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Roadside Welders in Ajegunle

Biochemical and Hormonal Profile

Highlights

Muscle and Articulation Chains

Detect Polyethylene Terephthalate

Discovering Thoughts, Inventing Future

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Contents of the Issue

i. Copyright Notice
ii. Editorial Board Members
iii. Chief Author and Dean
iv. Contents of the Issue

1. Can the Godelieve Denys-Struyf (GDS) Muscle and Articulation Chains Method Help in the Treatment of Hyperventilation? *1-4*
2. Bite to Bytes...Transition towards Electronic Dental Records- A Review. *5-12*
3. Studies on Selected Biochemical and Hormonal Profile Status in Plasma of Some Roadside Welders in Ajegunle, Nigeria. *13-19*

v. Fellows
vi. Auxiliary Memberships
vii. Preferred Author Guidelines
viii. Index

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Can the Godelieve Denys-Struyf (GDS) Muscle and Articulation Chains Method Help in the Treatment of Hyperventilation?

By Heleno Almeida Júnior, Renata Ungier de Mayor & Alexandre de Mayor

Introduction- Breathing is the most vital function in living beings. When breathing happens in a disordered manner in human beings, that may be the first sign that we are experiencing some dysfunction, whether mechanical, physiological, or psychological (CLIFTONSMITH and ROWLEY, 2011).

One respiratory dysfunction that gets scientific attention due to its complexity is the hyperventilation syndrome (HVS). This syndrome is characterized by a set of somatic symptoms induced by inadequate hyperventilation, which may be reproduced completely or partially, by voluntary hyperventilation (RAPIN et al., 2017). According to Lum (1987), hyperventilation may have symptoms similar to asthma. Therefore, it is necessary to distinguish one of the other, as the treatment of hyperventilation is curable and the procedures for achieving successful treatment differ in approach, mechanisms, and orientation. However, the lack of studies that state treatment efficacy is still a problem (RAPIN et al., 2017; VIDOTTO et al., 2019).

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Can the Godelieve Denys-Struyf (GDS) Muscle and Articulation Chains Method Help in the Treatment of Hyperventilation?

Heleno Almeida Júnior [α], Renata Ungier de Mayor [σ] & Alexandre de Mayor [ρ]

I. Introduction

Breathing is the most vital function in living beings. When breathing happens in a disordered manner in human beings, that may be the first sign that we are experiencing some dysfunction, whether mechanical, physiological, or psychological (CLIFTONSMITH and ROWLEY, 2011).

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HVS may be due to organic or physiological conditions, but its main cause may be related to psychological and behavioral factors (VIDOTTO et al., 2019). Increasingly, in our society, we find case reports of people suffering from anxiety, depression, perfectionism, feelings of inferiority, and others who, usually in times of crisis, may be associated with respiratory disorders such as hyperventilation. Thus, Vidotto et al. (2019) even suggest that it is necessary to create a multidimensional holistic assessment (biochemical, physiological, social, psychological, respiratory symptoms) for the accurate diagnosis of respiratory dysfunction. In this sense, the treatment proposed for HVS should also address the multidimensional holistic aspect, in order to evaluate its effectiveness.

The Muscle and Articulation Chains - G.D.S. Method - (Godelieve Denys-Struyf) is a non-investigated method for HVS that deserves attention. It is a global method of physical therapy and behavioral approach, created by the Belgian physiotherapist Godelieve Denys-Struyf in the 1960s (CAMPIGNION, 2003). More specifically, the work developed by her disciple, the French physical therapist Philippe Campignion, highlights the influences of biomechanical, psychological, behavioral and physiological aspects on breathing, respecting the individuality of each individual (CAMPIGNION, 1998).

Therefore, the present study aims to highlight, based on the available scientific evidence, how G.D.S. can collaborate as a treatment of HVS and bring new perspectives on the subject.

II. Methods

It is a systematic literature review. We used the keywords "hyperventilation," "respiratory dysfunction," "exercise," "psychological-behavioral," "GDS method" in Pubmed® and Scielo® databases in Portuguese, French, Spanish, and English, considering articles of the last ten years. Most recent and mentioned review or experimental papers were selected, with at least two of the keywords searched in the present study.

III. Results

Except for the keyword "G.D.S method," which only led to two articles, all others presented numerous papers screened according to the methodology adopted in the present study (Table 1). Thus, we highlight the originality of the present study, since, so far, no investigation had been done correlating these keywords or themes.

Author α: MSc., Professor at Inspirar College, state of Santa Catarina, Brazil. e-mail: heleno.taichi@gmail.com
Author σ: MSc. - Kiné Clínica de Fisioterapia e Centro de Formação, Centre de Formation Professionnel Campignion.
Author ρ: Expert in this area, Kiné Clínica de Fisioterapia e Centro de Formação, Centre de Formation Professionnel Campignion.

Table 1: Top recent and most mentioned articles

Author	Title	Conclusion
Bradley and Esformes, (2014)	Breathing pattern disorders and functional movement	"These results demonstrate the importance of diaphragmatic breathing on functional movement. Inefficient breathing could result in muscular imbalance, motor control alterations, and physiological adaptations that are capable of modifying movement. These findings provide evidence for improved breathing evaluations by clinicians."
Depiazziand Everard, (2016)	Dysfunctional breathing and reaching one's physiological limit as causes of exercise-induced dyspnoea	"Clarity in our approach to dysfunctional breathing is vital if funding is to be made available for high-quality studies designed to identify the prevalence and the potential healthcare cost-saving and improvements in QoL that would follow from accurate assessment and intervention."
Díaz-Arribas et al., (2014)	Effectiveness of the Godelieve Denys Struyf (GDS) Method in People With Low Back Pain: Cluster Randomized Controlled Trial	"The improvement in disability was slightly higher with group GDS sessions than with the program routinely used in clusters within the SNHS. Adding individualized GDS sessions eliminated this advantage. Further studies should compare GDS with other types of exercise."
Jones et al., (2013)	Breathing exercises for dysfunctional breathing/hyperventilation syndrome in adults.	"The results of this systematic review are unable to inform clinical practice, based on the inclusion of only one small, poorly reported RCT. There is no credible evidence regarding the effectiveness of breathing exercises for the clinical symptoms of DB/HVS. It is currently unknown whether these interventions offer any added value in this patient group or whether specific types of breathing exercise demonstrate superiority over others. Given that breathing exercises are frequently used to treat DB/HVS, there is an urgent need for further well designed clinical trials in this area. Future trials should conform to the CONSORT statement for standards of reporting and use appropriate, validated outcome measures. Trial reports should also ensure full disclosure of data for all important clinical outcomes."
Kim et al., (2019)	Effects of elastic band resistance exercises with breathi ng techniques on pulmonary function in female seniors.	"The results show that resistance accompanied by breathing techniques positively affects senior respiratory function when an elastic band is used for exercise."
Puppin et al., (2011)	Stretching in nonspecific chronic low back pain: a strategy of the GDS method	"Stretching exercises, proposed by the GDS muscular and articular chain method, were effective in reducing pain, functional disability, and increasing overall flexibility, but it did not improve the ability of the transverse abdomen to contract in patients with chronic and unspecific low back pain. "
Rapin et al., (2017)	Which treatments for the hyperventilation syndrome in adults?	"In practice, it provides learning about abdominal ventilation and respiratory rate regulation. Coupled with personalized therapeutic education, it seems to be the most appropriate technique. Other clinical studies are needed. "
Szulczewski, (2019)	Training of paced breathing at 0.1 Hz improves CO_2 homeostasis and relaxation during a paced breathing task	"The obtained results showed that training paced breathing at 0.1 Hz led to decrease in hyperventilation. Furthermore, the present study suggests that training paced breathing is necessary to make the task more pleasant and relaxing."
Vidotto et al., (2019)	Respiratory Dysfunction: What Do We Know About it?	"Finally, the treatment of patients with RD needs to be further investigated, not only because of the lack of a diagnostic tool that allows consistent recruitment of participants but also because of the scarcity of RCTs that test well-defined protocols for this group of patients."

Zaccaro et al., (2018)	How Breath-Control Can Change Your Life: A Systematic Review on Psycho-Physiological Correlates of Slow Breathing	"Slow breathing techniques act enhancing autonomic, cerebral and psychological flexibility in a scenario of mutual interactions: we found evidence of links between parasympathetic activity (increased HRV and LF power), CNS activities (increased EEG alpha power and decreased EEG theta power) related to emotional control and psychological well-being in healthy subjects."

Note: QoL= quality of life; GDS = Godelieve Denys Struyf; SNHS = Spanish National Health Service; DB/HVS = Dysfunctional breathing/hyperventilation syndrome; RCT = randomised controlled trial; CONSORT = Consolidated Standards of Reporting Trials; EEG = Electroencephalography; HRV = Heart Rate Variability; LF = Low Frequency; CNS = Central Nervous System

IV. Discussion

The biochemical components and physiological effects of the hyperventilation syndrome are well understood by the authors in their articles, even in previous studies such as George's, (1964), Lum's, (1987) and Chaitow's, (2004).

Hyperventilation causes an increase in ventilation rate. The exhalation rate of carbon dioxide (CO_2) exceeds the accumulated rate in tissues, causing a decrease in CO_2 and an increase in body pH, producing respiratory alkalosis (CHAITOW, 2004). According to Chaitow (2004), this induces vasoconstriction, decreasing blood flow and inhibiting hemoglobin transfer (from oxygen to cell tissue due to the Bohr effect), and inevitably muscles end up being affected by fatigue, dysfunction, and trigger points.

On the other hand, some authors show different opinions about the relationship between psychological and behavioral factors and hyperventilation. Lum (1987) addresses the behavioral factors as symptoms caused by hyperventilation, i.e., a somatopsychic pathway. Vidotto et al. (2019) discuss a psychosomatic one, where psychological and behavioral factors would be the main causes of hyperventilation. Regardless of the route, everyone should consider psychosomatic aspects, from biomechanical dysfunction to unstable emotions to resolve hyperventilation. Perhaps this is why some studies such as Jones et al. (2013) did not find lots of clear and positive results about exercise in the treatment of hyperventilation.

According to Rapin et al. (2017), the most appropriate technique apparently would be abdominal ventilation with respiratory rate regulation, combined with an individualized therapeutic education. According to Campignion (1998), however, only abdominal ventilation happens only when the body adopts a resting breath. In this sense, it is paramount to adopt some relaxation or even reprogram the mechanical ventilation at the most active moment as well. There are several breathing techniques and approaches aimed at improving ventilation. In hyperventilation, according to Szulczewski (2019), the slow breathing exercise favors the reduction of the picture. Still, not all people can breathe slowly because of mechanical difficulties, making something that should be pleasurable to accomplish, something unpleasant.

Philippe Campignion has developed his extensive work on the physiology of respiratory mechanics from a range of concepts. Based on Françoise Mézières's maxim, "Breathing is not taught or learned, it is released," as well as Godelieve Denys-Struyf's work on muscle and articulation chains. Her view that "each individual adopts a body attitude that is his or her own and derives from his or her psychological and behavioral experience" was the starting point for the study of the relationship between different postures and respiratory biomechanical behavior, taking into account the associated morphological diversity, especially regarding the shape and positioning of the chest. She then established the different respiratory typologies described in her work: chest blocked in inspiratory position, chest with large anteroposterior diameter, paradoxical chest with a small anteroposterior diameter and large lateral diameter, chest expired or chest with small diameter, asthenic chest (CAMPIGNION, 1998). Philippe Campignion uses these concepts for both evaluation and exercise proposal for each typology, respecting the individuality of each patient. The purpose of this approach is to release mechanical barriers, if there is any, and to reprogram the well-coordinated mechanics, thus contributing to proper respiratory physiology.

Biomechanical aspects are also fundamental in his work, as she reports the predispositions in case of the permanence of mechanical barriers and the relationship between the diaphragm and the visceral system (CAMPIGNION, 1998). This information is interesting because gastrointestinal and circulatory dysfunctions and other problems that may arise concomitantly with hyperventilation may be of psychological and behavioral origin, with biomechanical consequences.

This view stimulates future research, as there are still scientific gaps on the subject of hyperventilation, evaluation, and appropriate exercise. In the same way, it is relevant the need for more scientific investigation Philippe Campignion's approach, given the lack of articles on such an important subject. This proposal not only should include research on individual work but also on group work.

It is necessary to highlight that the comprehension of the human being in its totality may bring answers or solutions to the most diverse disorders. The perspective addressed in the present study is confirmed by what the authors presented here highlighted about hyperventilation. It is increasingly important to conduct studies on hyperventilation that consider the complexity of the human being and the intrinsic and extrinsic influences, both in his or her life as a whole and in the specific moment in which the pathology affects him or her.

V. Conclusion

Despite the approach of the Muscle and Articulation Chains - G.D.S. Method in the treatment of HVS seems promising; experimental studies are needed to prove its effectiveness.

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Bite to Bytes...Transition towards Electronic Dental Records- A Review

By Dr. Santanu Sen Roy, Dr. Ritika Bhambhani & Dr. Ipsita Maity

Abstract- Patient health records (both dental and medical), if accurately maintained not just help in better clinical decisions for the welfare of the patient but also have legal and other security benefits for the doctor. As digitization has paved its way in every stream, the same has occurred to maintaining of patient records, which when electronically controlled are termed as the Electronic patient records (EPR) or Electronic dental records (EDR) or Electronic medical records (EMR) pertaining to the dental details or the medical respectively. They would provide the advantages of well maintained paper records with benefits of cross-referencing the data by consulting specialists and help to integrate the medical and dental fraternity.

The use of EDR is more widespread internationally in US and European countries compared to the developing ones. Many challenges do exist for a complete transition, including financial restraints, skill development, confidentiality of records and their standardization. In developing countries demographics makes it more difficult to apply the EDR but efforts are ongoing.

Keywords: electronic dental records, electronic patient records, electronic health records, digitized records, paperless office/clinic, teledentistry, HIPAA, DISHA, NeHA.

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Bite to Bytes...Transition towards Electronic Dental Records- A Review

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The use of EDR is more widespread internationally in US and European countries compared to the developing ones. Many challenges do exist for a complete transition, including financial restraints, skill development, confidentiality of records and their standardization. In developing countries demographics makes it more difficult to apply the EDR but efforts are ongoing. This narrative review discusses the various systems of EDR, their benefits and functioning, and also the hindrances in path of their acceptance.

Keywords: electronic dental records, electronic patient records, electronic health records, digitized records, paperless office/clinic, teledentistry, HIPAA, DISHA, NeHA.

I. Introduction

It's a known fact that our lives are getting dependent on technology and digitization, and perhaps why not, there are endless advantages to it. Even the present day dental practice is closely linked to the utilization of computer-based technology. The Digitization has paved its way towards the diagnostic and treatment procedures in health sciences. Digitization refers to "capturing an analog signal in a digital form or representing any object by a discrete set of points, could be an image, sound or a document" [1]. In today's technology based life, smart phones have brought almost everything at the user's fingertips; where it is possible to access and achieve almost anything even when on a move. How could the medical and dental fraternity hence stay unaffected for long? With the use of digital techniques in almost all spheres, it had to seek application in maintaining medical/dental records.

Dental or medical records have always been a challenge to maintain. Updating them, reproducing the older records and sharing them has been difficult. As the name suggests the electronic records are patients' details managed electronically without physically handling the paper files. They have also been termed as computer based records [2]. The paper files would result in a bulk of endless files in a dental set up. On the contrary digitization of the same would offer multiple advantages like ease of storing and referring back, portability of patient's information, interoperability, integration within fraternity, patient participation and of course paperless offices. This is hence a patient friendly, operator friendly and environment favoring methodology and in turn promotes better practice management [2,3]. But no change comes easy; this transition has obvious disadvantages of greater costs involved and its use also is largely affected by demographics. Widespread use of electronic record softwares has become inevitable in United States of America and many European countries, considering the benefits. Multiple steps have been taken by their respective governments for the needed implementation. [4, 5]. But at the same time greater challenges are to be faced especially in developing countries like ours.

The review aims to include the benefits of EHR, its applications, limitations, needed standards and the hindrances to achieve the same.

II. The History and Development of Present Systems of EHR

Dr. Lawrence L. Weed was one of the pioneers to mention about an automated system to reorganize patient medical records. With the initial efforts of physicians and the IT experts, the PROMIS project was used in 1967 at the University of Vermont. The project aimed towards a timely and sequential access to patient data, enabling rapid collection of data for epidemiological studies, medical audits and business audits. Based on the above a Problem-Oriented Medical Record or POMR was formed in 1970 and was first used in a medical ward of the Medical Center Hospital of Vermont. Touch screen technology had also been incorporated into data entry procedures; other options like detailed drug information were added to the core

Author α: MDS. Reader, Department of Public health dentistry, Gurunanak Institute of Dental sciences and Research, Panihati, Kolkata.
Author σ: MDS. Reader, Department of Prosthodontics, Gurunanak Institute of Dental sciences and Research, Panihati, Kolkata. Consultant Prosthodontist at AMRI hospitals, Kolkata.
e-mail: ritikabhambhani@yahoo.co.uk
Author ρ: MDS. Reader, Department of conservative dentistry, Gurunanak Institute of Dental sciences and Research, Panihati, Kolkata.

program, for permitting a check on drug actions and interactions, dosages, side effects and allergies. During the 1970s and 1980s, various academic and research institutions refined electronic medical record systems. These include- a hospital-based 'Technicon system', 'Harvard's Costar system' for ambulatory care, 'The HELP system' and Duke's 'The Medical Record' are some examples of early inpatient care systems; 'Indiana's Regenstrief record' was among the earliest combined inpatient and outpatient systems [6, 7]. The technical boom of the 1990sincluding the advancements in computer and diagnostic applications further helped to spur the growth of electronic medical record systems in medical practices [4].

The application of EHR in medical practice is at a greater pick up than dentistry. The American dental Association (ADA) recognizes 'Dental Informatics' as a separate specialization within Health Informatics; which is a multi-disciplinary field that seeks to improve health care through the application of health information technology (HIT). The use would finally have an impact on health information management, health care administration, research, information gathering and synthesis, and knowledge sharing [8,9]. The use of this technology interests both the academicians and even practitioners. The students need to be exposed to the new technologies so as to keep them abreast with the growing demands of practice; also the research and many longitudinal studies come handier with such digital records. The birth of 'Teledentistry' is also closely related to the advent of digitization in dentistry.

The National Institute of Health and Medicine, USA in 1991 mentioned the greater need of adapting to EDR. The national health library too has been a major participant in this development. In 2009 the US Congress and Obama administration offered benefits to the health care community for promoting use of EHR. The HITECH i.e. Health Information Technology for Economic and Clinical Health Act, authorized incentive payments through Medicare and Medicaid to clinicians and hospitals who started to use electronic records [8,4]. The above mentioned Act was promoted as an element of the *American Recovery and Reinvestment Act (ARRA) 2009.*

The British government aimed for modernization of National Health Services under a program termed the 'BIG BANG approach' and has been one of the largest IT procurement plan. In Canada a similar agenda as 'INFOWAY' was started in 2001 and in Australia as 'HEALTH CONNECT' was begun [2,10]. INFOWAY is a not for profit organization funded by federal governments, working mainly to accelerate the development, adoption and effective use of digital health across Canada.

The ministry of Health and Family welfare (MoH & FW), India also notified the EHR standards for India in 2013, which were later revised in 2016[11].

a) Existing Systems

The development of EHR includes the collaboration of IT individuals, health care professionals and government officials. EHR is "electronic record of health related information of an individual that conforms to nationally recognized interoperability standards and can be created, managed and consulted by the authorized clinicians and staff across more than one health organization". The basic purpose of such softwares has been to capture, store, present, import and export needed patient records. The software should allow a better organization, easier retrieval in sequential way, chronological details of treatment performed and quick sharing of the same. If kept updated and shared amongst the various specialties they can present the whole longitudinal history of the patient to the service provider [12, 13].

EHR would include a range of data, that is- *personal data:* patient identification information, personal statistics like age and weight, vital signs, *comprehensive medical history*, diagnostic aids like laboratory test results, radiology images, clinical photographs, referral letters and consultants' reports; *drug records* including drug allergies, active medication, immunization status; *business records* like billing information, documentation of informed consent etc. This large amount of information is essential to be maintained, and digitizing the records provides an easy alternative of storing the above. The written records would always face issues like clarity of writing, fading away of ink, place to keep records [2, 3, 4, 8].

The way digital images have paved their way in daily practice even the digitized records would do the same; As by Dr. Lavine "a day would come when the paper records would become archaic" [14]. Peer pressure and patient demands, competition and aim of having a better approach to organizing records would lead more practitioners to accept EHR. Shifting rightly on time and being equipped to ride this wave would be a boon rather than being engulfed by same [15].

Dental informatics includes collaboration of the IT and medical-dental sector and has resulted in various practice management softwares paving their way out. Some are listed: ADSTRA dental software suite (by ADSTRA systems), Aerona Dental care (by Aerona software systems), Dentrix (By Henry Schein), Diamond dental software (by Diamond dental), Easy Dental (by Easy dental), e patient (by dental symphony), Galaxy dental systems (by galaxy systems), iSmile dental software (by iSmilesoftwares), Prime dental (by Prime dental software), Practice web dental (by practice web),Saral dental soft (by Saral computers),Total Dental (by total dental) and many more[16]. These softwares permit clinical charting, appointment management, imaging, document management, billing, payment history, treatment planning, reminders etc. As the files are saved as one unit it is easy updating them and no

duplicates or multiples are created. It reduces the chances of data replication as there is only one modifiable file. Opening a document is easier and not time consuming when compared to relocating the paper records. The patient name or an id can be used to open and refer to the details hence the patient can just walk in without any records- rightly termed the paperless offices. The following benefits too could be considered-- patients may register online, the doctor would be able to check appointment schedule from anywhere, electronic prescribing may be done, the treatment and medical history can be retrieved easily and seen at one screen when patient walks in, including old treatment records too; managing payments and applying for insurance claims gets easier, business gets more integrated, digital images are preserved as attachments, not the least the back-up of all details is maintained. An updated clinical charting with all health details of a patient as one file, would also allow more evidence based recommendations. The software companies need to be in compliance with the regulatory policies and set standards [13-19].

Maintaining records is an ethical and legal responsibility. It would also aid in forensics and mass disasters [20-21].

Thes~~e~~ storage softwares are broadly of three types- *Cloud based EDR* like Dovetail office, Liptak DDS rescue, Patterson Eaglesoft Clinicianor *Client server based records* or even the *hybrid types* using features of both. EDR which are cloud based, store all information in space and is termed a cloud; these systems also claim disaster protection. The server based EDR store the records in the client office itself and in the hybrid type maintain the backup over a rented server [2,15]. What would be important is to provide training sessions to office staff and the operators during installations with intermittent free webinars for better understanding of the system. The EDR are apt for today's clientele where the patients would want to do some basic consultations or appointment scheduling even on a move, could be over a phone or a laptop or tablet or even a desktop.

Teledentistry is an exciting new area of dentistry putting together the electronic health records with telecommunications technology and digital imaging; also termed the marriage of computers and telecommunications [22- 25]. Here the Internet service providers play the key role in linking health providers in different places, could be rural or remote communities. This would aid in providing quality care for patient located in underserved areas by sharing EDR over internet and providing videoconferencing with the best of dentists; termed the teleconsultation. A specialist located many miles away would make a diagnosis and recommend treatment options if EDR is shared well. It is also considered to be a boon for education [24]. The initiation of the telehealth system began in 1990's and was given a new definition by Cook in 1997 for its role in videoconferencing and opening a new course of dental treatment. Its implementation would improve the primary health care services and could permit communication with a peer dentist. All details could be viewed on one screen making it easy to share and discuss. The Teledentistry has been divided as two types- 1) Two way interactive or real time consultation and 2) Stored and forward Teledentistry. It is bound to have revolutionary changes on practice management, professionalism, patient care and management, referrals and competition.

Telehomecare by various virtual services being provided to patients to self support and prepare themselves for certain situations at home especially patients with chronic problems needing palliative care [10].

Storing indefinitely and legal benefits: The guidelines for preservation time of paper records vary amongst different countries. For example: The Department of Health for National Health Service (NHS) organization in England states community dental records to be maintained for a period of 11 years for adults, and 11 years for children from the date they turn 18. RCS (Royal College of Surgeons) present with similar guidelines of 10 years for adults and 10 years for children once they turn 18. The guidelines adopted by the Provincial Dental Board of Nova Scotia, consider this time period as 2 years following treatment completion. In Texas dental records need to be stored for 5 years. They have a well laid set of guidelines mentioning different retention periods for different records and describing other necessary rules for disposition like shredding of paper records and deletion of EDR. In India, the MCI (Medical Council of India) regulations 2002, every physician shall maintain medical records pertaining to his/her indoor patients in a standard proforma for 3 years from commencement of treatment. IDA (Indian Dental Association) recommends maintenance of records up to a minimum of 5 years considering both consumer needs and the judiciary. The electronic records hence provide a practical approach to indefinite storage of records without really affecting storing space issues [26-28]. Multiple acts like the CPA (Consumer protection act) passed by the Indian Parliament in the year 1986 and some other legal avenues exist to safeguard and protect the interest of consumers. The preservation of record would come in interest of the doctors in such situations.

In patients with systemic diseases like diabetes miletus, immune compromised states where patient is under the treatment of multiple specialties, sharing the salient information becomes essential to avoid complications, drug interactions and to provide better care. This requires a change in the method of practice towards a more integrated form amongst various specialties and to move towards evidence based approach. Interdisciplinary treatment in dentistry

involves mainly departments like Prosthodontics, Periodontics and Restorative dentistry and the sharing of patients' details is important for full mouth rehabilitations. [29, 30].

A study conducted at The Brigham Hospital and The Women Hospital at Massachusetts both using electronic records, helped conclude that by maintaining electronic records of patients the repetitions of many diagnostic tests was avoided, many individuals had undergone recent tests or investigations which could be used in further consultations. But to utilize the records in the manner as in the conducted study, a wise access to the records and exchange of salient information is essential amongst various specialties and the files need to be updated. [31-33]

Every individual's healthcare events can be recorded in longitudinally arranged manner. It hence demands collection of various records which can get generated during any clinical encounter and with strict implementation of every visit and revision.Problems like gap reporting, missing links in shared responsibility, problem with billing codes have been the practical hunches.

Other benefits of EDR particularly pertaining to dentistry would be the ease in maintaining records of full mouth rehabilitation cases and patients with mutilated dentitions needing complex and multidisciplinary treatment plans. Even interactions with laboratory would profit if certain needed images (dentition shape/size/ interrelationships/colouretc) could be shared for better end results [34]. The communication between dentist and the technician plays a very significant role in dental procedures and digital communication and make interactions quicker and accurate.

III. Standardisation

Standardization of these systems is very important to achieve integration of the records and safety. These should also allow privacy and active participation of patient for complete benefits of the system. If the software promotes alerts or reminders it would help in better involvement of patients. Internationally the HITECH Act and HIPAA govern the software policies. The ADA aims to standardize the EDR's which would be regulated by set rules as under specification no. 1001. Standards to be followed include areas like identification and demographics, patient identifiers, architecture requirements (ISO18308:2011 Health informatics), functional requirement (ISO HL710781: 2015 Health Informatics), reference model and composition (ISO 13940 Health informatics – system of concepts to support continuity of care), terminology (SNOMED CT), coding system (Logical observation identifiers names and codes – LOINC, WHO-FIC), scanned or captured records, imaging (DICOM- digital imaging and communications in medicine), data exchange, discharge summary, e prescription, data privacy (ISO /TS 14441:2013 health informatics.), integrity and encryption.

To maintain the needed standardization a continuous evolution and timely maintenance is a must. IHTSDO releases SNOMED CT twice annually and NHS mentions use of same for dental, nursing and drug related information. The standards have been set for the diseases/health conditions to be mentioned in softwares as abiding by WHO-FIC (The WHO family of international classification). Similarly e-prescription has to follow the pharmacy practice regulations 2015, (PCI).

Regulatory policies like Health Insurance Portability and Accountability Act (HIPAA) -1996, SNODENT®, dental subset of SNOMED CT etc. have been laid mainly to standardize and integrate various softwares. The later has been initiated by *The International Health Terminology Standards Development Organization (IHTSDO) and its Dentistry Specialty Interest Group (SIG)* to manage health information exchange safety. To a greater credit, the Open EHR is a non-profit organization which aims to develop interoperability and computability in e-health and focuses on EHRs. It provides reference model specifications and consists of a library of data points or groups; called the Archetypes – ISO 13606-2. [11, 35-41]

The Security Concerns of using these softwares are significant. The records are a possession of the patient and the operator or doctor concerned. The privacy and safe record keeping is an utmost requirement. Certain inclusions in the EDR would help making the records more secure: like use of login details like username and password, sticky policies for transferring and editing of data to maintain security, the system should make it possible to see when and why was a patient file accessed, provision for changing passwords and use of firewalls so as to maintain the details safe and free from hacking and other malpractice. Authorization too has been suggested for maintaining confidentiality.

Certifications of these program softwares by ONC/ONCHIT (Current Office of National Coordinator for Health Information Technology) have been fully operational since 2012 in US, before which a Temporary Certification Program (TCP) was functional since 2010. A similar system exists in Europe by name Eurorec, to help maintain quality of record keeping through digital means [36].

All the certified products have been included in CHPL or Certified Health Product List. This includes programs of two types 1) The complete EHR and 2) Modular EHR. Complete EHR as the name suggests meets all requirements of security and privacy concerns along with the utility criteria. The latter does not meet all the set requirements for certain edition of ONC certification, and also demands for eligible providers to implement additional software to meet all the

certification criteria. Indian government has presented with an act named DISHA that is digital information security in healthcare; which hereby suggests the following to avoid breach and its consequences- 'Anonymization', that is deleting personal information from digital health data, or 'Deidentification' in a manner that it can be connected again (planned by NeHA). The privacy and confidentiality of EDR would be the dentists' responsibility. Discarding files in electronic media is safer and can be deleted from all records so as not to allow access to anyone. When in store, the access to all people should be restricted and right training of office staff and trust is a must. Threats to health care information and its privacy could be by certain human threats, such as employees or hackers; or from technology failures, such as a system crashing; and also from natural and environmental threats such as earthquakes, hurricanes and fires. These threats can either be internal, external, intentional and unintentional. Another big challenge is the errors involved due to wrong human and computer interactions [41-46]. The accuracy of EDR may get affected while inputs of the data are made by the staff involved. Standardized software with a database to cross check medical terms, drug doses etc may reduce such errors.

IV. Barriers and Hindrances in Acceptance of EDR

EDR helps to organize the practice better and provide other multiple advantages, but no science comes easy, be it the financial aspect, training requirements or the employment of a new system on a wider basis, all need a very good management and support. Dentistry lags behind medical fraternity in terms of the quality of record keeping. Medical doctors must comply with stringent record keeping regulations, even on paper as the stakes involved are more. Dental practitioners do not yet face this level of pressure to comply, although changes in this direction are just a matter of time. Mandating this compliance for the dental community, the quality of care could improve. In one perspective 'Teledentistry' could be a benefit in developing countries to improve patient care, the same time finances to create such a huge network matter more. Surveys suggest the poor maintenance of paper records by dentists in many Indian states and hence needless to mention digitizing would come much later. A very low percentile of about 38% of surveyed dentists was found to maintain records, whereas 62% of them were maintaining no records at all, in a study regarding awareness, in one of the states of India. Astekar M. et al found in their cross-sectional survey based on telephonic conversation that few dentists (surveyed) were aware of the legal mandate for dental records and were ignorant about the laws governing their profession [21]. A similar situation was found in another state by Preethi *et al* where 21% of the target or surveyed dentists did not maintain any form of dental record and only 12% maintained complete dental records. This trend could be reflected in other parts of the country and is a very alarming situation as most dentists are unaware of the ethical and legal implications of inadequate or improperly maintained dental records [47]. But the Indian law [Article 51 A(h) of the Constitution of India] mentions of the moral obligation on the doctor and the legal duty, to maintain and preserve medical, medicolegal, and legal documents in the best interests of social and professional justice. Also it is necessary to maintain accounts to avoid action from Income Tax authorities under Section 44 AA of the Income Tax Act, 1961 [34]. India faces greater problem due to a larger population, diverse culture and spread over a larger region of varied geographical landscapes. The interoperability and all models based on similar principles is very important. International Trade Administration's Health IT top markets report estimated global health care expenditure as US $ 7trillion, in 2015, and likely to exceed US $ 9trillionby 2020.

Only an involvement of various government sectors, The Ministry of Electronics and IT, Ministry of Health and Family welfare and NITI Aayog or erstwhile planning commission of India can together make changes happen [44].

The integration of EMR and EDR is another very big challenge. Which is what is the actual benefit of the system. Medical fraternity would benefit if gets an access to dental records, as many systemic ailments are first noted in the mouth like some carcinomas, Sjogrens syndrome, diabetes milletus, eating disorders, syphilis and gonorrhea. A survey in US Medical Records Institute, on the EHR trends found a 70% positive response for the need of sharing patient information with others and mentioned it to be quite helpful for practice and patient benefits [2, 15]. A single consolidated record would also be a great aid in research. Such longitudinal records would really help in better and more evidence based decisions.

The benefits of EDR are many, but the financial aspect would remain a major consideration and the endless comparison of these benefits against costs would exist. Clinicians and researchers understand the significance of EDR to proceed further or improve the practice, and to keep pace with the digitized times of today. Studies have shown it to be cost effective in a long run and in hospitals or multispecialty centers where employing and training staff exclusively for maintaining these records becomes worthwhile. Smaller or individual units would find the latter difficult. After the investment is done towards the digital management of records, it is only with time the benefits would be reaped. The more number of staff in bigger setups could be trained to manage these duties better. The number of dentists

worldwide who are trying to adapt to latest trends is increasing.

A study in 2006 found 90% of surveyed dentists using practice management software and turning their offices into paperless; of which 47% were new and 42% the established dentists [13]. A study suggested the amount spent annually over stationary, staff time, operator and x ray films would be more than costs involved in electronic records [37].They are expensive in terms of training institutes but considering better future prospects, investments can be justified. The costs on patients would get higher but it allows a better retrievability of records and whole lot of other benefits.

It is also to be noticed that application of EPR requires help of health information management professionals and they should integrate the whole medical fraternity to reap true benefits. Present state may not be really helpful unless intraoperability and integration or records achieved. The benefits could be achieved in one context and not in the other depending on the clinical routine and control over programming errors, errors in human computer interactions, and data entry errors in copying from notes, of vital signs or drugs or cut paste errors. The EDR seem to be more beneficial for larger set ups in terms of cost effectiveness, also the interoperability is really needed for a patient and the changing staff. Researchers mentioned that it makes sense but may not suit all. Hence being applicable to a greater sector needs lot of hurdles to be crossed [50].

If not well handled it may also lead to adverse consequences like wrong alerts, not sufficiently updated records resulting in wrong clinical decisions. Some researchers have found present scenarios not upto the mark and needing improvements, and damage caused by improper use of EPR has been also stated as e- iatrogenesis [51,52].

Authors' point of view

The greater challenges remain in demographically developing sectors. To achieve the goals set for EPR, it would need to first begin at educational institutions where the training dentists realize the importance of dental records, and hence apply later in practice. The exposure to technological changes and software managements would remove the associated inhibitions. The aid by governments towards the teaching institutes becomes must hence to implement this.

V. Conclusions

The accurate health/dental history provides important and valuable information for the dentist, prior to beginning treatment and hence the importance of taking and keeping records and updating them. Records needed for legal implications, insurance, consumerism, good quality care and electronic records can help achieve all. It is an independent field not just involving the medical and dental fraternity but the health information management and informatics sector. More and more dentists are perhaps turning towards paperless offices internationally yet much is to be achieved when it comes to standardization and integration in true sense. It demands a periodic review and update for the document to be living document.

Abbreviations

ADA- American Dental Association
ARRA- American recovery and reconstruction act
CHPL – Certified health IT product list
DISHA-Digital information security in healthcare
EDR- Electronic Dental Records
EMR- Electronic Medical Records
EPR- Electronic Patient Records
IDA- Indian Dental Association
LOINC- Logical observation identifiers names and codes
MCI – Medical Council of India
NeHA-National electronic health authority of India
ONC/ONCHIT- Current Office of National Coordinator for Health Information Technology
HIPAA- Health Insurance Portability and Accountability Act of 1996
HITECH- Health information technology for economic and clinical health act (2009)
HIT- Health Information Technology
TCP – Temporary certification program
PCI- Pharmacy council of India
WHO-FIC- The WHO family of international classification

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Studies on Selected Biochemical and Hormonal Profile Status in Plasma of Some Roadside Welders in Ajegunle, Nigeria

By Egoro, Emmanuel Tonbra., Oni, Emmanuel Sunday & Chukwuma, Samuel Anakwe
Niger Delta University

Abstract- Welding is a blending process that involves the joining together of metals or thermoplastics. This study was aimed at assessing the status of selected biochemical parameters and hormonal profile in plasma of some roadside welders within the age range of 35-45 years who had welded with ≥20 welding rods/day for a duration of≤10 years (experimental group one) and≥11years (experimental group two) respectively. Five ml blood specimen was withdrawn from each of the ninety apparently healthy recruited volunteers who were categorized as control group (n=30), experimental group one (n=30) and experimental group two (n=30). The plasma obtained was used for the quantitative measurement of alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, C- reactive protein, urea, creatinine, luteinizing hormone, follicle stimulating hormone, prolactin and testosterone. The results showed no significant alterations in the mean values (p≥0.05) of all the measured biochemical and hormonal profile status in experimental group one volunteers as against that of the control group.

Keywords: *roadside welders, biochemical parameters, hormonal profile status, ajegunle, nigeria.*

GJMR-K Classification: *NLMC Code: QU 35*

Strictly as per the compliance and regulations of:

Studies on Selected Biochemical and Hormonal Profile Status in Plasma of Some Roadside Welders in Ajegunle, Nigeria

Egoro, Emmanuel Tonbra. [α], Oni, Emmanuel Sunday [σ] & Chukwuma, Samuel Anakwe [ρ]

Abstract- Welding is a blending process that involves the joining together of metals or thermoplastics. This study was aimed at assessing the status of selected biochemical parameters and hormonal profile in plasma of some roadside welders within the age range of 35-45 years who had welded with ≥20 welding rods/day for a duration of ≤10 years (experimental group one) and ≥11years (experimental group two) respectively. Five ml blood specimen was withdrawn from each of the ninety apparently healthy recruited volunteers who were categorized as control group (n=30), experimental group one (n=30) and experimental group two (n=30). The plasma obtained was used for the quantitative measurement of alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, C- reactive protein, urea, creatinine, luteinizing hormone, follicle stimulating hormone, prolactin and testosterone. The results showed no significant alterations in the mean values (p≥0.05) of all the measured biochemical and hormonal profile status in experimental group one volunteers as against that of the control group. However, in experimental group two volunteers only alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, C-reactive protein, urea, creatinine and testosterone were significantly altered (p ≤0.05) against that of the control group while other parameters were not altered. In conclusion, welding with ≥20 welding rods/day for ≥11 years duration may pose danger to roadside welders in the studied community. Gross neglect of safety precautions may be contributory to this danger. It is therefore recommended that roadside welders should comply with safety precautions and go for regular medical check- up.

Keywords: roadside welders, biochemical parameters, hormonal profile status, ajegunle, nigeria.

I. Introduction

Welding is an old profession which applies the joining of metals or thermoplastics through construction process, thus resulting into blending. As reported by an ancient Greek historian Herodotus, this profession which was invented by Glaucus of Chios has been in practice for so many millennia dated back with the use of bronze and iron as earliest examples in Europe and Middle East (1), followed by the emergence of "short pulse" electrical arc welding by Sir Humphry Davy in 1800, (2, 3, 4), which was later followed by the emergence of continuous electric arc welding in 1802 by a Russian Scientist, Vasily Petrov (4,5).

Apart from being indecent, welding is a very dangerous occupation that requires strict compliance to the necessary precautions so as to prevent its harmful effects. Exposure to gases such as ozone, carbon dioxide and fumes that contain heavy metals may pose danger to the health status of welders that are inexperienced. For example exposure to manganese fumes generated from welding even at levels as low as < 0.2mg/m^3 may cause health problems such as neurological and/or damage to liver, kidneys, central nervous system and the lungs in particular where nano particles are easily trapped in the alveolar macrophages thus inducing pulmonary fibrosis (6,7).

This study which is aimed at assessing the alterations of selected plasma biochemical parameters and hormonal profile status in some roadside welders in Ajegunle, Nigeria who had welded with ≥20 welding rods/day for a duration of ≤10 years and ≥11 respectively was embarked upon taking into consideration the danger posed by exposure to gases and fumes generated from welding rods as well as the gross non compliance to safety precautions by most of these roadside welders.

II. Materials and Methods

Ninety apparently healthy male subjects categorized into three (3) groups as shown were randomly recruited for this research work: Control group: This group consisted of thirty (30) apparently healthy male volunteers within the age range of 35-45 years who by virtue of their profession are white collar workers. Experimental group one: This group consisted of thirty (30) apparently healthy male volunteers who are roadside welders and by virtue of their profession had welded with ≥20 welding rods/day for a duration of ≤10 years and are within the age range of 35-45 years. Experimental group two: This group consisted of thirty (30) apparently healthy male volunteers who are

Author α: Department of Medical Laboratory Science, Faculty of Basic Medical Sciences, College of Health Sciences, Niger Delta University, PMB 071, Wilberforce Island, Bayelsa State, Nigeria.
e-mail: etegoro2@gmail.com
Author σ: Department of Chemical Pathology, Rivers State University, Port-Harcourt, Rivers State, Nigeria.
Author ρ: Department of Pharmacology, Faculty of Basic Medical Sciences, College of Health Sciences, Niger Delta University, PMB 071, Wilberforce Island, Bayelsa State, Nigeria.

roadside welders and by virtue of their profession had welded with ≥20 welding rods/day for a duration of ≥11 years and are within the age range of 35-45 years. As at the time of carrying out this research work all the recruited volunteers in both the control and experimental groups were free from any ailment(s), Besides, they were not addicted to cigarette smoking, snuffing, drugs and coffee abuse thus ruling out the likely effects of these lifestyle variables on the obtained results. All the collected data from the recruited volunteers were through well structured questionnaire.

The procedure used for this research was strictly in compliance with the principles of Helsinki declaration of 1975 as revised in 2008. Approval was obtained from all the recruited volunteers who were informed and made to know the reason for which their blood specimens were being collected. Furthermore, permission was obtained from employers of the recruited volunteers in the experimental groups: Oluwafemi Welding and Construction Industry, Oluwasegun Welding and Construction Industry and Adegoke Welding and Construction Industry all in Ajegunle, Lagos State, Nigeria before their blood specimens were collected.

After this process, five ml blood specimen was withdrawn from each of the recruited volunteers (control and experimental groups) via a standard venipuncture technique and dispensed into lithium heparinized anticoagulated bottles respectively. The specimen in each bottle was mixed carefully so as to ensure homogenicity and prevention of blood clot, and thereafter spun for 10minutes at 1,500 revolution/minute using Gulfex Medical and Scientific macro centrifuge model 800D England.

The obtained plasma was subsequently used for the quantitative measurement of biochemical parameters and hormonal profile status. The absorbance of the following biochemical parameters were quantitatively measured with S23A13192 model spectrophotometer: alanine aminotransferase (ALT) as described in the manual of 11th February, 2009 revised edition of Randox Laboratories Limited, 55, Diamond Road, Crumlin, County, Antrim, BT294QY, United Kingdom in accordance with the colorimetric method of (8,9), aspartate aminotransferase (AST) as described in the manual of 5th January, 2007 revised edition of Randox Laboratories Limited, 55, Diamond Road, Crumlin, County, Antrim, BT294QY, United Kingdom in accordance with the colorimetric method of (10,11), alkaline phosphatase (ALP) as described in the manual of September, 2001, A506 edition of Teco Diagnostics, 1268N, Lakeview Avenue, Anaheim, CA92807, 1-800-222-9880 in accordance with the colorimetric endpoint method of (12), C-reactive protein (Crp) as described in the manual of Spin-react Diagnostic, Spain in accordance with the latex turbidimetry method of (13,14), urea, as described in the manual of 7th January, 2011 revised edition of Randox Laboratories Limited, 55, Diamond Road, Crumlin, County, Antrim, BT294QY, United Kingdom in accordance with the urease Berthelot method of (15-18) and creatinine, as previously described by Jaffe in 1886 and revised on the 15th September, 2010 by Randox Laboratories Limited, 55, Diamond Road, Crumlin, County, Antrim, BT294QY, United Kingdom in accordance with the Jaffe reaction method of (19, 20). The absorbance of the following hormonal profile status were quantitatively measured with plate reader MR DYNEX Technologies Inc 14340 Sullyfield Circle, Chantilly, VA , 20151-1621 USA with serial number IMRA-2676 using the specified methods: luteinizing hormone, as described in the manual of May, 2008 revised edition of Diagnostic Automation Inc Microwell enzyme immunoassay test kit catalog No 4225 in accordance with the colorimetric method of (21), follicle stimulating hormone, as described in the manual of 4th February, 2003, revised edition of enzyme immunoassay test kit catalog No BC-1029, Biocheck Inc, 323, Vintage Park, Dr Foster City, USA, CA 94404 in accordance with the colorimetric method of (22), prolactin, as described in the manual of 27th June, 2003 revised edition of enzyme immunoassay test kit catalog No: PROL-96 in accordance with the colorimetric method of (23), and testosterone, as described in the manual of PI EL-198 revision 6: 02/2009 of Immunospec Corporation, 7018 Owensmouth Ave. Suite 103, Canoga Park, CA 91303. REF. EI-198 in accordance with the colorimetric method of (24).

Statistical analysis

The data obtained from the recruited volunteers (control and experimental groups) via well structured questionnaire were analyzed using descriptive statistic of frequency and percentage while the results obtained from the quantitative measurement of their plasma biochemical parameters and hormonal profile status were expressed as mean and standard deviation with the differences between the control and experimental groups assessed using the student's" t" tests, which were considered statistically significant at $p \leq 0.05$

III. Results and Discussion

Welding fumes are harmful metal fumes that are generated in the course of welding. The harmful effects of these fumes coupled with gross non compliance with safety measures by majority of roadside welders in the studied community have become a burden that demands swift attention. In furtherance to increase knowledge on these harmful effects, data on compliance with safety measures while working were obtained from the recruited volunteers in experimental groups one and two via well structured questionnaire as shown in Table 1.

The data revealed that 80% of these volunteers are non compliant with the use of leather hand gloves and particles masks safety measures respectively while 90% and 100% are non compliant with the use of long sleeve jackets and helmets with dark ultra violet filtering face plate safety measures respectively. However, the results went further to show that 100% of the volunteers are compliant with the use of goggles as a safety measure. These findings as established in this study may easily permit the dangers posed by fumes and gases generated from these welding rods on the roadside welders in the studied community taking into consideration the high percentage rate of non compliance with these welding safety measures which may however, be attributed to the non provision of these safety gadgets by the management of the roadside welding and construction industries or gross neglect of usage by the roadside welders.

In this study the mean values of biochemical parameters in plasma of the control group were also compared with that of the experimental group one as shown in Table 2. The results revealed no significant alterations ($p \geq 0.05$) in the mean values of all the measured plasma biochemical parameters as against that of the control group. This finding which is established in this study is suggestive that welding with ≥20welding rods/day for a duration of ≤10 years may not pose danger to the health status of roadside welders in the studied community.

In this study the mean values of hormonal profile status in plasma of the control group were also compared with that of the experimental group one as shown in Table 3. The results revealed no significant alterations ($p \geq 0.05$) in the mean values of all the measured plasma hormonal profile status as against that of the control group. This finding which is established in this study may be suggestive that welding with ≥20 welding rods/day for a duration of ≤10 years does not alter hormonal profile status thus may not pose danger to the health status of roadside welders in the studied community.

In this study the mean values of biochemical parameters in plasma of the control group were also compared with that of the experimental group two as shown in Table 4. The results revealed significant elevations ($p \leq 0.05$) in the mean values of plasma alanine aminotransferase (ALT), plasma aspartate aminotransferase (AST) and plasma alkaline phosphatase (ALP) as against that of the control group. This finding as established in this study is presumed to be linked with liver injury caused by the inhalation of heavy metal such as manganese which is generated from the fumes of ≥20 welding rods/day used for welding for a duration of ≥11 years by these roadside welders thus resulting in the release of these enzymes from the liver into the plasma.

The mean value of C-reactive protein in plasma of the recruited volunteers in experimental group two as shown in Table 4 revealed significant elevation ($p \leq 0.05$) as against that of the control group. This finding which is established in the study and in conformity with the previous work of (25) is suggestive of inflammatory disorder which may be due to the exposure and inhalation of gases and fumes generated from the use of ≥20 welding rods/day for a duration of ≥11 years by the roadside welders with the resultant release of interleukin 6 as well as cytokines that are capable of triggering the synthesis of C-reactive protein via the liver.

The mean values of urea and creatinine in plasma of the recruited volunteers in experimental group two as shown in Table 4 revealed significant elevations ($p \leq 0.05$) as against that of the control group. This finding which is established in the present study may be suggestive of renal impairment caused by the inhalation of heavy metals such as manganese, cadmium etc which are produced from the fumes of ≥20 welding rods/day used for welding for a duration of ≥11 years by the roadside welders.

In this study the mean values of hormonal profile status in plasma of the control group were also compared with that of the experimental group two as shown in Table 5. The mean value of testosterone in plasma of the recruited volunteers revealed significant decrease ($p \leq 0.05$) as against that of the control group. This finding as established in the present study may be linked to the exposure and inhalation of heavy metals and gases generated from fumes of the ≥20 welding rods/day used for welding for a duration of ≥11 years by these roadside welders which could be inhibitory to spermatogenesis thus putting them at infertility risk. However, none of the recruited volunteers in this experimental group had significant mean values alterations ($p \geq 0.05$) of plasma luteinizing hormone, plasma follicle stimulating hormone and plasma prolactin as against that of the control group. The reasons for this are not clearly understood, thus further research is suggested.

Table 6 shows the percentage of volunteers in both experimental groups one and two with abnormal values as compared to the reference ranges for the measured parameters. As revealed in the Table, 7% of the volunteers in experimental group one had significant elevations of plasma alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase, urea and creatinine respectively as against 50% of the volunteers in experimental group two respectively. This finding which is established in the present study is further suggestive that 50% of roadside welders in the studied community who had used ≥20 welding rods/day for welding over a duration of ≥11 years are prone to risks of hepato-renal disorder due to the longtime bioaccumulation of cadmium, manganese etc

which are toxic heavy metals generated from the fumes of welding rods as against 7% of those who had used ≥20 welding rods/day for welding over a duration of ≤10 year.

Also revealed in this study, 13% of volunteers in experimental group one had significant elevation of plasma C-reactive protein as against 67% in the experimental group two. This finding as established in the present study may as well be suggestive of inflammatory disorder which may be due to the bioaccumulation of toxic heavy metals over the duration of ≥11 years use of ≥20 welding rods/day which has thus yielded the release of interleukin 6 and cytokines that are capable of triggering the synthesis of C-reactive protein via the liver.

In this study, 13% decrease in the plasma value of testosterone in experimental group one volunteers was revealed as against 60% decrease in the plasma value of testosterone in experimental group two volunteers. It is further shown from this study that exposure to fumes and gases generated from the use of ≥20 welding rods/day for a duration of ≥11 years may put roadside welders in the studied community at the risk of oligospermia.

IV. Conclusion

In conclusion, this present study has established that chronic inhalation of gases and fumes generated during the course of using ≥20 welding rods/day for a duration of ≤10 years coupled with gross non compliance with safety measures appear not to have any significant toxic effects on the roadside welders in the studied community. However, chronic inhalation of gases and fumes generated during the course of using ≥20 welding rods/d ay for a duration of ≥11 years coupled with gross non compliance with safety measures may put 50% of roadside welders in the studied community at risks of liver and renal disorders respectively while 67% and 60% may be put at the risk of inflammatory and fertility disorders respectively.

V. Recommendations

(i) Management of roadside welding and construction industries should include health education in their apprenticeship programme so as to enlighten trainee welders and qualified roadside welders on the importance of adhering strictly to safety measures while working.

(ii) Safety gadgets should not only be provided by management of roadside welding and construction industries, but usage by welders and trainee welders while at work should be enforced.

(iii) Management of roadside welding and construction industries should register with reputable medical facilities so as to enable her members of staff go for routine medical check-up.

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Table 1: Compliance with safety measures by volunteers in experimental groups one and two while working

Variables	Response of volunteers	Frequency (n=60)	Percentage
Use of leather hand gloves	YES NO	I2 48	20 80
Use of particles mask	YES NO	12 48	20 80
Use of long sleeve jackets	YES NO	6 54	10 90
Use of goggles	YES NO	60 0	100 0
Use of helmets with dark ultra violet filtering face plate	YES NO	0 60	0 100

Key:
n= number of volunteers in both experimental groups one and two

Table 2: The plasma values of biochemical parameters measured in the control group compared with the experimental group one

Parameters	Control Group (n=30)	Experimental Group (n=30)	Remark
ALT (U/l)	9.50 ± 1.04	9.52 ± 1.05	NS
AST (U/l)	8.92 ± 0.95	8.95 ± 0.97	NS
ALP (UI/L)	12.10 ± 1.78	12.13 ± 1.79	NS
CRP (mg/L)	4.00 ± 0.18	4.02 ± 0.20	NS
Urea (mmol/L)	9.50 ± 1.04	9.53 ± 1.05	NS
Creatinine(μmol/l)	8.92 ± 0.95	8.95 ± 0.97	NS

Keys:
Values are in mean ± SD
NS= not significant
ALT = alanine aminotranferase
AST = aspartate aminotransferase
ALP = alkaline phosphatase
CRP = C-reactive protein

Table 3: The plasma values of hormonal profile status measured in the control group compared with the experimental group one

Parameters	Control Group(n=30)	Exp Group(n=30)	Remark
LH(mIU/ml)	7.10 ± 0.77	7.11± 0.78	NS
FSH(mIU/ml)	3.20 ± 1.02	3.22 ± 1.05	NS
PROL(ng/ml)	3.05 ± 0.98	3.08 ± 1.02	NS
TESTO(ng/ml)	5.32 ± 1.35	5.30 ± 1.32	NS

Keys:
Values are in mean ± SD
NS= not significant
Exp Group=Experimental Group
n=number of volunteers
LH = luteinizing hormone
FSH = follicle stimulating hormone
PROL = prolactin
TESTO = testosterone

Table 4: The plasma values of biochemical parameters measured in the control group compared with the experimental group two

Parameters	Control Group (n=30)	Experimental Group (n=30)	Remark
ALT (U/l)	9.50 ± 1.04	18.00 ± 2.02	S
AST (U/l)	8.92 ± 0.95	16.00 ± 1.84	S
ALP (UI/L)	12.10 ± 1.78	47.10 ± 3.79	S
CRP (mg/L)	4.00 ± 0.18	13.52 ± 2.02	S
Urea (mmol/L)	9.50 ± 1.04	18.74 ± 2.05	S
Creatinine(μmol/l)	8.92 ± 0.95	16.95 ± 1.97	S

Keys:
Values are in mean ± SD
S= significant
n= number of volunteers
ALT = alanine aminotranferase
AST = aspartate aminotransferase
ALP = alkaline phosphatase
CRP = C-reactive protein

Table 5: The plasma values of hormonal profile status measured in the control group compared with the experimental group two

Parameters	Control Group(n=30)	Exp Group(n=30)	Remark
LH (mIU/ml)	7.10 ± 0.77	7.12± 0.80	NS
FSH(mIU/ml)	3.20 ± 1.02	3.22 ± 1.05	NS
PROL(ng/ml)	3.05 ± 0.98	3.07 ± 1.00	NS
TESTO(ng/ml)	5.32 ± 1.35	2.10 ± 0.78	S

Keys:
Values are in mean ± SD
NS= not significant
S=significant
Exp Group=experimental Group
n=number of volunteers
LH = luteinizing hormone
FSH = follicle stimulating hormone
PROL = prolactin
TESTO = testosterone

Table 6: Percentage of volunteers in experimental groups one and two with abnormal values compared to the reference ranges for the parameters measured

Parameters	Exp Group 1 (n=30)	Percentage	Exp Group 2 (n=30)	Percentage
ALT (U/l)	*2	7	*15	50
AST (U/l)	*2	7	*15	50
ALP(IU/L)	*2	7	*15	50
CRP (mg/L)	*4	13	*20	67
Urea(mmol/L)	*2	7	*15	50
Creatinine(μmol/l)	*2	7	*15	50
LH(mlU/ml)	0	0	0	0
FSH(mlU/ml)	0	0	0	0
Prolactin(ng/ml)	0	0	0	0
Testosterone(ng/ml)	**4	13	**18	60

Keys:
n = number of volunteers
Exp Group = experimental group
**= number of volunteers with values greater than the maximum reference ranges for the parameters measured*
***= number of volunteers with value lesser than the minimum reference range for the parameter measured*
ALT = alanine aminotranferase
AST = aspartate aminotransferase
ALP = alkaline phosphatase
CRP = C-reactive protein
LH = luteinizing hormone
FSH = follicle stimulating hormone
PROL= prolactin
TESTO = testosterone

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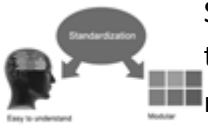

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Disbursement of 40% Royalty earned through Global Journals : Researcher = 50%, Peer Reviewer = 37.50%, Institution = 12.50% E.g. Out of 40%, the 20% benefit should be passed on to researcher, 15 % benefit towards remuneration should be given to a reviewer and remaining 5% is to be retained by the institution.

We shall provide print version of 12 issues of any three journals [as per your requirement] out of our 38 journals worth $ 2376 USD.

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The individual Fellow and Associate designations accredited by Open Association of Research Society (US) credentials signify guarantees following achievements:

- The professional accredited with Fellow honor, is entitled to various benefits viz. name, fame, honor, regular flow of income, secured bright future, social status etc.

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- The Fellow can organize symposium/seminar/conference on behalf of Global Journals Incorporation (USA) and he/she can also attend the same organized by other institutes on behalf of Global Journals.
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- • This individual has learned the basic methods of applying those concepts and techniques to common challenging situations. This individual has further demonstrated an in–depth understanding of the application of suitable techniques to a particular area of research practice.

Note :

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- In future, if the board feels the necessity to change any board member, the same can be done with the consent of the chairperson along with anyone board member without our approval.
- In case, the chairperson needs to be replaced then consent of 2/3rd board members are required and they are also required to jointly pass the resolution copy of which should be sent to us. In such case, it will be compulsory to obtain our approval before replacement.
- In case of "Difference of Opinion [if any]" among the Board members, our decision will be final and binding to everyone.

"

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

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Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
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7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

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- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
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The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

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Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

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Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

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Tips for writing a good quality Medical Research Paper

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

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- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
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- Recommendations for detailed papers will offer supplementary suggestions.

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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX

A

Anonymization · 25

C

Chondrosarcoma · 10
Cystosarcoma · 8

F

Fibroadenoma · 9
Fibrohistiocytic · 8, 9

H

Hematoxylin · 9
Histopathological · 8

L

Leiomyosarcoma · 9, 10

M

Mammography · 9
Mesenchymal · 10

N

Neoplasms · 8, 10

O

Oligospermia · 34

P

Pleomorphism · 9
Prosthodontics · 18, 24, 29

S

Sarcomas · 8, 10, 11
Somatopsychic · 16
Squeezenet · 1

T

Terephthalate · 1

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