

# GLOBAL JOURNAL

OF MEDICAL RESEARCH: K

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A close-up photograph of a hand wearing a bright blue nitrile glove. The hand is holding several small, clear glass vials and syringes. Each vial has a white label with black text. The labels include product names like 'TUDORHEROL, DALPHIA', 'LUTEIN', and '2C04', along with lot numbers, grades, quantities, and expiration dates. The background is a blurred white lab coat.

Impact on Quality of Life

Unraveling the Chemotherapeutic

Highlights

Evolution of Quality Management

Long COVID Syndrome and its Impacts

Discovering Thoughts, Inventing Future



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## Long COVID Syndrome and its Impacts

By Esther Soneghet, Beatriz Vilela Palazzo, Raissa de Sousa Guerra, Renata Gomes Ramalho dos Santos, Julia Nicolau Barbieri, Eduarda Monteiro Machado, Gabriela Tomazini Rodrigues Pereira Amorim, Gabriela Salomão Espírito Santo Mendonça, Guilherme Silva Miranda, Pollyane Vieira de Almeida, Bruno Renan de Carvalho Lopes, Marina Lima Rodrigues, Mariana Isabella de Medina Satriano, João de Oliveira Neto & Eduardo Fernandes Rodrigues

**Abstract- Introduction:** When addressing the COVID-19 pandemic, one must also address its remnants, as well as the Long COVID-19 Syndrome, or just Long COVID-19, which addresses a group of symptoms common to COVID, but which persist even after the infectious picture has ended. The main symptoms are fatigue, dyspnea, joint and muscle pain, headaches, and brain fog. Other symptoms, such as arrhythmias, anxiety, and sleep disorders, have been described, but the cause of these sequelae and the reason for them are not known for certain.

**Methodology:** This is a literature review based on the SciELO and PubMed data platforms. The search period was July 2023, meeting the inclusion criteria of articles from 2000 to 2023, in Portuguese and English, online, and in full text. The following health descriptors (DeCS) were used as strategies to better evaluate the texts: "Long COVID syndrome", "COVID" and "Post COVID syndrome".

**GJMR-K Classification:** NLM: WC 515



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# Long COVID Syndrome and its Impacts

Esther Soneghet <sup>α</sup>, Beatriz Vilela Palazzo <sup>σ</sup>, Raissa de Sousa Guerra <sup>ρ</sup>, Renata Gomes Ramalho dos Santos <sup>ω</sup>,  
Julia Nicolau Barbieri <sup>¥</sup>, Eduarda Monteiro Machado <sup>§</sup>, Gabriela Tomazini Rodrigues Pereira Amorim <sup>χ</sup>,  
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**Abstract- Introduction:** When addressing the COVID-19 pandemic, one must also address its remnants, as well as the Long COVID-19 Syndrome, or just Long COVID-19, which addresses a group of symptoms common to COVID, but which persist even after the infectious picture has ended. The main symptoms are fatigue, dyspnea, joint and muscle pain, headaches, and brain fog. Other symptoms, such as arrhythmias, anxiety, and sleep disorders, have been described, but the cause of these sequelae and the reason for them are not known for certain.

**Methodology:** This is a literature review based on the SciELO and PubMed data platforms. The search period was July 2023, meeting the inclusion criteria of articles from 2000 to 2023, in Portuguese and English, online, and in full text. The following health descriptors (DeCS) were used as strategies to better evaluate the texts: "Long COVID syndrome", "COVID" and "Post COVID syndrome".

**Results:** COVID-19 is a disease caused by a novel coronavirus that can trigger severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case of the disease was reported in China in December 2019 but spread worldwide in 2020. The number of cases exceeds half a billion people, which means that a large number of people have persistent health consequences after recovering from COVID-19 and can persist for a long time with symptoms, and these conditions have been conglomerated into the Long COVID Syndrome (LCS). [1] After much analysis of the cases of the pandemic, it was possible to conclude that there are conditions that can infer a greater possibility of the development of the long COVID-19 syndrome, which would be clinical relapse of the disease in already vaccinated non-immunodeficient patients, the presence of a latent autoimmune response during COVID-19 infection, the explicit ability of the virus to overcome innate and adaptive immunity, the presence of the virus in fluids after 2 months of infection, and long-term persistence of the virus in the body of immunodeficient patients.

**Final Comments:** In view of the above, it is possible to conclude that the remnants left by the COVID-19 pandemic have repercussions that have not yet been studied and discussed. There are several factors that are not discussed together, addressing all the important factors for the case, especially patients with long-term COVID syndrome.

## I. INTRODUCTION

When addressing the COVID-19 pandemic, one must also address its remnants, as well as the Long COVID-19 Syndrome, or just Long COVID-19, which addresses a group of symptoms common to COVID but which persist even after the infectious picture has ended. The main symptoms are

fatigue, dyspnea, joint and muscle pain, headaches, and brain fog. Other symptoms, such as arrhythmias, anxiety, and sleep disorders, have been described, but the cause of these sequelae and the reason for them are not known for certain.

According to Schneider - 2021, there are some points, such as the persistent or abnormal immune response, due to some factor of the virus, not yet identified or reported, that causes this chronic response of the body.

In addition, the impacts on patients with chronic diseases or autoimmune diseases must be understood since, as they are in a continuous and exaggerated response, COVID-19 ends up creating various impacts and new symptoms.

## II. METHODOLOGY

This is a literature review whose sources were taken from the SciELO and PubMed data platforms. The search period was July 2023, meeting the inclusion criteria of articles from 2000 to 2023 in Portuguese and English, online, and in full text. The following health descriptors (DeCS) were used as strategies to better evaluate the texts: "Long COVID Syndrome", "COVID" and "Post COVID Syndrome".

## III. RESULTS AND DISCUSSION

COVID-19 is a disease caused by a new coronavirus that can trigger severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case of the disease was reported in China in December 2019, but it spread worldwide in 2020. The number of cases exceeds half a billion people, which means that a large number of people have persistent health consequences after recovering from COVID-19 and can persist for a long time with symptoms, and these conditions have been conglomerated into the Long COVID Syndrome (LCS). [1] This means that a large number of people have persistent health consequences after recovering from COVID-19 and can persist for a long time with symptoms, and these conditions have been conglomerated into the Long COVID Syndrome (LCS).

To understand LCS, it is necessary to elucidate the pathogenicity of the causative agent of COVID-19, SARS-Cov-2, and its characteristics in terms of the four stages of viral infection. To this end, these four stages

are: invasion; primary blocking of antiviral innate immunity; involvement of the virus's protective mechanisms and the factors of adaptive immunity; and acute and long-term complications of COVID-19. The first stage (invasion) takes place through the recognition of the spike (S) protein of the SARS-CoV-2 target cell receptors, i.e., the main receptor (angiotensin-converting enzyme 2, ACE2), its co-receptors, and potential alternative receptors. The number of different receptors allows the virus to infect cells from many different tissues. In the second stage, most of the polyfunctional proteins that SARS-Cov-2 produces are involved in the primary blocking of innate immunity against the virus. A high degree of redundancy and systemic action that characterizes these pathogenic factors allows SARS-CoV-2 to overcome antiviral mechanisms in the early stages of invasion. The third stage is mainly based on the protection of the virus against adaptive immunity factors, overcoming the barrier function at the focus of inflammation, and the spread of SARS-CoV-2 throughout the body. The fourth stage is associated with the deployment of acute and long-term complications of COVID-19, which is related to the ability of SARS-CoV-2 to induce autoimmune and autoinflammatory pathways of tissue invasion and the development of mechanisms that cause disorder in the index immune system, causing a condition of systemic inflammation [1].

The main route of transmission for SARS is via respiratory droplets, but contact with an infected surface can also be a route. The incubation period for COVID-19 is between 3 and 14 days, depending on the individual's immune status. The typical symptoms of COVID-19 are a sore throat, fatigue, fever, loss of taste associated or not with loss of smell, shortness of breath, gastrointestinal symptoms, a dry cough, and general malaise [1, 4].

The development of COVID will depend on a series of factors that can be environmental, comorbidities, and the patient's immune system, and this will determine whether COVID can stop at stages 1 or 2 and move towards total cure or worsen to more advanced stages and effectively affect several systems and develop complications and the persistence of symptoms that would be the Long COVID Syndrome. The "long COVID" phenomenon affects around 10% of patients with SARS-CoV 2 and is mainly associated with long-term disorders of the central nervous system, persistent alterations in the immune system (including long-term lymphopenia), and complications in other organs. It has not yet been fully elucidated, but there are several indications that it is based on processes of self-promotion of inflammation, in addition to the long-term viral presence and vascular comorbidities due to the relationship with angiotensin II. [2,4]

After much analysis of the cases of the pandemic, it was possible to conclude that there are

conditions that can infer a greater possibility of the development of the long COVID-19 syndrome, which would be clinical relapse of the disease in already vaccinated non-immunodeficient patients, the presence of a latent autoimmune response during COVID-19 infection, the explicit ability of the virus to innate and adaptive presence of the virus in fluids after 2 months of infection, and infectionistence of the body of immunodeficient patients. [3,4,5].

Long-term COVID is present at all ages and severities that have already been documented, with the highest incidence between the ages of 36 and 50. There are several conditions related to this syndrome that can last for years or even a lifetime and can make the individual disabled in many ways. There are several causes, and they can even be combined with each other. Some ideas about how it happens are that it's caused by a problem with the immune system, changes in the microbiota in the gut, autoimmunity and molecular mimicry, thrombotic events, endothelial dysfunction, and poor brain stem signaling [5, 7].

The main impacts on the body and symptoms of COVID-19 are chest pain and palpitations due to cardiac impairment and myocardial inflammation, cough and dyspnea due to abnormal gas exchange, abdominal pain due to intestinal dysbiosis and viral persistence, cognitive impairment, fatigue, unregulated sleep, and memory loss due to dysautonomia, neuroinflammation, and reduced cerebral blood flow, as well as kidney, spleen, and liver damage, diabetes, autoimmunity, DVT, stroke, pulmonary embolism, erectile dysfunction, and irregular menstrual cycles. [3,6]

Diagnosis through tests has not yet been established, but the use of magnetic resonance imaging to identify abnormalities in the organs as well as specific markers for the conditions, an electrocardiogram, and ultrasound, among other tests, As for treatments, there aren't any specific ones for Long COVID Syndrome. However, there are treatments for the conditions listed that work well often, such as antihistamines, blood thinners, epheresis, corticosteroids, and immunoglobulins. There are also non-drug treatments, like exercise (though this isn't generally suggested) and a certain diet that stimulates the brain. [ 5,6]

Currently, managing long-term COVID-19 is challenging due to a series of intrinsic and extrinsic factors, such as the lack of knowledge and access to information about this syndrome and the conditions related to it, as well as the neglect of this condition, the lack of research on the subject, and the consequent foundation of a formal treatment for the condition, in addition to prejudice towards affected individuals who suffer daily from judgments and often from uninformed health professionals who treat them as irrelevant cases. [2,5]

#### IV. FINAL CONSIDERATIONS

Considering the above, it is possible to conclude that the remnants left by the COVID-19 pandemic have repercussions that have not yet been studied and discussed. There are several factors that are not discussed together, addressing all the important factors for the case, even more patients with Long COVID Syndrome.

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## Unraveling the Chemotherapeutic Potential of Cow Urine in Context of its Importance to Humanity

By Nikita Pandit, Jitendra Varsakiya, Chetna Deoghare & Yogranjan Singh

*Indus University*

**Abstract-** From ancient times, cow pee has been utilised to treat a variety of human illnesses. It is a crucial and integral component of Panchgavya Chikitsa. Ayurveda classics have emphasised its value and usage in treatments such decoction purgation and enema for the treatment of Kushtha (vitiligo), Kandu (eczema) Udarrog (disorders of GI track), colic, abdominal tumours, cancer treatment, enlargement of the belly, and flatulence etc. Numerous studies have also been conducted that demonstrate the effectiveness of this substance in treating a variety of conditions, including those related to the skin, the stomach, the kidneys, the heart, the liver, stones, diabetes, athletes' foot, cysts, haemorrhoids, and the liver, as well as its immunostimulant, bioenhancer, anticonvulsant, anticancer, wound-healing, antioxidant, and antimicrobial properties. It may be used in agriculture to make bio insecticides and vermin compost. The distillate of cow urine, which is a good bio enhancer, just received U.S. patent protection. To demonstrate its traits and advantages, further study is needed.

**Keywords:** *ayurveda, anti-cancer cow urine, chemotherapeutic potential, panchgavya chikitsa.*

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# Unraveling the Chemotherapeutic Potential of Cow Urine in Context of its Importance to Humanity

Nikita Pandit <sup>α</sup>, Jitendra Varsakiya <sup>σ</sup>, Chetna Deoghare <sup>ρ</sup> & Yogranjan Singh <sup>ω</sup>

**Abstract-** From ancient times, cow pee has been utilised to treat a variety of human illnesses. It is a crucial and integral component of *Panchgavya Chikitsa*. Ayurveda classics have emphasised its value and usage in treatments such decoction purgation and enema for the treatment of *Kushtha* (vitiligo), *Kandu* (eczema) *Udarog* (disorders of GI track), colic, abdominal tumours, cancer treatment, enlargement of the belly, and flatulence etc. Numerous studies have also been conducted that demonstrate the effectiveness of this substance in treating a variety of conditions, including those related to the skin, the stomach, the kidneys, the heart, the liver, stones, diabetes, athletes' foot, cysts, haemorrhoids, and the liver, as well as its immunostimulant, bioenhancer, anticonvulsant, anticancer, wound-healing, antioxidant, and antimicrobial properties. It may be used in agriculture to make bio insecticides and vermin compost. The distillate of cow urine, which is a good bio enhancer, just received U.S. patent protection. To demonstrate its traits and advantages, further study is needed. To increase people understands of the value of cow poop and its many uses for enhancing lifestyle and health. This article will enlighten the attributes and applications of uses of cow urine from contemporary and Ayurveda literature.

**Keywords:** ayurveda, anti-cancer cow urine, chemotherapeutic potential, panchgavya chikitsa.

## 1. INTRODUCTION

The cow, also referred to as the mother of all, is the most significant animal in the entire *Veda*. The essential products obtain from cows include milk, ghee, curd, urine, and fertilizer. *Panchagavya*<sup>1</sup>, which consists of these five components, is administered to the mother after childbirth. Cow is a mobile pharmacy. It is the drug industry's luck. There are many ailments which curable or incurable, manage with the cow urine now a days in India and abroad also. These things are well portrayed in sacred scriptures of Ancient science<sup>2</sup> i.e *Atharva Veda*, *Charak Samhita*, *Sushrut Samhita* Vaggbhatt, Raj Nighuntu, *Bhavprakash*. Indian culture holds cows in the highest regard. Thirty three divine entities in total accompanied the cow. The cow provides us much while taking remarkably little from us. Indian people have thusly proved that the cow has an undeniable place in Indian life and economics with the help of intense passion and devotion.<sup>3</sup> With the help of the product from the cow, peoples can acquire wealth, religion, reproduction, and salvation. Due to an ancient

Indian custom, Indian ranchers were once referred to as lords or the providers of grains. Cow controls all aspect of our lives. There is indication anyone If see lord Shiva and the dark cow together, It may be counteract the unfavourable effects of the planets in our natal horoscope. A dark cow is tied in the Shiva sanctuary.<sup>4</sup> When notice the cow's lower legs, people take precautions against sudden passing. *Parikrama*, (going around the cow), is the same as visiting all of the holy places. The cow is the principal animal that emits a substantial amount of oxygen. *Ghee* derived from cow milk is used in havans and conciliatory flames because it can produce one tonne of oxygen, when one scoop of pure ghee is sprinkled on the burning cow excrement cakes (fuel). There may not be a better way to get rid of contaminants.<sup>1,3</sup> Urine, which is one of the most important cow excretory products and one of the most effective medicines for various ailments. Cow urine contains all the important components needed to maintain a healthy balance of *Vata*, *Pitta* and *Kapha*.<sup>5</sup> Because of its importance in medicine, cow urine is also known as the water of life or *Amrita* Because of its preventive and curative properties.

### a) Gir

India's Gir milk cattle are a well-known breed endemic to the Kathiawar gir hills and woods, which are located in the Gujarati districts of Jamnagar, Bhavnagar, Rajkot, and Amreli. The gir animals are renowned for their ability to withstand stressful situations and their resilience to a number of tropical illnesses. Animals from successful breeding grounds have been transferred into Brazil, Mexico, the United States, and Venezuela. The state of Gujarat produces a substantial amount of milk thanks to its livestock. Gir cattle are mostly raised by the tribes of *Bharwade*, *Maldharis*, *Ahirs*, and *Charans*. In quest of grass, they wander from one location to another with their cattle. In Gujarat state, the gir animals are also housed at several Goshalas (Goshala is also ought but we have to maintain a single spelling).<sup>6</sup>

Gir animals may have coats that are entirely crimson, almost black and white, or any shade of red. The majority of animals have black skin, while others have brown skin. Convex and wide like a bone shield, the forehead is conspicuous. The animal seems messy as a result of the overhanging eyes, which make them appear to be half closed. Ears have a notch at the tip, are long and pendulous, and are folded like a leaf. Horns have a curved shape and bend back at the end.<sup>7</sup>

**Corresponding Author α:** Department of Clinical Research & Healthcare Management, Indus University, via Shilaj, Rancharda, Ahmedabad-382115, Gujarat, India. e-mail: npandit.its@gmail.com

At the base, they face backwards and downwards and rise slightly upwards and forwards. The body is well proportioned, the tail is long and whip-like, the hooves are black and medium in size, the hair is short and shiny, the skin is soft and malleable, the hipbones are prominent, and the teat tips are spherical in cows. For successful conception, heifers need fewer artificial inseminations than cows. 52.49 months was the age of first calving recorded in Gircows.

#### b) Haryana

A well-known dual-purpose breed from northern India, Haryana, was raised largely for its bullock products. Large portions of the Haryana districts of Gurgon, Jind, Hisar, and Rohtak are included in its breeding tract.<sup>8</sup>

These animals are also raised in the Rajasthani districts of Jodhpur, Alwar, Loharu, and Bharatpur. In western Uttar Pradesh's Meerut, Bulandshahar, and Aligarh, these breeds are also widely distributed. On the Indo-Gangetic plains, this breed is one of the most prevalent. According to some sources, the Rohtak district's Jhajjar, Beri, and Jahajgarh pockets were home to a large population of purebred Haryana. Animals in Haryana are either white or light grey in colour.<sup>9</sup> Between the fore and rear parts of bulls, the colour is rather black or dark grey. Having dark skin. Haryana cattle have well-balanced, compact bodies. Their long, thin faces, flat foreheads, and well-defined bony prominences at the poll's centre are distinguishing features. They possess little horns. Usually, the muzzle is black. Large, noticeable eyes are present. Animals often have dark eyelashes. They seem elegant due to the high head carriage. Cows have a medium-sized hump, while males have a huge hump. The feet are tiny, firm, and well-shaped, and the legs are somewhat lengthy and thin. Small beneath, roomy, and extending far forward, the sheath has a strong milk vein. Teats are medium in size and well-developed in proportion. Tail is narrow, tapered, and somewhat short. A black switch is located right below the hocks. A coat colour other than white or grey and a white switch of tail are regarded from the standpoint of breed registration as a clear departure from the normal characteristics. Male and female adults typically weigh 499 and 325 kg, respectively. The average age at first calving is 1,567 days, however the range is 1,067 to 1,809 days. The range of milk output is 692 to 1754 kg, with an average of 997 kg. Lactation lasts from 238 to 338 days, or roughly 272 days. Average service time is 232 days, dry period is 255 days, and clawing interval is 483 days. These values range from 126 to 305 days, respectively (range 415 to 561 days)<sup>7,8</sup>

Recently, cow urine was patented (U.S. Patent Nos. 6896907 and 6,410,059) for its therapeutic benefits, notably for the prevention and treatment of malignancies and the control of bacterial infection<sup>9</sup> If left

to soak for days in gomutra, several toxins may be refined and cleansed. For instance, after soaking in cow urine for 12 hours,. There are many methods of intoxication of medicinal plants with cow urine are available in Ancient Ayurveda like Dhatura (Dhaturametel) seeds (with the shell peeled off) are regarded as being cleaned. Aconite (Aconitum napellus), Guggul (Commiphora amukul), loha (Iron), and bBalataka (Semecarpus anacardium) may all be purified and detoxified using cow pee. Silver can also be purified and detoxified using cow urine. Rifampicin, the first-line antibiotic used to treat TB, has bio-enhancer activity in cow urine that may increase its effectiveness against Gram-positive bacteria by up to 11 times and against Escherichia coli by up to 7 times. Antibiotics including Rifampicin, Tetracycline, and Ampicillin are better able to pass both natural and artificial membranes thanks to cow urine distillate. The increase in transportation ranges from around two to seven times<sup>10</sup>

## II. LITERATURE REVIEW

In recent decades, aquaculture has had the greatest rate of development among all food production technologies, and further expansion in aquaculture output is anticipated. Aquaculture is a novel method of utilising eco-systems that also generates economic opportunities, and there is strong evidence that it has negative environmental externalities. Improved governance may be the best strategy to handle negative externalities, but it is often challenging since the majority of aquaculture output occurs in underdeveloped nations with weak management capabilities.<sup>11</sup>

Hu w et al (2007)<sup>12</sup> The adoption of trade methods to lessen environmental consequences is highly motivated by the fact that a significant portion of aquaculture produce is traded. Aquaculture's diversity of species, production techniques, and governance structures make it unlikely that broad trade policies will succeed in achieving environmental goals. However, there is a genuine danger that trade policies would have little or no environmental effect but instead will diminish economic opportunities, create new equity issues, and have an adverse impact on public health

Shaw SL et al (2007)<sup>13</sup> Salah Probiotics' impact on *Tilapia nilotica*'s survival, growth, and resistance to infection was examined. (*Oreochromis niloticus*). The results demonstrated the possibility of employing probiotics to improve *Oreochromis niloticus*' immunological and health condition as well as its illness resistance, hence enhancing growth performance.

Ahuja A et al. (2012)<sup>14</sup> *Streptococcus faecium*, *Lactobacillus acidophilus*, and *Saccharomyces cerevisiae* were investigated by as potential growth boosters for Nile tilapia (*Oreochromis niloticus*). On Nile tilapia development performance, they examined the impacts of three different probiotics, two bacteria, and

one yeast. Three diets were created with the ideal amount of protein (40%) for tilapia fry: one with a 0.1% bacterial supplement of *Streptococcus faecium* and *Lactobacillus acidophilus*, another with a 0.1% yeast supplement of *Saccharomyces cerevisiae*, and a third diet that was left unsupplemented.

Levamisole enhanced growth in common carp larvae without having any negative effects on survival or development, claim KekudaPT (2010)<sup>15</sup>.

Kekuda PT (2010)<sup>15</sup> investigated the use of immunostimulants in fish larval aquaculture. The usage of immunostimulants as dietary supplements, according to their claims, may strengthen an animal's natural defences and increase its resistance to diseases at times of high stress, such as during grading, reproduction, transfer, and vaccination.

Tyagi PK (2013)<sup>16</sup> With the use of herbal feed components, enhanced the immunity of Indian major carp *C. catla*. The test group's haemagglutination antibody titres, total serum proteins, serum globulins, and spleen and kidney RNA/DNA ratio were marginally higher than those of the control group. These findings support the notion that *A. aspera* improves *Catla*'s immunity.

Sarsar et al. (2013)<sup>17</sup> in the serum of the juveniles of three major carp species in India, assessed non-specific parameters including superoxide production, haemagglutination (HA), haemolysin (HLY), and bacterial agglutination titres, myeloperoxidase (MPO), and lysozyme activities, as well as alternative complement levels (*C. mrigala*, *C. catla* and *L. rohita*).

Shah CP et al. (2011)<sup>18</sup> investigated the results of consuming *A. aspera* seed and administering *A. hydrophila* vaccination to *L. rohita*. The test group had higher levels of superoxide anion generation, lysozyme, alkaline phosphatase, SGOT, SGPT, and albumin: globulin (A/G) ratio compared to the control group. These findings suggest that *A. aspera* boosts *L. rohita*'s immunity and enhances its resistance to infection.

Sathasivam A (2010)<sup>19</sup> investigated the immunoprotective impact of microbial levan on *L. rohita* juveniles challenged with *A. hydrophila*, undertook a 60-day feeding experiment. The results showed that as levan supplementation was increased, the total leucocyte count, erythrocyte count, serum lysozyme activity, respiratory burst activity (NBT assay), and relative survival percentage trended upward, whereas lower levan supplemented groups displayed higher albumin/globulin ratios.

The dietary dosages of turmeric that improve immune response and disease resistance against the opportunistic pathogen *A. hydrophila* in *L. rohita* fingerlings were examined by Vats S et al. (2012)<sup>20</sup>. The study revealed 100% and 89% survivability in the group of fish fed with 5.0 and 1.0 g of turmeric per kg of feed and indicated that this dosage offered the best defence against pathogen challenge.

Yadav et al. (2008)<sup>21</sup> investigated the impact of dietary fatty acid content on the fatty acid profile of the liver and muscle in young *Synechogobius hasta*. These dietary lipids were crucial for increasing energy, vital fatty acids, and fat-soluble vitamins, as well as for improving the quality of the meat.

#### a) Scope of Cow urine

Nowadays, cow farming is a significant source of revenue and a business that helps landless and disadvantaged farmers to generate cash from shared resources and land<sup>22</sup>. In Myanmar, traditional medical practitioners of the Buddhist culture continue to treat a variety of illnesses using cow urine treatment, with good outcomes.<sup>23</sup> The traditions followed have origins that go back more than 2500 years to the Buddhist period. In a clay pot containing cow urine, they ferment the fruits of *Phyllanthus emblica*, *Phyllanthus simplex*, and *Terminalia chebula*. They then drink it every morning<sup>24,25</sup>. Cow urine may be used to treat eczema, burns, hepatitis, jaundice, immunological diseases, dysentery, malignancies, and diabetes, according to Raja K(2011)<sup>24</sup>.

The idea that this substance may also make it easier for tumour cells to spread to distant organs through the angiogenic pathway is supported by the possibility that Follistatin is involved in tumour angiogenesis. Emerging data supports this theory and indicates that FLS, at least in certain tumours, seems to promote the metastatic process<sup>25</sup>.

#### b) Cow Urine in Ayurveda

1. *Panchgavya* Chikitsa, is an Ayurveda therapy that relies on cow-derived products (Raja K).<sup>26</sup> Urine was employed as a vehicle for the administration of medical herbs utilising seldom used, priceless medicinal plants, according to the Chinese pharmacological dictionary Shang Han Lun (Yadav S et al)<sup>21</sup>. An ancient Ayurvedic idea known as "cow pee treatment" focuses on utilising the components of cow urine to cure a variety of bodily conditions. Cow urine is referred as in Ayurveda as *Madhya*, and the word *hridya* denotes that it protects the heart and brain from harm brought on by mental stress.
2. The name "Panchgavya" refers to five principal compounds derived from cows, including milk (*Gaudugdh*), dung (*Gaumaya*), urine (*Gaumutra*), butter oil (*Ghee*), and curd (*Gaudahi*). These five items may be used alone or in combination with other plants for therapeutic purposes and have medicinal effects against a variety of illnesses. Cowpathy or Panchgavya therapy are terms used to describe this kind of treatment. It has been characterised as a very effective material or secretion of animal origin with many medicinal

benefits in the Sushrita Samhita, Charaka Samhita, and Ashtanga Sangraha.<sup>27,28</sup>

According to Maheshwari AK et al (2004)<sup>29</sup>, cow urine is very beneficial for urological disorders because it gives the body some of the most fundamental vitamins and minerals. Additionally, cow urine therapy is beneficial for conditions like cancer, diabetes, AIDS, asthma, psoriasis, eczema, blood pressure, heart disease, piles, asthma, esnophilia, cough, phlegm, varicose veins, diarrhoea, cholesterol, chest pain.

#### c) *Composition of Cow urine*

Most compounds found in extracellular fluid are often also found in urine, which is generated to maintain the consistency of the extracellular fluids' makeup (Tatiraju DM, 2013)<sup>30</sup>. Urine is primarily composed of water, minerals, urine cast, and other bodily waste products. 95% of cow pee is water, 2.5% is urea, 2.5% is minerals, 24 kinds of salts, 2.5% is hormones, and 2.5% is enzymes. According to an analysis of cow urine, it contains a variety of nutrients, including calcium salts, iron, silicon, silicon dioxide, chlorine, magnesium, citric acid, succinic acid, potassium, ammonia, nitrogen, sulphur, phosphate, sodium, manganese, carbolic acid, uric acid, amino acids, lactose, enzymes, creatinine, hormones, and gold acids. Copper has the ability to both cure and counteract ailments. Amino acids and cytokines may help to improve the immune system. Only Gomutra possesses all the chemical characteristics, potentials, and components necessary to reverse all the negative effects and imbalances in the body.<sup>30</sup>

The daily quantity of urine output varies depending on the nutrition, job, weather, water intake, season, and other variables. The ratio of dissolved substance to water affects the specific gravity of urine. The specific gravity will be decreased as the volume increases. Cattle typically generate 17 to 45 ml/kg body weight of urine each day with a mean specific gravity of 1.030 to 1.045. (Chawla PC et al, 2010)<sup>31</sup>. While there were few heavy metals present, copper, mercury, nickel, and zinc concentrations were 10–500 times greater than those found in precipitation and surface waters.

#### d) *Therapeutic uses of Cow Urine*

Cows' urine, milk ghee, curd, and dung all have therapeutic characteristics and are used alone or in conjunction with other herbs to treat a variety of illnesses, including as cancer, AIDS, and diabetes. This alternative therapy is known as cowpathy.<sup>32</sup> Many elements essential to the correct operation of the cardiovascular system may be found in cow pee. As a vasodilator, kallikrein lowers the risk of hypertension. The enzyme urokinase functions as a fibrinolytic agent; ammonia preserves the blood corpuscles' structural integrity. Blood is cleaned up by components of nitrogen, sulphur, salt, and calcium, while iron and erythropoietin stimulating factor keep hemoglobin levels

stable. Poornima G et al. (2012)<sup>32</sup> used CdCl<sub>2</sub> to cause hepatotoxicity in mice and administered "kamdhenu ark" to one group and Zn and "kamdhenu ark" to another group for up to 60 days. Compared to the CdCl<sub>2</sub> treated group, the treated mice showed hepatocytes with typical cellular characteristics and conspicuous nuclei. These findings imply that "kamdhenu ark" works as a bioenhancer of Zn and has antagonistic effects against cadmium-induced liver damage. Serum levels of the marker enzymes serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), alkaline phosphatase, and acid phosphatase that were elevated during carbon tetrachloride-induced hepatotoxicity were significantly decreased when bramhighrita, an Ayurveda formulation from the panchagavya class, was An istopathological analysis of the liver from several groups of people corroborated it. Kumar A et al. (2004)<sup>33</sup> investigated the antidiabetic effectiveness of a herbal remedy made from *Gymnema sylvestre*, *Momordica charantia*, *Eugenia jambolana*, *Aegle marmelos*, *Cinnamomum tamala*, *Aloe barbadensis*, and *Trigonella foenumgraecum* in alloxan-induced diabetic rats. They came to the conclusion that compared to herbal treatments created with water; those manufactured with cow pee considerably reduce blood sugar levels. Moreover, fresh cow pee has an anti-diabetic effect.<sup>34</sup>

### III. METHODS AND MATERIALS

#### a) *Proximate composition of feed*

All of the metrics, including crude protein, crude fat, ash content, nitrogen-free extract, and moisture content, were greater in the samples treated with Gir cow urine, as shown in tables. T3 (HF) has greater crude fiber.



b) Selection of cow breeds



*Fig. 1:* Gir (*Bosindicus*)



*Fig. 2:* Haryana (*Bosindicus*)



*Fig. 3:* HF cross breed (*Bostaurus*)

c) Cow urine collection

The faces of six disease-free cows were chosen for collection. The first urine sample was taken from

Goshala, Sri Vittal Rukminni Samsthan, Govindhapuram near Kumbakonam in the early morning (4.00 to 5.00 hrs.) from Gir, Haryana, and HF cross-bred cattle (Tag

Nos. 0206, 0177, 0184, 0468, 0133, 0201), as well as livestock from Gir and Haryana. The urine was collected, and sterile, airtight containers were used to transfer it to the lab. These animals were kept in a shed that was well

aired and provided with individual feeding and watering. Ad libitum access to fresh water for drinking and food was provided. Every day, around 2 kg of the available green food was given to the animals.



*Fig. 4:* Cow urine samples collected from Goshala of Sri Vittal Rukmini Samasthan



*Fig. 5:* Collection of Cow Urine





Fig. 6: Different breeds of Cow Urine

#### IV. RESULTS AND DISCUSSION

##### a) Effect of cow urine on Growth Parameters in *Labeo rohita*

- The effect of cow urine on growth parameters on 10th day from the day of cow urine treatment

Table 1 lists a number of variables, including fish growth, growth rate, % increase in body weight, growth rate, etc., for fish treated with cow urine of various breeds and untreated controls. In T1 (0.28 g), which was treated with Gir cow urine, the growth was seen to be greater as compared to the treatments. The T3 cell line that has received HF treatment showed the least growth, 0.13 g. The trend is the same for all other metrics.

- The effect of cow urine on growth parameters on 20th day from the day of cow urine treatment

Table 2 shows how cow urine affected the development parameters on the twentieth day. T3 saw the least increase (0.20 g), whereas T1 experienced the most growth spike (0.4875 g). Compared to the growth rate on the 10th day, each group's growth rate fell.

- The effect of cow urine on growth parameters on 30th day from the day of cow urine treatment

The effects of several growth parameters, such as fish weight growth, growth rate, and % increase in body weight, are shown in Table 3. Control had the least growth augmentation of 0.212 g. T1 had the highest weight rise, which was 0.498 g. T1 had the highest weight percentage (72.9%) and control had the lowest (33.5%).

Table 1: Development characteristics of rohu fingerlings on day 10 of the experiment when cow urine was added to the water

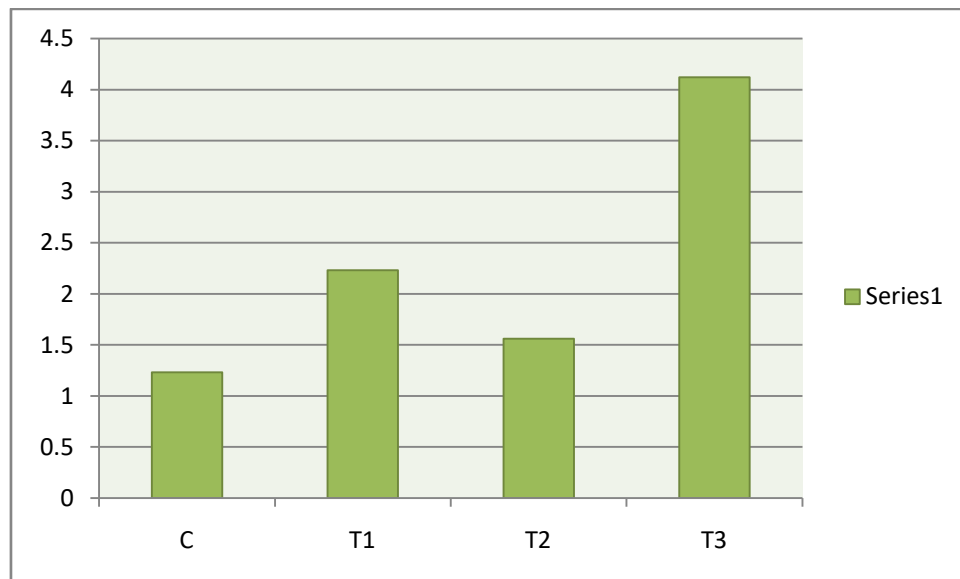
Parameters	10 <sup>th</sup> day			
	C	T1	T2	T3
Initial weight(g)	1.23	1.35	1.36	1.65
Final weight (g)	1.45	1.68	1.25	1.45
Growth(g)	1.2545	1.253456	1.2365	1.145245
Growth rate(g/day)	1.0212	1.254	1.0265	1.005
Percentage increase body weight	35.5	42.56	23.56	18.5
Average growth rate(g/day)	1.235	1.456	1.254	1.789
Survival rate (%)	82	85	88	83

**Table 2:** Development characteristics of rohu fingerlings throughout the 20 days of the experiment when cow urine was added to the water

Parameters	20 <sup>th</sup> day			
	C	T1	T2	T3
Initial weight(g)	1.23	1.35	1.36	1.65
Final weight (g)	1.45	1.68	1.25	1.45
Growth(g)	1.2545	1.253456	1.2365	1.145245
Growth rate(g/day)	1.0212	1.254	1.0265	1.005
Percentage increase body weight	35.2	75.6	38.2	33.6
Average growth rate(g/day)	1.234	1.025	1.456	1.123
Survival rate (%)	80	86	81	85

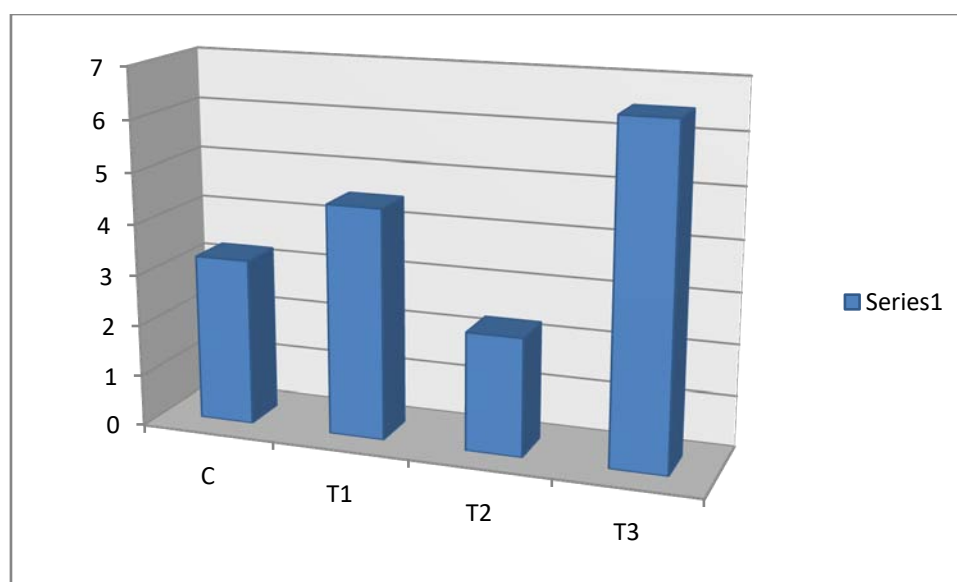
**Table 3:** Development characteristics of rohu fingerlings on day 30 of the experiment when cow urine was added to the water

Parameters	30 <sup>th</sup> day			
	C	T1	T2	T3
Initial weight(g)	1.23	1.35	1.36	1.65
Final weight (g)	1.45	1.68	1.25	1.45
Growth(g)	1.2545	1.253456	1.2365	1.145245
Growth rate(g/day)	1.0212	1.254	1.0265	1.005
Percentage increase body weight	63.2	56.2	45.2	78.5
Average growth rate(g/day)	1.234	1.025	1.456	1.123
Survival rate (%)	75	85	90	83



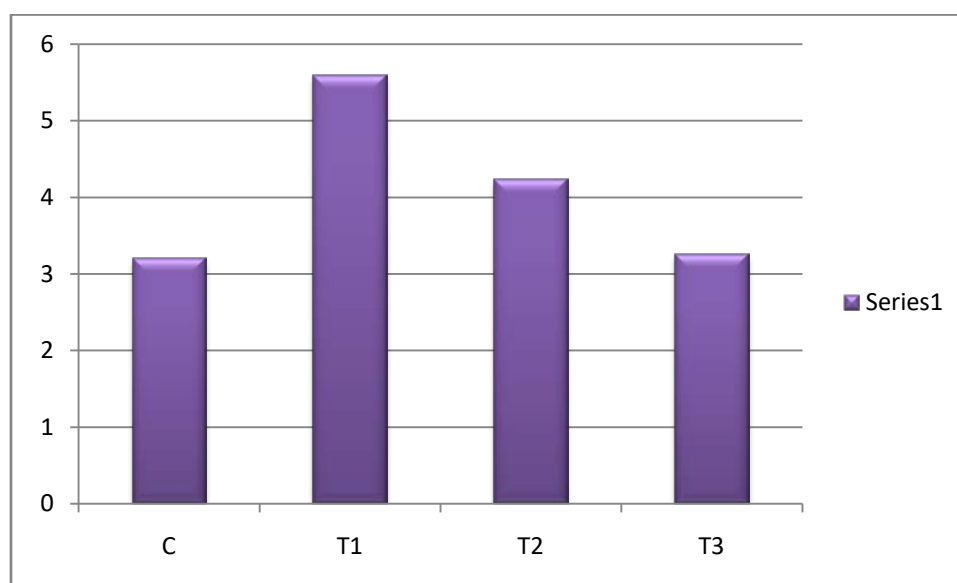
Note: C- Untreated Control, T1-Gir Cow urine Treatment, T2- Haryana Cow urine Treatment, T3- HF (Holstein Friesian) Cow urine Treatment

**Fig. 1:** The impact of cow urine as a water addition on labeo rohita development.



Note: C- Untreated Control, T1-Gir Cow urine Treatment, T2- Haryana Cow urine Treatment, T3- HF (Holstein Friesian) Cow urine Treatment

Fig. 2: The impact of cow urine as a water supplement on Labeo rohita growth rate.



Note: C- Untreated Control, T1-Gir Cow urine Treatment, T2- Haryana Cow urine Treatment, T3- HF (Holstein Friesian) Cow urine Treatment

Fig. 3: The impact of cow pee as a water addition on Labeo Rohita's % rise in body weight

#### b) Discussion

- The effect of cow urine on food utilization parameters on 10th day from the day of cow urine treatment

Table 1 demonstrates that, when compared to other treated groups, fish given cow urine of Gir (T1) directly administered in water had the highest feeding rate (3.53 mg/g/day), food absorption (26.69 mg), absorption rate (2.51 mg/g/day), absorption efficiency (70.98%), gross conversion efficiency (54.81%), and net conservation efficiency (77.22%). The HF cow urine treated groups (T3) showed the lowest results, which

were nonetheless greater than the findings of the control group (68.58%).

- The effect of cow urine on food utilization parameters on 20th day from the day of cow urine treatment

Feeding rate (1.77 mg/g/day), food absorbed (35.72 g), absorption rate (1.77 mg/g/day), absorption efficiency (69.04%), gross conversion efficiency (94.22%), and net conservation efficiency (93.93%) are some of the food usage metrics., which received Gir cow urine treatment, was greater in T1 (Table 2). The HF cow urine treated groups (T3) had a minimum

performance of 65.65%, which is less than the control group.

- The effect of cow urine on food utilization parameters on 30th day from the day of cow urine treatment

Table 3 shows the effects of different breeds of cow urine on the food consumption indicators. As compared to other treatment groups, cow urine from Gir (T1) administered directly into water increased the maximal feeding rate (1.18 mg/g/day), absorption rate (1.39 mg/g/day), absorption efficiency (68.72%), gross conversion efficiency (96.09%), and net conservation efficiency (84.42%). The minimum values across the treatment groups and when compared to the control was noted for the same parameters as in T3. Results of the 30th day for food consumption parameters affected by the addition of cow pee to the water

## V. CONCLUSION

Cow urine is a natural and universal treatment that replenishes the body's deficiencies in all of the beneficial components since it includes all of these elements. There are 24 different kinds of salts in cow pee, and medications derived from it may treat even the most fatal illnesses. The majority of medications are created by distilling urine and collecting the vapors, often known as distillate or Go-Ark. It was discovered that cow urine improved the effectiveness of many herbal remedies as a larvicide and pest control antibiotic, antifungal, and anticancer agent. Moreover, plant preparations and cow urine have been shown to have synergistic larvicidal, antibacterial, and anti-diabetic effects. Even though research on various plants has demonstrated their bioactivity, including their antibacterial, anti-inflammatory, and antiviral effects, immunomodulatory activity, and cow urine has shown to exhibit a similar effect on various animals, including man, the combination of both is still largely unreported in detail. One of cow urine's numerous qualities is bio enhancing.

The goal of the current study was to examine the potential immunomodulatory, growth-promoting, and protective effects of various preparations of cow urine extract of *Ocimum sanctum* on *Oreochromis mossambicus*, with particular emphasis on non-specific and specific immunity, as well as the functional immunity of this species in terms of disease resistance against the common fish pathogen *Aeromonas hydrophila*. Positive controls were kept in place to see whether cow urine or *O. sanctum* alone had a fantastic impact comparable to the combo treatments. If this is the case, there is no need to combine the processes since they take more time, work, and money. Knowing this, DCU/FCU and/or DOS/impact FOS's on other groups was preserved. For dosage fixing of further investigations, the impact of different doses of cow urine extracts of *Ocimum*

*sanctum* preparations (distilled, DCOS, or ferment, FCOS) on growth parameters was considered.

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## Frailty in the Elderly and its Impact on Quality of Life

By Ivete Maria Carneiro de Sousa Ricardi, Gabriele Pereira Martins Carneiro,  
Vitória Loureiro, Carolina Santoro Bueno, Luciane Alves de Oliveira,  
João de Oliveira Neto, Pedro Henrique Rodrigues  
& Karlos Adryano Priscinotte Rodrigues Lima

**Abstract- Introduction:** The elderly undergo biopsychosocial and functional changes that reduce their ability to adapt to the environment. In addition, pathological processes occur that make the elderly more susceptible to frailty.

**Methodology:** The methodology used for this analysis was based on a literature review, in which the sources were obtained from the SciELO, Google Scholar, and PubMed data platforms.

**Discussion:** Ageing raises concerns about the impact on the quality of life of these individuals (Lenardt et al., 2016). According to Who (1995), quality of life is an individual's perception of their position in life according to the context in which they live and their relationship with expectations, goals, and concerns. In this sense, it can be seen that quality of life suffers from internal and external influences (Jesus et al., 2018).

**GJMR-K Classification:** NLM: WT 104, WB 320



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# Frailty in the Elderly and its Impact on Quality of Life

Ivete Maria Carneiro de Sousa Ricardi <sup>α</sup>, Gabriele Pereira Martins Carneiro <sup>ο</sup>, Vitória Loureiro <sup>ρ</sup>, Carolina Santoro Bueno <sup>ω</sup>, Luciane Alves de Oliveira <sup>ς</sup> João de Oliveira Neto<sup>x</sup>, Pedro Henrique Rodrigues <sup>ν</sup> & Karlos Adryano Priscinotte Rodrigues Lima <sup>θ</sup>

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**Final comments:** The aging process has a significant impact on individuals' quality of life. Quality of life, as defined by the World Health Organization, is intrinsically linked to the individual's perception of their position in life.

## I. INTRODUCTION

The elderly undergo biopsychosocial and functional changes that reduce their ability to adapt to the environment. In addition, pathological processes occur that make the elderly more susceptible to frailty. This frailty is based on three pillars, which include alterations such as loss of muscle mass (sarcopenia), neuroendocrine dysregulation, and immune dysfunction. Elderly people with these characteristics are more likely to suffer from muscle mass loss and develop a chronic inflammatory state. It is therefore clear that frailty is closely related to the quality of life of the elderly, since the more frail they become, the lower their general well-being.

Frailty in the elderly is a complex condition that can significantly compromise their quality of life. As we age, several factors such as decreased muscle mass, bone loss and changes in the immune system can contribute to frailty.<sup>2</sup> This physical and functional vulnerability makes older people more susceptible to falls, illnesses and disabilities, which, in turn, negatively impacts their autonomy and independence. In addition to the physical aspects, fragility can also have emotional repercussions, leading to feelings of isolation and discouragement. Therefore, it is crucial to adopt integrated approaches to care, including regular physical activity, a balanced diet and psychosocial

support, to preserve the health and promote the well-being of older people, minimizing the adverse effects of frailty on their aging journey.<sup>3</sup>

Frailty in the context of aging represents not just a physical condition, but a multifaceted challenge that can drastically reshape the life experience of older people. The real impact of this fragility transcends the evident limitations of mobility and resistance, directly influencing autonomy and the ability to actively participate in society.<sup>5</sup> Physical vulnerability can translate into frequent falls and health complications, generating not only significant financial costs, but also triggering a cycle of functional decline. Coping with frailty requires a holistic approach that considers not only clinical aspects, but also social and emotional elements, aiming to restore and maintain the quality of life of the elderly in the face of these challenges.<sup>4</sup>

## II. METHODOLOGY

The methodology used for this analysis was based on a literature review, in which the sources were obtained from the SciELO, Google Scholar, and PubMed data platforms. The search was conducted in August 2023, and inclusion criteria were applied, which involved the selection of works written in Portuguese and English, with online availability and full access to the content.

## III. DISCUSSION

Ageing raises concerns about the impact on the quality of life of these individuals (Lenardt et al., 2016). According to Who (1995), quality of life is an individual's perception of their position in life according to the context in which they live and their relationship with expectations, goals, and concerns. In this sense, it can be seen that quality of life suffers from internal and external influences (Jesus et al., 2018).

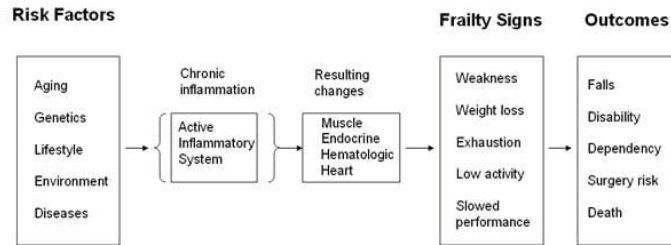
The elderly undergo biopsychosocial and functional changes, which lead to a reduction in the ability to adapt to the environment, as well as pathological processes taking place, which makes the elderly more vulnerable and predisposes them to fragility (Siqueira et al., 2021). Mariana et. al. (2023) report that frailty is a syndrome characterized by a decrease in the body's physiological capacity since there is a disharmony in body homeostasis, making the

elderly more vulnerable to falls, hospitalizations, and functional incapacity (Siqueira et. al., 2021).

Fried et al. (2001) define frailty as being based on a trip, since it presents alterations such as

sarcopenia, neuroendocrine dysregulation, and immune dysfunction. Elderly people with these characteristics are prone to a loss of muscle mass and a chronic inflammatory state (Ferrioli et al., xxxx).

## Frailty in Elderly



Modified from: Chen et al Clinical Interventions in Aging 9:436, 2014

Figure 1: Frailty in elderly

Thus, frailty is related to the comorbidities and functional incapacity that the individual may have, since it includes reduced mobility, increased risk of falls and hospitalizations, as well as greater morbidity and mortality (Fried et al., 2001). All these factors will have a negative impact on quality of life in ageing (Siqueira et al. 2021).

It is therefore known that frailty is closely linked to quality of life in the elderly, since the greater the frailty, the lower the individual's well-being (Lenardt et al., 2016). In this sense, in order to improve quality of life during ageing, it is essential to look for resistance exercises, in addition to a multidisciplinary assessment, which should involve physical, psychological and social aspects.

### IV. FINAL COMMENTS

The aging process has a significant impact on individuals' quality of life. Quality of life, as defined by the World Health Organization, is intrinsically linked to the individual's perception of their position in life. Ageing brings with it a series of biopsychosocial and functional changes that reduce the ability to adapt to the environment, making the elderly more vulnerable to pathological processes and frailty. Frailty, in turn, is characterized by a decrease in the body's physiological capacity and an imbalance in body homeostasis, with components such as sarcopenia, neuroendocrine dysregulation and immune dysfunction. This frailty is associated with comorbidities, functional incapacity, reduced mobility, an increased risk of falls, hospitalizations and greater morbidity and mortality, resulting in a reduced quality of life for the elderly. The greater the frailty, the lower the individual's well-being. In order to improve quality of life in the elderly, it is crucial to adopt strategies that include resistance exercise and a multidisciplinary approach, considering not only

physical aspects, but also psychological and social ones. By understanding the factors that contribute to frailty and recognizing their negative influence on the quality of life of the elderly, we can seek solutions that promote healthier and more satisfactory ageing, with a view to the lasting well-being of these individuals.

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# Evolution of Quality Management and Quality of Care Management

By Moukhafi Sahar (PhD, Professor)

*Higher Institute of Engineering and Business*

**Abstract-** It should be noted that the development of quality concepts in medical care during the last half of the 20th century has been accompanied by significant changes in the policy and ethics of the health sector and has led to an evolution in terms of the performance of care.

During the last half of the twentieth century, the development of quality concepts in the field of medical care has been accompanied by important changes in the politics and ethics of the health sector and has led to an evolution in terms of health care performance. It is obvious that the progress of quality concepts and methods in the field of health care is originally the result of the evolution of quality management in the industrial world.

**Keywords:** *quality management, hospital quality management, continuous quality improvement.*

**GJMR-K Classification:** *NLM Code: W 84.5*



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# Evolution of Quality Management and Quality of Care Management

Moukhafi Sahar (PhD, Professor)

**Abstract-** It should be noted that the development of quality concepts in medical care during the last half of the 20th century has been accompanied by significant changes in the policy and ethics of the health sector and has led to an evolution in terms of the performance of care.

During the last half of the twentieth century, the development of quality concepts in the field of medical care has been accompanied by important changes in the politics and ethics of the health sector and has led to an evolution in terms of health care performance. It is obvious that the progress of quality concepts and methods in the field of health care is originally the result of the evolution of quality management in the industrial world.

The analysis of the historical evolution of the quality movement, first in the industrial world where this movement has taken roots, then in the hospital environment allows to define and to underline the importance of quality not only in the industrial environment but also in the health field.

The history of hospital quality is marked by two main phases, according to E. Minvielle, these two phases are called: the professional administrative phase and the organizational phase.

In this article we will analyze the historical stages of industrial quality and quality of care. To do this, we will take the following path: historical foundation of quality management and the evolution of hospital quality management.

**Keywords:** quality management, hospital quality management, continuous quality improvement.

## I. INTRODUCTION

The word "quality" refers to the Latin word "quais" which means what. For the Robert, quality "is a way of being, a characteristic", it is intrinsic to a product or service.

For the A. F. N. O. R., quality is defined as "the set of properties and characteristics of a product or service that gives it the ability to satisfy explicit or implicit needs." (ISO Standard 802 - 2.1)

The International Organization for Standardization (ISO) defines quality as "the ability of a product or service to satisfy the explicit or implicit needs of users. This forward-looking definition is presented as a result to be expected based on needs that must be identified and understood. It refers to the need for stakeholders to find a balance between customer expectations, costs, deadlines, staff satisfaction and the strategic choices of the hospital structure.

**Author:** Laboratory of Innovation in Management and Engineering for the Enterprise, Higher Institute of Engineering and Business, ISGA Groupe, Morocco. e-mail: sahar.moukhafi@gmail.ma

Based on the World Health Organization's (WHO) definition of quality as "providing each patient with the range of diagnostic and therapeutic procedures that will ensure the best health outcome, according to the current state of medical science at the lowest cost for the same result, with the least iatrogenic risk, and for the greatest satisfaction in terms of procedures, results and human contact within the health care system", we can conclude that medical and care activities are at the center of any reflection on hospital quality. However, this definition broadens the concept of quality to include all functions of the hospital organization, including cost control, risk management and user satisfaction in the broadest sense.

According to the WHO definition, quality is defined in the context of a global and multi-professional approach. Thus, some dimensions of quality of care cannot be based solely on the commitment of health care professionals. According to this approach, the perception of quality is systemic and total in relation to the hospital organization. This approach to quality is the result of a long historical evolution, which began in the industrial world before spreading to the healthcare sector.

The development of quality approaches in hospitals is directly linked to the quality movement that has taken off in industry. This movement, although focused on a common objective, includes several currents that it is important to identify. Today, quality approaches have only been transferred to the hospital sector in a fragmented and localized way. The difficulty of these transfers lies in adapting the concepts, methodologies and tools to the specific context of health care institutions, particularly in terms of culture and terminology.

## II. QUALITY MANAGEMENT

The word "quality" refers to the Latin word "quais" which means what. For the Robert, quality "is a way of being, a characteristic", it is intrinsic to a product or service. For the A. F. N. O. R., quality is defined as "the set of properties and characteristics of a product or service that gives it the ability to satisfy explicit or implicit needs." (ISO Standard 802 - 2.1) The International Organization for Standardization (ISO) defines quality as "the ability of a product or service to satisfy the explicit or implicit needs of users. This forward-looking definition is presented as a result to be expected based on needs



that must be identified and understood. It refers to the need for stakeholders to find a balance between customer expectations, costs, deadlines, staff satisfaction and the strategic choices of the hospital structure. In order to better understand the evolution of quality in the healthcare field, it was necessary to analyze its genesis in the industrial world where this movement took root.

### III. HISTORICAL EVOLUTION OF QUALITY

#### 1. Quality inspection

In the 20th century, quality was perceived as a concern for inspection. This was accompanied by the emergence of scientific management based on the Taylorian firm model, theorized in the United States by F.W. Taylor in 1911, which was subsequently adopted in French-language literature under the term Organisation Scientifique du Travail (OST). OST is based on three essential points: observe, standardize and inspect. Observe the workers and identify the coherence of the tasks performed in order to produce, to break down the production phase into tasks as elementary as possible. Standardize the best way to do things based on the observations, ensuring the efficiency of the production and To inspect the tasks performed and their conformity to the set standards by drawing tolerance limits.

The quality is therefore the creation of the scientific organization of work, it is based on universal standards.

At the time when Taylorism became widespread, the first standardization bodies were created, such as the BSI (British Standard Institution) in 1901, the DIN (Deutsches Institut für Normung) in 1917, and the AFNOR (Association Française de Normalisation).

That said, it is important to note that its Taylorian quality inspection systems are not linked to customer expectations for several reasons, two of which are worth mentioning:

The company's objective is to manufacture, at the lowest cost, products that conform to specifications established by specialized engineers only.

The majority of the companies which manufacture in mass, sell semi-finished products to other companies and not to final consumers

#### 2. Quality control

##### *Questioning of quality inspection*

The economic development that the world of industry experienced between 1900 and 1930 made the market become mass, production increased, which made it difficult to maintain quality inspection, because of the large number of products manufactured and employees. This made quality inspection costly and manufacturing defects keep increasing, in this case Taylor's scientific approach no longer fulfills the role of reducing overall production costs.

#### Appearance of statistical quality control

The concept of quality control was born in the late 1920s in the United States, within the American Bell Telephone Company and its subsidiary, the Western Electric Company, which launched research on the statistical analysis of quality defects. In 1931, the engineer W. A. Shewhart published a seminal work on the subject.

The quality control comes as an answer to the problems related to the high costs of the inspection, the engineer W.A. Shewhart succeeded in conceiving a control chart which allows the statistical control of the manufacturing quality, this last one is based on two main concepts: the level of the acceptable quality (NQA) and the limits of control.

- NQA: tolerated percentage of defective product determined from a cost benefit trade-off.
- Control limits: the limits that the characteristics of samples taken must not be exceeded. Quality control is an analytical process that provides information on error probabilities, limits, and their numbers.

*Deficiencies in statistical quality control in quality control,* quality is determined and perceived by the quality engineers, far from the customer's vision, since the NQA is set by the company's engineers. In this approach the company defines quality according to its own interest, which is the minimization of inspection costs, and not from the interest and preferences of the customer. After the Second World War, it was realized that quality control, which is a control done at the end of the chain, is very costly, the detection of defects beforehand is the best solution.

#### 3. Quality assurance

##### *The emergence of the customer focus*

After the Second World War, the relationship between producers and consumers underwent a gradual change, in the United States and in Europe after a few years. Indeed, as consumers became more and more numerous, the increasingly different products on the market posed two concerns: on the one hand, the evaluation of product quality, and on the other hand, the lack of an exchange link that was present between craftsmen and customers. This led the producers to ask themselves the question: how to know the needs and preferences of a large and anonymous clientele in order to adjust the offer to the demand? In order to evaluate the quality, the company was faced with two possibilities: either to determine the quality according to the perception of the consumer, in this case how to know this consumer and his needs? Or it is the company that establishes the quality, but how to adjust it to the market demand?

J.M. Juran, A.V. Feigenbaum and W.E. Deming made the customer one of the main actors of the



economy, and enters the concept of quality, they affirm that the customer directs the economic activity by desires that the market must satisfy, the goal of the production is to satisfy the need of the customer and to know them.

#### *Quality assurance as a preventive approach*

Quality assurance appeared with M. Juran and W.E. Deming. With the increase of the customer focus, the quality assurance is based on an external orientation, the quality has as an objective to satisfy the needs of the customer, so the company is committed to produce goods and services that are designed to spread to the expectations of consumers. All the means of control and correction undertaken by the company are integrated in this same objective.

Quality assurance proposes control procedures and preventive devices that have the role of ensuring the quality of the product during all levels of production. The control is only done at the end of the production line.

Quality has moved from a product-centered quality to a production process-centered quality. This has been achieved by:

- Identification and formulation of processes.
- Creation of indicators that ensure the control and management of processes.
- Management reviews and audits to keep the system efficient for evolution and improvement.

The quality assurance focuses on the customer, his expectations and needs which are changing, it implies a continuous improvement of the quality of the product, it is a kind of adaptation to these changes, also implies the continuous improvement of the production processes.

The implementation of quality assurance has led to the formulation of several procedures for the control of manufacturing processes in all levels of production, which has given a formalist aspect see bureaucratic approach, which is far from the staff concerned and not adapted to the organizational reality of the company, which has created several problems and dysfunctions.

Several authors, such as J.M. Juran and A.V. Feigenbaum (Feigenbaum A.V.), have affirmed that quality assurance requires much more than statistical skills such as: planning, coordination, establishment of standards, evaluation... All of this is part of management know-how. It is from this moment that a new trend appears which is the total quality.

#### *Total quality*

The bases of the total quality have been highlighted by the quality assurance previously mentioned which are:

- Quality control begins at the product design stage and continues until delivery to the consumer.

- Quality control involves everyone who is involved in the manufacturing process.

A new concept of quality is born, which has as a conceptual basis the main features of quality assurance, developed in 1950 in Japan and then in the rest of the world called: Total Quality Management (TQM).

#### 4. The birth of total quality

During the reconstruction of Japan, after the second world war, several industrial and scientific groups were created, one of them named Union of Scientists and Engineers (JUSE), it realizes that the survival of the country will depend on the export, and that the quality will take a major place in the world market, what pushed him to conceive a program of promotion of the quality, thereafter the JUSE organizes a series of conference animated by Deming, in 1950, and which turns around the statistical control and the preventive methods of the assurance of the quality

After Deming, J. M. Juran presents management courses that deal with the major problems of quality, according to him "the major obstacle to the improvement of quality in the United States was located in the organizational barriers that corresponded to the compartmentalization between departments.

In the United States, at the end of the 1950s, several new concepts of quality assurance appeared, the prevention established by J. M. Juran affected the entire organization, and it is A.V. Feigenbaum, who is the first to speak of total quality (Total Quality Control (TQC)), according to him all the functions influence the quality of products, not only manufacturing.

Subsequently, in 1960, a program called 0 defects, developed by the Martin Company, specialized in the military industry, was born, and through it, the principle of continuous quality improvement was theorized for the first time.

In 1962, JUSE introduced the quality program to all Japanese employees under the guidance of Kaoru Ishikawa, a professor at the University of Tokyo and one of the leaders in quality, who believed that all company personnel should be involved in quality control. This gave rise to a Japanese school of quality, named Company-Wide Quality Control (CWQC) by Mr. Juran. CWQC is based on five fundamental principles:

- Focus on the customer, one of the key principles of quality assurance.
- To be based on the process approach with a preventive vision, the second key principle of quality assurance.
- Involve all functions in the quality approach (work of A.V. Feigenbaum).
- Set the goal of continuous improvement, based on the notion of 0 defects.
- Involve all the staff, one of the distinctive points of the Japanese school.

Indeed, the Japanese school has had a great impact on the conception and application of total quality in the industrial world, thanks to the different techniques and tools it has developed.

*We quote:* Quality circles: a participative management tool.

- Quality Function Deployment (QFD): a tool for integrating the implicit and explicit needs of customers within the company (customer focus).
- The 5M diagram designed by Kaoru Ishikawa: which focuses on the preventive logic opposed to the processes.
- The Kan-ban invented by Taiichi Ohno, an engineer at Toyota: a just-in-time management system for supplier orders and production.

*The application of the total quality concept at the international level*

In the 1970s, the world of industry was in crisis, Fordism, considered as a production mode that replaced Taylorism, was called into question, mass consumption was replaced by a more selective consumption, in fact the nature of the demand was changing and the individual, in a progressive way, takes a central place in the market, it became a main concern for the system of production. The concept of the representative customer gives way to the singularized customer, its purchasing power decreases and its needs are more and more specific with a lower cost, without forgetting that the offer and the competition are from now on on a world scale.

The challenge for firms is to adapt the production system to the new market context, which leads companies to draw inspiration from the successful Japanese experience, and therefore focuses more on quality as a competitive element.

From the 1970s, in the United States and then in Europe, companies began to adopt the Japanese management model: Total Quality Management (TQM), which took the form of the importation of Japanese managerial tools. Thus, American and European companies are applying the Japanese management method which establishes the link between employees and the continuous improvement of quality as a common objective (participative management).

In the United States and Europe, the human dimension of quality is developing more within the framework of the application and adaptation of Japanese management. In 1979, Philip Crosby published a book that had a major impact on the international development of total quality management, in which he stated that participative management and economic gains for the company were two related elements.

## IV. HOSPITAL QUALITY MANAGEMENT

### 1. Hospital Quality Management Movement

The hospital world is characterized by a great complexity, indeed the hospital, whose main mission is the production of care, is a field of interaction between medical knowledge, care and administrative management.

In order to assimilate the evolution of hospital quality, a perspective of its history is required.

The history of hospital quality is marked by two main phases. According to E. Minvielle, these two phases are called: the professional administrative phase and the organizational phase.

Before going into more detail on the history of quality, we present definitions of hospital quality.

#### *Definitions of hospital quality*

Several definitions of hospital quality have emerged, the most recognized worldwide are:

"Quality is to guarantee to each patient the assortment of diagnostic and therapeutic acts, which will ensure the best result in terms of health, in accordance with the current state of science, at the best cost for the same result, with the least iatrogenic risk and for his or her greatest satisfaction in terms of procedures and human contacts within the care system." WHO

"High quality care is care aimed at maximizing the well-being of patients after considering the benefit/risk ratio at each step of the care process." Avedis Donabedian

"High-quality care contributes strongly to increasing or maintaining quality of life and/or length of life." American Medical Association, 1984

The ability of health services for individuals and populations to increase the likelihood of achieving desired health outcomes, consistent with current professional knowledge." Institute of Medicine, 1990

The term "quality" has a multidimensional character, and depends on the vision of each health care actor, generally speaking its definition has evolved from a professional definition centered on the technical quality of the finished product or service, to a definition that includes the degree of patient satisfaction as a main element.

Avedis Donabedian, one of the pillars of quality of care, distinguishes three dimensions of quality of care:

- Structures: all resources used in the care process such as equipment, devices, premises, etc.
- Processes: refers to the care delivered to patients, and how well it conforms to pre-established rules and standards.
- Outcomes of care are generally influenced by the patient's health status, survival, quality of life,

progression of health status, satisfaction is also considered in this category

According to Donabedian, quality of care has several dimensions: effectiveness, which is reflected in the results of care in terms of health status after the course of care, but also the patient's point of view; efficiency, which links the results of care to the resources used; accessibility, which is summarized by the degree of conformity to the patient's preferences and values; legitimacy, which encompasses the values of society; and finally, equity.

One of the most relevant ways of measuring quality of care is from the perspective of the patient and his/her satisfaction. Quality assessment is done through the measurement of the user's opinion, as the user's perception of the quality of care is an essential aspect along with the measurement of outcomes.

While the Institute of Medicine (Crossing the Quality Chasm) states that quality of care includes the elements of: safety, effectiveness, efficiency, timeliness, equity, and patient-centeredness.

The Pickler/Commonwealth Program for Patient-Centered Care is a patient-centered quality of care program developed in 1988, it emphasized 8 characteristics of quality most important to the patient, they are:

- respect for the values, preferences, and needs expressed by the patient;
- integrated and coordinated care;
- clear and high quality education and information for the patient and his family;
- physical comfort, including pain management
- emotional support and alleviation of fear and anxiety
- appropriate involvement of family members and friends
- continuity;
- accessibility.

## 2. Quality of care from different perspectives

Improving the quality of hospital care has been a priority since the 1960s in the Anglo-Saxon countries, and much work has been done in this area, stating that + quality of care can be expressed from several points of view of the different actors in care: the patient/consumer, the professional, the health care institution, the social welfare system, (5) the government.

Each type of point of view must have different criteria for standardization and a different perception of the quality of care.

According to the patient's point of view, quality depends on his needs and expectations in terms of care and services. According to him, quality is clinical effectiveness in terms of diagnostic accuracy to the effectiveness of the treatment and care provided.

For health / care institutions, quality is the production of the most effective care possible, at the

lowest cost (cost, efficiency), with the condition that the patient returns to the institution when needed.

From the point of view of the social welfare system, quality is the cost-effectiveness, management and use of resources to achieve the desired health outcomes.

And finally for society, quality is the optimization of resources in favor of the communities and the citizen in general.

The concept of satisfaction is one of the tools for measuring the quality of care, from the patient's point of view, it is essential for its evaluation.

## 3. Genesis of hospital quality

*Quality as seen from the perspective of a professional bureaucracy*

H. Mintzberg describes the hospital organization as a professional bureaucracy, this model of structures is based primarily on the skills and knowledge of the operational center (professionals), in the case of the hospital, the service provided, which is the production of care must be controlled by the operators who perform it. This type of organization is also based on the development of standards and norms that have the role of coordinating work and determining what must be done beforehand.

Quality in the hospital is therefore based on the control of professional practices on the one hand, and on the respect of rules and norms pre-established by the management or legal texts on the other hand.

*First phase: evaluation of hospital quality.*

In 1980, two different orientations emerged, in the United States and then in Europe, namely the evaluation of the quality of professional practices, and the evaluation of the quality of care provided within the hospital institution.

*The quality of professional practices*

This approach sums up quality in terms of professional expertise, or the mastery of knowledge in each hospital specialty. In fact, quality is defined as the technical mastery of care acts.

In 1970, several American studies noted differences in the performance of medical and surgical procedures, which were not directly related to the patient's condition or even to the technical conditions of the hospital environment. This led experts in the field to create a movement whose objective was to draw up recommendations for good clinical practice, considered to be a standardized description of the best medical attitude for a given pathological case.

The evaluation of the quality of professional practices has affected several specialties, we cite: the indicators of prescription of specific acts such as chest x-rays, nosocomial infections.

Quality for nurses can be summarized as the control of technical acts or gestures such as intravenous injections, the insertion of a catheter, etc., and the

control of preventive acts, which is based on medical knowledge.

#### *The quality of hospital services*

The result of the first phase is the development of written procedures in order to avoid the organizational risks linked to the oral transmission of information.

The second step is to carry out corrective actions in order to minimize the discrepancies between what has been done and what should be done, based on pre-established standards. A standard includes laws, recommendations, rules and pre-established standards. Sometimes corrective actions can be stated in a baseline.

#### *Hospital quality under the impact of the bureaucratic-professional approach*

The production of quality in the hospital is done through two successive phases: the evaluation phase and the phase of development of corrective actions, it is the administrative and professional who have the common role of ensuring them, so this production begins with the evaluation stage.

To ensure its application, professionals and administrators are both involved in the quality process, so we distinguish two categories:

- The autonomous co-productions of the quality: they are the steps made by the professionals or the administrators, it engages only one of the two.
- Crossed co-productions: there are certain tasks that require the cooperation of both professionals and administrators, for their accomplishment and to ensure their quality, as for example: the placement of patients admitted to the emergency room in downstream beds, this task requires coordination between the two for the co-production of quality. (Minvielle, 1999).

In both cases, in order to ensure the quality of care, professionals and administrators must set themselves the goal of quality while respecting the rules and standards pre-established under a professional bureaucracy angle.

#### 4. The emergence of a new reflection on the organization of quality work.

At the end of the 1980s, a new trend emerged in the United States, and later in Europe, in which the classic methods and approaches of quality assessment and quality assurance were questioned, despite their successes, especially in the logistical and technical sectors of the hospital. The aim of this questioning was to broaden the field of investigation of quality.

#### 5. The questioning of traditional approaches.

There are several criticisms of traditional approaches to quality, which can be divided into two main points: the first concerns the lack of consideration given to the organizational dimensions of the hospital in the traditional approach to quality, and the second

concerns the prescriptive aspect of the methods for improving quality.

#### *Professional practices to organization*

The vision of quality oriented towards professional practices is narrow, and neglects other aspects of the quality of care, such as the involvement of users and other care actors in the care process, D. Berwick and D.N. Schumacher were the first to emphasize the reductive nature of this approach, which focuses on the analysis of professional practices and on medical expertise alone.

This questioning is based on classical approaches from the industrial world, mainly the work of W.E. Deming, who states that only 15% of deficiencies are related to the technical expertise of professionals, and 85% are the result of organizational factors, which shows that dysfunctions are not always the responsibility of health professionals, but due to errors in the management of the hospital organization to the various services of care.

#### 6. Continuous improvement and compliance with standards

According to traditional approaches, quality is compliance with norms and standards, such an approach limits the level that could be reached in the quality of care services, the risk is to develop norms and standards that affect only a minimal level of quality and far from excellence.

#### 7. Total quality management

Following these observations criticizing the traditional approaches, a new movement is born, called the total quality management, following the example of the industrial world, the hospital is committed to make the transition from the detection of defects to a quality management system.

This movement is based on several principles:

The search for continuous improvement of excellence in work, so quality improvement is a permanent process.

Quality is no longer the conformity to standards and norms, but the ability of the health care institution to present services and health care benefits that are as close as possible to the requirements of the patients.

The organizational aspect is essential, the care entity must master the organizational modes as well as possible, a break with functional management is then required, all the care actors must be involved in the quality process.

Quality management sets several objectives related to the quality of care and the organization of the entity, its success is based on a process approach, each activity is presented in the form of a process and not described as a function only, this allows the detection of malfunctions with the help of methods and tools: control diagrams that allow the mapping and evaluation of processes as well as the intensity of



malfunctions; "fishbone" diagrams that allow to visualize the causes at the origin of malfunctions and to locate the responsibilities

Following the implementation of quality management, quality departments were set up in hospitals, and accreditation institutions were created, while giving major importance to the patient.

#### 8. Accreditation of health care institutions and quality improvement

The purpose of accreditation is to evaluate the quality of a health care institution and to ensure its continuous improvement through changes in medical, paramedical and managerial practices. The accreditation procedure provides a general and independent assessment of quality in the health care organisation, using indicators, criteria and reference systems, covering procedures, good clinical practice and the results of the various services and activities in the organisation. The accreditation process must be external and independent of the health care organisation, and its evaluation affects all of its activities and practices. It verifies that the conditions for the safety and quality of care and patient management are taken into account by the health care organisation.

In 1918, the first accreditation program was created in the United States, with the help of an association of surgeons, and then adopted by four other associations of health professionals, who created an organization, called today: joint commission, this organization is responsible for the certification of all American hospitals today.

In Canada, health professionals joined the joint commission in 1950, and in 1956, created their own accreditation organization called Accreditation Canada. The Australian certification program was developed in 1974, based on the Canadian experience.

Most other countries applied the principle of accreditation later, as did France, which created the ANAES "Agence Nationale d'Accréditation et d'Évaluation en Santé" in 1996, based on the Anglo-Saxon model.

Morocco has recently embarked on a project to establish a hospital accreditation program with the cooperation of the WHO, in a process aimed at developing a national hospital accreditation system that would provide institutions with a frame of reference for better functional organization and technical capacity and, consequently, higher quality care.

#### *Accreditation and total quality*

Accreditation is a systemic approach based on six main objectives, inspired by both American and European procedures. It represents an opportunity for hospital managers to evaluate the quality of health care services and organizational practices, in order to optimize resources and improve quality by making decisions about organizational changes.

Accreditation is a strategic process, its purpose is to ensure continuous quality improvement, by measuring the hospital's ability to engage in a quality process that aims at excellence at all levels, with a strong focus on the patient, who is at the heart of the healthcare system.

#### *The accreditation process*

Accreditation, like any quality approach, encompasses all the activities undertaken in a hospital. All the activities related to care represent a chain which determines the overall level of quality of the entity (from reception to medical and nursing activities, including the hotel industry, internal transport, biomedical and medical-technical activities, etc.). The objective is to make all care professionals aware that they are involved in a quality approach that aims to organize the health establishment by adopting the methods and techniques of quality management.

It is based on a global approach to the health care facility through: audit, quality management and evaluation.

The audit enables a comparison to be made between the practices undertaken in the hospital and the quality references and standards. This comparison helps to identify the hospital's strong points and its weak points, which are called situations of non-compliance with standards and therefore of non-quality.

Non-quality can be: organizational (structure and management tools failing), medical and care (nosocomial infections, readmission ...), logistical (poor accommodation, lack of variety of meals served ...) or technical (delays in repairs ...), thereafter, action plans are made with indicators of results, which are subject to evaluation to calculate the differences between the quality objectives and achievements, these differences are analyzed in the context of an audit.

#### 9. Quality of care from different points of view

Ensuring better quality during hospitalization is a priority for the health care system.

Much work on this subject has been done in Anglo-Saxon countries since the 1960s, and it has been argued that the quality of health care can be reflected through the points of view of the different parties involved: the patient/consumer, the professional, the health care institution, the social welfare system, the government.

Each type of point of view has standardized criteria and a perception of quality of care that varies according to its structure and objectives:

Quality, according to the patients' point of view, is defined in terms of their needs and expectations for care and services.

Quality, from the practitioner's perspective, is defined as clinical effectiveness, in addition to the accuracy of diagnosis, appropriateness and effectiveness of the treatment and care provided.



Quality, for health care facilities/institutions, is the ability to produce the best delivery of care at the lowest cost (cost-effectiveness), with the objective that patients return when they need it.

Quality, from the perspective of the social welfare system, refers to the cost-effectiveness, management and use of resources to achieve the desired health outcomes.

Finally, from a societal or health system perspective, quality is often expressed in terms of value for money and benefits to the community at large.

The concept of patient satisfaction is used to assess the quality of care from the patient's perspective. Feedback from patients (users of the health care system) is generally considered essential to assess and assure quality.

## V. CONCLUSION

In this article we have analyzed the evolution of the quality movement, first in the industrial world where it originated. Then, its declension within hospital organizations. This has allowed us to understand the evolution of the perception of quality, as well as the factors that have influenced the passage of quality from a simple concern for control to a total approach of the organization. This led us to observe that the different approaches to hospital quality have followed the same pattern of evolution as in the industrial world. However, we have noted a phase shift in the two quality movements over time.

Our analysis of the evolution of the hospital quality movement has led us to conclude that the hospital organization has strong specificities that are reflected in the different parameters of the organization. Its bureaucratic-professional configuration and the complexity of the care production process, in which knowledge from the medical, nursing and administrative worlds is brought together, have forced these organizations to adapt the various quality approaches according to their parameters.

It should be noted that the emergence and evolution of quality concepts in the field of medical care during the last half of the 20th century was accompanied by significant changes in the politics and ethics of the health sector. Over time, the patient has become an increasingly important part of the health care system, and interest in the patient's perspective has grown the hospital organization has strong specificities that are reflected in the different parameters of the organization. Its bureaucratic-professional configuration and the complexity of the care production process, in which knowledge from the medical, nursing and administrative worlds is brought together, have forced these organizations to adapt the various quality approaches to their parameters.

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## **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](mailto:submit@globaljournals.org) or get in touch with [chiefeditor@globaljournals.org](mailto:chiefeditor@globaljournals.org) if they wish to send the abstract before submission.

## BEFORE AND DURING SUBMISSION

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.
6. Proper permissions must be acquired for the use of any copyrighted material.
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.

## POLICY ON PLAGIARISM

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures



- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

## AUTHORSHIP POLICIES

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

### Changes in Authorship

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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### Appealing Decisions

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.

### Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

## 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.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

### 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 through 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.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."



Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- 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.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

#### **Approach:**

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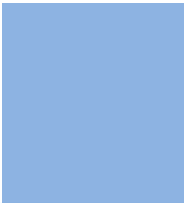


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