the fields in the last twenty years. We found a highest number of articles published in the area of alternative medicine and a lack of publications about the use of GDV in Bulgaria considering the whole period.

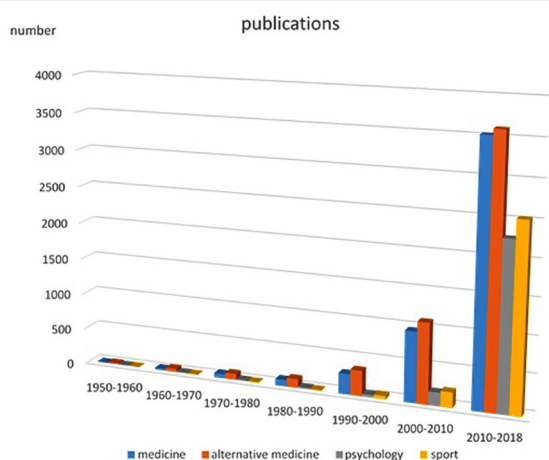


Fig. 1. Application of GVD in medicine, psychology and sports – publication rate for the period 1950-2018

Fig. 2 reports the general amount of papers in medicine, psychology and sports during the last 7 decades and separately over the past year. The publication activity is highest in the medical field. We also found an expanding number of articles in sports and psychology. For the last year the growth rate is calculated as 18.3%, 26.8% and 20.3% for medicine, psychology and sports, respectively, referring to the period 1950-2018.

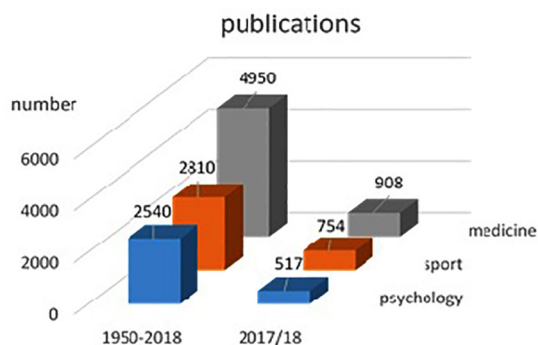


Fig. 2. Number of publications for the last 70 years and over the past year

Fig. 3 presents the publishing activity in prevention, diagnostic and therapy. The results are similar to those reported on Fig. 2 with a tendency towards a growing number of articles published in the period 2017-2018, presented in percentages of the general amount of papers for the last 70 years, as follows: 21.8% for prevention, 20.3% for diagnostic and 18.4% for therapy. These facts confirm the research inter-

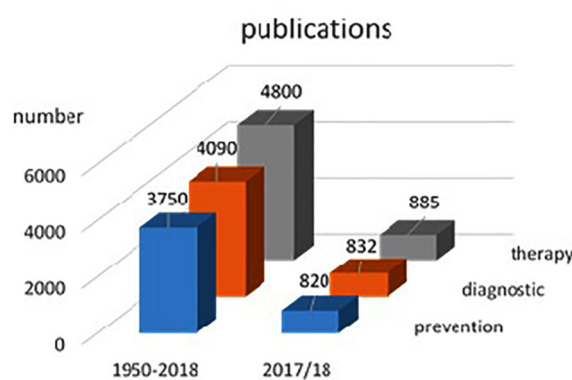


Fig. 3. Number of publications in diagnostic, prevention and therapy fields for the whole period 1950-2018, and separately for 2017-2018

est and could prove the effectiveness of GDV in these fields of medicine.

The number of publications in different spheres of alternative medicine for the last 7 decades is presented on Fig. 4. The first publications on the use of GDV in acupuncture are from the 1980s, followed by application in homeopathy in the 1990s and in yoga – after the 2000s. It is clear that the interest in application of GVD in unconventional medicine is growing exponentially.

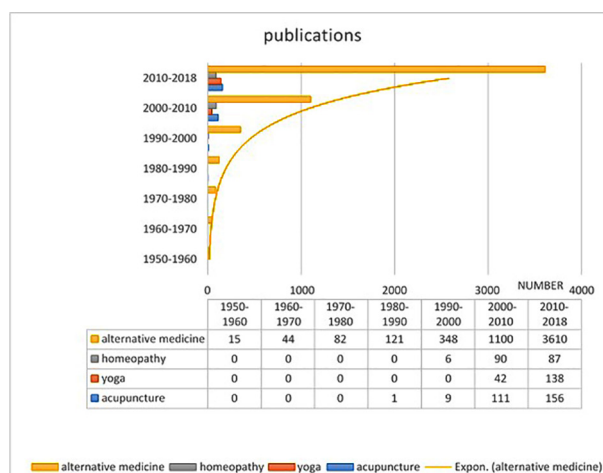


Fig. 4. Publications in the different fields of alternative medicine for the period 1950-2018

### Application of GDV in alternative medicine

GDV diagnostics have some advantages, such as the easiness of the technique, the possibility for through and real time assessment of the whole individual health status and measurement of the psy-

cho-emotional state. The impossibility of using GDV in patients with amputated fingers is pointed as the main disadvantage of the method (2, 24).

The research of articles published in alternative medicine shows that GDV is mostly used in homeopathy, yoga and acupuncture. The method is applied not only for diagnosis and assessment of the basic human health status but also as a tool for helping to provide an adequate acupuncture, homeopathic or yoga treatment. Additionally GDV is a good device for monitoring the effectiveness of different treatment protocols.

#### ◇ Homeopathy

GDV is used for assessing the action of some homeopathic medicines. The effect of applying them on healthy people has been studied since the 1970s. Glutathione patch applied on the acupoint CV6 causes positive changes in the physiological state of some organs and systems (liver, kidneys and peripheral nervous system) probably due to the antioxidant activity of Glutathione (25). A similar study was published in 2013. The researchers investigated the effect of Y-age Aeon, another homeopathic medicine on healthy people. They discovered an increased dopamine, glutamate, cysteine and serine production – only one day after the start of application. The results confirm the advertised action of Y-age Aeon but no pending changes in mood, motor activity and heart ratio were obtained during the observed period. This fact determines the role of GDV for monitoring and adjusting the duration of the treatment course (26).

#### ◇ Yoga

We found studies showing the effect of yoga on the entire human body. A significant decrease of catecholamine levels and stress reduction were detected after a one-hour yoga session in healthy people. Different types of yoga practices were investigated for their action on the physiological status of organs and systems, using GDV (27 – 31), with some of the studies involving patients with cancer (32).

#### ◇ Acupuncture

The application of GDV in alternative medicine helps for the diagnosis (based on the meridian system) and monitoring the changes caused by acupuncture needles. GDV was used for detecting any differences in energy flows before and after real and sham acupuncture in healthy individuals (33). In a

study, conducted in 2016, an in vitro model of acupoints was developed. GDV showed that acupoints act as an amplifier of human stem cells proliferation playing the role of a natural magnetic field. These results suggest that acupuncture works as a regenerative treatment (34).

In recent years the GDV method has become a base of the integrative approach to human health being the first step of attacking diseases and normalizing the photoelectronic flows in the body. This seems to be a reason for including GDV in educational programs of the medical higher education schools worldwide, as timely efforts integrate the methods of alternative healthcare in modern such (35).

## CONCLUSION

Although GDV is not well known in Bulgaria, we presented scientific evidence that it is extremely used worldwide. An expansive research activity on GDV application in medicine, psychology and sports from the beginning of the 20<sup>th</sup> century till now is was conducted. The results of our research show that over the past year the greatest number of published papers is in alternative medicine (acupuncture, homeopathy, yoga).

GDV has been proven to be an evidence-based diagnostic method, successfully integrating the philosophy of Western and Eastern medicine. It provides a new perspective on the observation of the human body in states of health, illness, physical and psychological stress. This method is a way to integrate conventional and alternative strategies for prevention and treatment in favor of personalizing the approach to human health and disease.

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