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Highlights

- Primary Bloodstream Infection
- Emergence of Multidrug Resistant
- Clinical Samples in North India
- Pyridoxine Toxicity in Pediatric Patient

Discovering Thoughts, Inventing Future

VOLUME 23 ISSUE 1 VERSION 1.0

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Pyridoxine Toxicity in Pediatric Patient with ESRD on Peritoneal Dialysis. Case Report

By Nawras Al Hadi, Badria Al Ghaithi & Hilal Al Hashami

Abstract- Pyridoxine induced toxicity was first described in 1984 in 58 years old female patient who used megadose as prescribed by her physician to treat carpal tunnel syndrome. Later on, couple of case report also reported different forms of neurosensory toxicity in adult patients on high doses and/or long-term therapy of pyridoxine. We present the first case of pyridoxine toxicity in pediatric patient received therapeutic dose of pyridoxine of 1 mg/kg/day once daily who presented with low blood pressure, headache and hypersomnia.

Keywords: pyridoxine, children, toxicity.

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Nawras Al Hadi [α], Badria Al Ghaithi [σ] & Hilal Al Hashami [ρ]

Abstract- **Pyridoxine induced toxicity was first described in 1984 in 58 years old female patient who used megadose as prescribed by her physician to treat carpal tunnel syndrome. Later on, couple of case report also reported different forms of neurosensory toxicity in adult patients on high doses and/or long-term therapy of pyridoxine. We present the first case of pyridoxine toxicity in pediatric patient received therapeutic dose of pyridoxine of 1 mg/kg/day once daily who presented with low blood pressure, headache and hypersomnia.**

Keywords: pyridoxine, children, toxicity.

Abbreviation: PN (pyridoxine), TB (Tuberculosis), PLP (pyridoxal 59-phosphate), RDA (Recommended Dietary Allowances), CKD (chronic kidney disease), ESRD (end stage renal disease), PDXK (pyridoxine kinase)

I. Case Report

A 4-year-old child with end stage renal disease secondary to Caroli syndrome. He has been on peritoneal dialysis for two years. He presented with 5 days history of a sudden onset headache, hypotension, numbness of all limbs, sleepiness and lethargy. Parents also gave a history of unsteady gait for two days. There was no history of fever, weakness, change in memory or loss of bowel or bladder control. There was no history of change in behavior or loss of conscious level. Parents denied any history of trauma, animal exposure and sick contact. Mantoux test was done recently as part of pre-transplantation work up. The test was positive and hence started on isoniazid and pyridoxine does of 20mg OD (1-2mg/kg/day, Weight: 17Kg) for treatment of latent TB.

On initial examination, child was alert, conscious and vitaly stable. Motor, sensory exam were normal. Reflex examination was normal in all extremities, and his gait was normal. Other systemic examinations were unremarkable.

Laboratory investigations included complete blood count, C-reactive protein, thyroid-stimulating hormone, vitamin D, glucose, liver transaminases were normal. His estimated glomerular filtration rate is below 15 ml/min/m2. CT head scan was done considering the acuity of child presentation and was normal.

Possibility of pyridoxine induced neurotoxicity was considered yet pyridoxine level couldn't be sent because of lack of availability. Therefore, child was admitted for observation and pyridoxine was put on hold.

On Day 1 of admission, child was clinically stable; nurses and parents were instructed clearly to not administer pyridoxine to the child. Neurology team was involved to evaluate the child, they have concluded that symptoms go with peripheral neuropathy, looking into the clinical and laboratory data the likely cause is pyridoxine

Infectious disease team was consulted for dose adjustment; the dose was decreased to half of the initial dose for his weight and child was discharged on 10 mg OD dose with close follow-up.

He was seen after two weeks in infectious disease clinic and parents reported significant improvement of his symptoms, yet he is still not at his baseline. Month later, child was readmitted in general ward under his primary team for treatment of peritonitis; mother mentioned that child still suffering from increase sleepiness and lethargy and that they haven't completely resolved even after reducing medication to half. After discussion with his primary team and infectious disease team, pyridoxine was stopped completely with close follow up. On subsequent out patient visit; his symptoms improved dramatically and he continued on isoniazid alone.

II. Discussion

Kidney transplantation is the best option of treatment for children with end stage kidney disease. Mantoux test is considered as part of pretransplant work up.

Our patient was diagnosed to have latent disease based on positive tuberculin skin test and negative chest X-ray in asymptomatic patient. He was started on treatment with INH and pyridoxine regimen.

Vitamin B6 is a water-soluble vitamin which present in mainly 3 natural forms, commonly used in clinical practice is pyridoxine [6,21].

Vitamin B6 is absorbed into the body and then converted to pyridoxal 59-phosphate – it's active form-(PLP). It acts as an enzyme co-factor and or regulator, facilitating different cellular function. It's essential in amino acid metabolism, energy-generating pathways, immune function as well as steroid synthesis [9,4]. In the

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brain, PLP is required in the synthesis of different neurotransmitters important in both neuronal excitation and inhibition. It's then catabolized through the oxidation of pyridoxal to 4-pyridoxic acid, which is excreted in urine [21].

Daily recommended dose of vitamin B 6 varies according to the age of patient and indication of usage and form of supplementation. In pediatric age group, the daily-recommended dose increases with age. In our patient, 0.6 mg/day is the RDA of vitamin B6 with an upper limit of 40 mg/day of pyridoxine [21].We followed national guidelines and started the patient on 20 mg OD dose of pyridoxine for patient on isoniazid to prevent neurotoxicity.

Pediatric patients with chronic kidney disease (CKD) are at increased risk of complications especially those with advanced disease or on renal replacement therapy. As a result of reduce dietary intake, altered metabolism as well as dialysate-driven losses of water-soluble vitamins and select trace elements [7,10,13]. Add to that, these patients are on multiple medication that can alter the absorption and utilization of these elements.

Vitamin B6 and CKD relationship is a complex that is not fully understood. Many reports suggest presence of an evidence of vitamin B6 deficiency in advanced CKD patient. Nevertheless, the intake and/or requirements of vitamins and trace elements in pediatric chronic kidney disease (CKD) or ESRD populations have not yet been studied in randomized controlled trials [12].

Vitamin B6 deficiency has been observed in hemodialysis patients and well-studied. High-efficiency hemodialysis is leading to an even higher clearance of pyridoxine which sometimes found low even with replacement [14].

Unlike hemodialysis, children on peritoneal dialysis have either normal or high level of vitamin B6 without supplementation [15].

In recent meta-analysis, pyridoxine clearance is much lower in peritoneal dialysis than in hemodialysis, where mean serum levels can fall by 28-48 % depending on the dialyzer used [3,7,11,18].

In animal study it was found that the susceptibility to pyridoxine-induced neuronopathy increases 5- to 10-fold in rats with renal failure upon chronic exposure. Furthermore, less than one week of protein deficient diet was able to accelerate and intensify the histological lesions and clinical signs of toxicity in these rats [17].

The exact mechanism of pyridoxine induced neuropathy (PN) is not well established. Proposed hypotheses include formation of reactive quinone methide, aldehyde toxicity through elevated PL/PLP concentrations, inhibition of PLP-dependent enzymes, andpyridoxal kinase (PDXK) inhibition [16,22,23]. Histopathologicaly it was found that toxic exposure to PN induced cell body degeneration of primary sensory ganglion and demyelination, consequently axonal degeneration. If exposed for long time, cell injury may result in irreversible damage [19].

The clinical picture of PN induced neuropathy comes to our knowledge from clinical reports, patient typically present with sensory peripheral axonopathy involving stocking gloves distribution, however few cases report describes central and transit autonomic nerves system involvement [1]. Patient may suffer from paresthesia, hyperesthesia, bone pains, muscle weakness, numbness and fasciculations [2,8,20]

Although it may seem simple, identifying PN poisoning is quite challenging. When it comes to measuring plasma level of B-6 vitamer: Elevated PN plasma level is often not indicative of PN accumulation [22]. On the other hand, electrophysiological studies may aid in the diagnosis of sensory axonopathy, but it lacks any distinct characteristics [5]. Hence, clinician need to use their clinical judgment to safely reach to the diagnosis.

There is no reported treatment option. In majority of case reports drug cessation is needed. If the injury to the nerve is not advance, ganglions can regenerate leading to clinical improvement.

III. Conclusion

Still there is little known to the pathophysiology of PN induced neuropathy. Therefore, we can conclude that in certain circumstances usage of pyridoxine supplementation should be used with cautions as in our patient. Parents should be counsel about the possible symptomatology that can develop overtime to their children.

References Références Referencias

1. Albin RL, Albers JW, Greenberg HS, Townsend JB, Lynn RB, Burke JM Jr, Alessi AG. Acute sensory neuropathy-neuronopathy from pyridoxine overdose. Neurology. 1987 Nov; 37(11):1729-32. doi: 10.1212/wnl.37.11.1729. PMID: 2823181.
2. Bacharach R, Lowden M, Ahmed A. Pyridoxine Toxicity Small Fiber Neuropathy With Dysautonomia: A Case Report. J Clin Neuromuscul Dis. 2017 Sep; 19(1): 43-46. doi: 10.1097/CND.0000000000000172. PMID: 28827489.
3. Boeschoten, E. W. et al. (1988) 'Deficiencies of vitamins in capd patients: The effect of supplementation', Nephrology Dialysis Transplantation, pp. 187–193. doi: 10.1093/oxfordjournals.ndt.a091643.
4. Calderon-Ospina, C. A., Nava-Mesa, M. O. and Paez-Hurtado, A. M. (2020) 'Update on safety profiles of vitamins B1, B6, and B12: A narrative review', Therapeutics and Clinical Risk

Management, pp. 1275–1288. doi: 10.2147/TCRM.S274122.
5. Camdessanché, J. P. et al. (2009) 'The pattern and diagnostic criteria of sensory neuronopathy: a case-control study', Brain, pp. 1723–1733. doi: 10.1093/brain/awp136.
6. Clase, C. M., Ki, V. and Holden, R. M. (2013) 'Water-Soluble Vitamins in people with low glomerular filtration rate or on dialysis: A Review', Seminars in Dialysis, pp. 546–567. doi: 10.1111/sdi.12099.
7. Corken, M. and Porter, J. (2011) 'Is vitamin B 6 deficiency an under-recognized risk in patients receiving haemodialysis? A systematic review: 2000-2010', Nephrology, 16(7), pp. 619–625. doi: 10.1111/j.1440-1797.2011.01479.x.
8. Dalton, K. and Dalton, M.J. (1987). Characteristics of pyridoxine overdose neuropathy syndrome. Acta Neurologica Scandinavica, [online] 76(1), pp.8–11. doi:10.1111/j.1600-0404.1987.tb03536.x.
9. Hadtstein, F. and Vrolijk, M. (2021) 'Vitamin B-6-Induced Neuropathy: Exploring the Mechanisms of Pyridoxine Toxicity', Advances in Nutrition, pp. 1911–1929. doi: 10.1093/advances/nmab033.
10. Harshman, L. A., Lee-Son, K. and Jetton, J. G. (2018) 'Vitamin and trace element deficiencies in the pediatric dialysis patient', Pediatric Nephrology, pp. 1133–1143. doi: 10.1007/s00467-017-3751-z.
11. Heinz, J. et al. (2008) 'Washout of water-soluble vitamins and of homocysteine during haemodialysis: Effect of high-flux and low-flux dialyser membranes', Nephrology, pp. 384–389. doi: 10.1111/j.1440-1797.2008.00946.x.
12. Joyce, T. et al. (2018) 'Vitamin B6 blood concentrations in paediatric dialysis patients', Pediatric Nephrology, 33(11), pp. 2161–2165. doi: 10.1007/s00467-018-4053-9.
13. Kopple, J. D. et al. (1981) 'Daily requirement for pyridoxine supplements in chronic renal failure', Kidney International, 19(5), pp. 694–704. doi: 10.1038/ki.1981.69.
14. Kosmadakis, G., Da Costa Correia, E., Carceles, O., Somda, F. and Aguilera, D. (2014). Vitamins in dialysis: who, when and how much? Renal Failure, 36(4), pp.638–650. doi:10.3109/0886022x.2014.882714.
15. Kriley M, Warady BA. Vitamin status of pediatric patients receiving long-term peritoneal dialysis. Am J Clin Nutr. 1991 Jun; 53(6): 1476-9. doi: 10.1093/ajcn/53.6.1476. PMID: 2035477.
16. Krinke, G. et al. (1981) 'Pyridoxine megavitaminosis produces degeneration of peripheral sensory neurons (sensory neuronopathy) in the dog', NeuroToxicology, pp. 13–24.
17. Kulkantrakorn, K. (2014) 'Pyridoxine-induced sensory ataxic neuronopathy and neuropathy: revisited', Neurological Sciences, 35(11), pp. 1827–1830. doi: 10.1007/s10072-014-1902-6.
18. Mydlík, M. et al. (1998) 'Peritoneal clearance and peritoneal transfer of oxalic acid, vitamin C, and vitamin B6 during continuous ambulatory peritoneal dialysis', Artificial Organs, pp. 784–788. doi: 10.1046/j.1525-1594.1998.06220.x.
19. Rao, D. B., Jortner, B. S. and Sills, R. C. (2014) 'Animal models of peripheral neuropathy due to environmental toxicants', ILAR Journal, pp. 315–323. doi: 10.1093/ilar/ilt058.
20. Scott K, Zeris S, Kothari MJ. Elevated B6 levels and peripheral neuropathies. Electromyogr Clin Neurophysiol. 2008 Jun-Jul; 48(5):219-23. PMID: 18754531.
21. Stover, P.J. and Field, M.S. (2015). Vitamin B-6. Advances in Nutrition, [online] 6(1), pp.132–133. doi:10.3945/an.113.005207.
22. Vitamin B6 salvage enzymes: Mechanism, structure and regulation. (2011). Biochimica et Biophysica Acta (BBA) - Proteins and Proteomics, [online] 1814(11), pp.1597–1608. doi:10.1016/j.bbapap.2010.12.006.
23. Vrolijk, M. F. et al. (2017) 'The vitamin B6 paradox: Supplementation with high concentrations of pyridoxine leads to decreased vitamin B6 function', Toxicology in Vitro, pp. 206–212. doi: 10.1016/j.tiv.2017.07.009.

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Primary Bloodstream Infection in Pediatric Intensive Care Units at Joinville

By Camila Smekatz Simão Facchinello, Guilherme Warmling Schulz, Lucas Horochoski & Artur Ricardo Wendhausen

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Abstract- A retrospective data collection of patients with primary bloodstream infection diagnosis admitted to the surgical and pediatrics intensive care units of Dr.Jeser Amarante Faria Children's Hospital between March 2016 and March 2020 with 28 days or more of age. In this study, 122 medical records were included. Patients under 1 year of age represent most of the sample (72,95%) and those admitted to the surgical unit were the most affected by bloodstream infection (54,10%). The main comorbidity at admission was heart disease, followed by pneumonia and bronchiolitis. The average time to infection from device insertion was of 14,76 days.Bloodcultures showed microorganism growth, being the main agents found: Serratia marcescens (10,66%), Staphylococcus epidermidis (10,66%) and Pseudomonas aeruginosa (8,20%).

Keywords: sepsis · intensive care units, pediatric · catheter-related infections· cross infection · length of stay · pediatrics.

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Keywords: sepsis · intensive care units, pediatric · catheter-related infections· cross infection· length of stay · pediatrics.

I. Introduction

Healthcare-associated infection (HAI) is an acquired complication by the patient after his hospital admission and it is an important preventable cause of morbidity and mortality among hospitalized patients.[1] Among HAIs causes, the Primary Bloodstream Infection (PBSI) is considered one of the most relevant nosocomial infections in pediatrics. Around 10 to 23% of hospitalized children have hospital-acquired bacteremia and, despite all the advances made in hospital care, PBSI is associated with a high mortality in pediatric intensive care unit (PICU).In addition, PBSI increases hospitalization time and cost.[2,3]

PBSI risk factors are related to severity of underlying illnesses, age, prolonged hospitalization, invasive procedures, medications, parenteral nutrition, steroid exposure, use of central venous catheter (CVC), among others.[3,4,5,6] However, the main risk associated with PBSI is the use of intravascular devices, accounting approximately for 60% of nosocomial bacteria.[7] In the pediatric population, according to the National Nosocomial Infections Surveillance System (NNIS), PBSI rates can reach 7.3 cases per 1000 catheter-days.[8]

PBSI can be diagnosed from laboratory and clinical criteria. Those with positive blood culture have more objective diagnostic criteria. Nevertheless, blood culture sensitivity is variable due to technique variation among different hospitals and laboratories.9PBSIis caused mainly by coagulase-negative Staphylococcus, accounting for 31%.3

As PBSI have important consequences for both the patient and the health service, the analysis of incidence, of epidemiological profile and of the inpatient outcomes with PBSI are important to evaluate the need for prevention, identify possible improvements to be made in healthcare and achieve better and rationalized treatment, aiming for lower complications, morbidity, mortality, and healthcare-related costs.

II. Methods

Descriptive, observational and cross-sectional study between March 2016 and March 2020, with retrospective data collection from medical records on the PHILIPS Tasy system (Philips Healthcare, Cambridge, MA, USA) at Dr. Jeser Amarante Faria Children's Hospital (HJAF) in Joinville-state of Santa Catarina, Brazil.

In this study were included patients diagnosed from laboratory or clinical criteria with PBSI admitted to the general pediatrics and surgical PICU of the HJAF. The laboratory diagnostic criteria for PBSI was laboratory confirmed infections, with at least one positive blood culture not related to infection at another site. The clinical diagnostic criteria for PBSI used was clinical sepsis, more precisely, when treatment for sepsis was instituted and there was no apparent infection at another site, and the blood culture was negative.

Were excluded from the study children under 28 days of age, patients whose diagnosis has changed during the period of hospitalization and patients whose medical records were missing data or with incorrect or insufficient completion.

The collected variables are age, sex, diagnosis on admission, use of invasive devices, type of device - CVC or PICC (Peripherally Inserted Central Catheter),

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puncture site, previous comorbidities, and length of PICU stay.

To build the database Microsoft Excel software was used. The collected data were tabulated and its analysis was performed using IBM SPSS, version 21.0. Descriptive (absolute and relative frequency) and inferential analysis (Spearman Correlation Test, Kruskal Wallis Comparison Test and Mann-Whitney Comparison Test) were used.

The choice of non-parametric tests was based on the result of the Kolmogorov Smirnov normality test, in which the variables showed a tendency towards non-normality. In this way, data referring to the median and interquartile range were displayed. For all tests, a significance level of 5% (p-value < 0,05) was adopted.

This study complies with the guidelines for research involving human beings, contained in resolution 466/2012 of the National Health Council and was approved by the Ethics Committee in Research with Human Beings of the Hans Dieter Schmidt Hospital under number 4.365.075.

III. Critical Analysis

As it is an observational and descriptive study, it does not pose a risk to the patients. Likewise, there was no need for informed consent forms. The study also did not influence any change in patients' conduct and/or treatment. All collected data regarding patients are the sole responsibility and confidentiality of the researchers.

PBSI incidence analysis and PICU admitted patients' profile make it possible to assess the need for improvement in healthcare, aiming to reduce the mortality and morbidity resulting from disease complications and, consequently, the reduction of hospitalization time and hospital costs.

IV. Results

122 children were diagnosed with PBSI between March 2016 and March 2020. Their sociodemographic and clinical characteristics can be observed in Table 1. It also presents the data about length of stay of the CVC until infection with age, location, year and diagnosis variables. Length of stay of the CVC stay until infection presented a distribution with tendency to non-normality, therefore, non-parametric tests were used, and the median and interquartile range of the respective variables are shown.

Absolute and relative frequencies of PICU admission diagnoses and comorbidities can be seen in Table 2. Heart disease is the most common diagnosis at admission and/or comorbidity. Diagnoses such as multiple traumas, oncological pathologies, encephalitis, acute abdomen, among others, accounts for 19.67% of PICU admission diagnoses. Other comorbidities, such as encephalopathy and chronic lung diseases, added up to 17.21%.

Regarding central device usage, 96.97% of patients had at least one catheter, of which 75.0%were CVC and 21.97% were PICC. Only 3.03% of the evaluated patients did not have any type of central catheter and 8.2% had both devices simultaneously. Insertion sites and its statistically significant relation with central device type can be observed in Table 3.

Regarding microbiological profile, 101 blood cultures (82.79%) showed microorganisms growth, these are shown Table 4.

V. Discussion

When evaluating the characteristics of patients diagnosed with PBSI in the PICU, it was observed that most of them are infants. This age predominance is in line with other studies, it is due to the fact that this group has an immune system still in formation and many have underlying medical conditions that increase the risk of acquiring an infection.[8,10] There is not a specific pattern regarding sex as it is not a determining characteristic for infection.[2,4,8,11]

Patients with complex surgical conditions, mainly from heart diseases, have a great propensity to acquiring PBSI. This is due to the risk increase intrinsic to this population, such as: prolonged hospitalization, major surgical procedure, pro-inflammatory status, need for invasive devices, among others.[3,12,13]

As evidenced by Hatachi et al., PBSIs were associated with a longer length of PICU stay, a fact that demonstrates the severity of the patient condition and, as consequence, a greater need for healthcare.[14]

Hospitalization time until infection also varies significantly according to the population under study, as some groups have aggravating characteristics for acquiring PBSI. There are reports in literature of groups with similar profiles that converged to a median of 13.4 days of length of PICU stay until PBSI, a result slightly below the median of 14.76 days found in the sample studied in this present work.15 There were no correlations found of age and duration of CVC use until infection, therefore this comparison could not be performed.

Regarding the place where PBSI diagnoses were made, a study carried out in a cardiac PICU found most PBSI diagnoses were made in postoperative surgical patients.[12] These data corroborate the findings of this sample, since most surgical PICU patients have a heart disease.

Central device use is an important risk factor for PBSI.[2,5,7,10,15] The majority of the patients assessed in this study had a central device (96.97%) and, of these, 75% had a CVC. In relation to the device site, unlike this study, two studies show there is an infection predominance in femoral vein inserted catheters.[16,17] This discrepancy may occur due to unusual performance of the procedure in this site at HJAF.

Woods-Hill et al. described a significant risk increase of infection in patients with multiple central devices.[11] This present work, in contrast with the literature, found only 8.2% of patients with more than one central venous catheter, this fact is probably due to the population studied, in which only one central catheter was sufficient.

Gram-negative bacteria were the predominant etiological agents in this study (48.36%), specially Serratia marcescens, responsible for 10.66% of all PBSIs. This is different from many studies, mainly from developed countries, that have shown gram-positive bacteria prevail.[3,8,15,17,18]

Infections by gram-negative bacteria are closely related to healthcare assistance since these pathogens colonize the gastrointestinal tract and oropharynx. Several Serratia marcescens outbreaks have been described in literature, many of them related to devices and solutions contamination, being the hands of health professionals a major vehicle of transmission.[19]

Jang et al. published a study in which, by performing pulsed-field gel electrophoresis in the hands of health professionals from a neonatal Intensive Care Unit, strains of Serratia marcescens involved in an infectious outbreak were isolated, showing that the absence of basic care, such as hands hygiene, can negatively impact on several sectors of hospital care.[20]

In conclusion, it was observed that the profile of children with PBSI admitted to the HJAF PICUs from 2016 to 2020 was of infants with complex surgical conditions, mostly being heart diseases. Most of the patients had a CVC, and the jugular vein was the most prevalent puncture site. Regarding the PBSI microbiological profile, gram-negative bacteria were responsible for the highest number of infections recorded, and the median length of PICU stay until PBSI were 14.76 days.

VI. Limitations

This present work objective was to study the PBSI prevalence in HJAF PICUs, the infected patients' characteristics and its microbiological profile, being the incidence rate and final outcomes of the patients not analyzed.

Author´s contribuitions

Study design: Wendhausen AR

Data collection: Facchinello CSS, Schulz GW, Horochoski L

Data analysis: Facchinello CSS, Schulz GW, Horochoski L

Manuscript writing: Facchinello CSS, Schulz GW, Horochoski L

Manuscript revision: Facchinello CSS, Wendhausen AR

Study supervision: Wendhausen AR

Declaration: The data underlying the research text are contained in the manuscript in the form of tables. However, the database contains patient records and personal data, which is why they will be available on demand with the corresponding author.

Conflict of interests

The authors declare that they have no conflict of interest.

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References Références Referencias

1. Boev C, Kiss E. Hospital Acquired Infections Current Trends and Prevention. Crit Care NursClinics of North America. 2017; 21(1): 51-65.
2. Spir PRN. Epidemiologia das infecções de corrente sanguínea de origem hospitalar em hospital de assistência terciária, São Paulo, Brasil [master'sthesis]. São Paulo (SP): USP; 2007.
3. Piva JP, Garcia PCR. Prevenção e Controle de Infecções Relacionadas com Assistência em Saúde em Unidade de Terapia Intensiva. In Cunha J, Michelim L. organizadores. Medicina Intensiva em Pediatria. 2ª Ed. Revinter. 2014.
4. Mello MJG, Albuquerque MFPM, Lacerda RH, Souza WV, Correia JB, Brito MCA. Fatores de risco para infecção associada à assistência à saúde em unidades de terapia intensiva pediátrica: uma revisão sistemática. CadSaude Publica. 2009; 3: 5373-91.
5. Yamaguchi R, Noritomi D, Degaspare N, et al. Peripherally inserted central catheters are associated with lower risk of bloodstream infection compared with central venous catheters in paediatric intensive care patients: a propensity-adjusted analysis. Intensive Care Med. 2017; 43(8): 1097–104.
6. Torre FPF, Baldanzi G, TrosterEJ. Risk factors for vascular catheter-related bloodstream infections in pediatric intensive care units. RevBras Ter Intensiva. 2018; 30(4): 436-42.
7. BRASIL. Agência Nacional de Vigilância Sanitária. Infecção de Corrente Sanguínea. Orientações para Prevenção de Infecção Primária de Corrente Sanguínea. Agosto, 2010.
8. Richards MJ, Edwards JR, Culver DH, Gaynes RP. Nosocomial Infections in Medical Intensive Care Units in the United States. Pediatrics. 1999; 27(5): 853-4.
9. BRASIL. Agência Nacional de Vigilância Sanitária. Segurança do Paciente e Qualidade em Serviços de Saúde. Critérios Diagnósticos de Infecção Relacionada à Assistência à Saúde. 2013.2: 43-48
10. Lakshmi KS, Jayashree M, Singhi S, Ray P (2007) Study of nosocomial primary blood stream

infections in a pediatric intensive care unit. J Trop Pediatr. 53: 87–92.
11. Woods-Hill CZ, Srinivasan L, Schriver E, Haj-Hassan T, Bezpalko O, Sammons JS. Novel risk factors for central-line associated bloodstream infections in critically ill children. Infect Control Hosp Epidemiol. 2020; 41(1): 67-72.
12. Alten, JA, Rahman, A, Zaccagni, HJ, et al. The epidemiology of healthcare- associated infections in pediatric cardiac intensive care units. Pediatr Infect Dis J.2018; 37: 768–72.
13. Venturini E, Montagnani C, Benni A, Becciani S, Biermann KP, De Masi S, Chiappini E, de Martino M, Galli L; CLABSI (central-line associated bloodstream infections) study group. Central-line associated bloodstream infections in a tertiary care children's University hospital: a prospective study. BMC Infect Dis. 2016; 16(1): 725.
14. Hatachi, T., Inata, Y., Moon, K., Kawamura, A., Yoshida, K., Kinoshita, M., & Takeuchi, M. (2019). Effects of Healthcare-Associated Infections on Length of PICU Stay and Mortality. Pediatric Critical Care Medicine. 20(11), e503-e509.
15. Elward AM, Fraser VJ. Risk factors for nosocomial primary bloodstream infection in pediatric intensive care unit patients: a 2-year prospective cohort study. Infect Control Hosp Epidemiol.2006; 27: 553–60
16. Niedner MF, Huskins WC, Colantuoni E, Muschelli J, Harris JM, 2nd, Rice TB, Brilli RJ, Miller MR. Epidemiology of central line-associated bloodstream infections in the pediatric intensive care unit. Infect Control Hosp Epidemiol. 2011; 32(12): 1200–08.
17. Wylie MC, Graham DA, Potter-Bynoe G, Kleinman ME, Randolph AG, Costello JM, et al. Risk factors for central line-associated bloodstream infection in pediatric intensive care units. Infect Control Hosp Epidemiol. 2010; 31: 1049-56.
18. Yogaraj JS, Elward AM, Fraser VJ. Rate, risk factors, and outcomes of nosocomial primary bloodstream infection in pediatric intensive care unit patients. Pediatrics. 2002; 110(3): 481-5.
19. Cristina ML, Sartini M, Spagnolo AM. Serratia marcescens Infections in Neonatal Intensive Care Units (NICUs). Int J Environ Res Public Health. 2019; 16(4): 610.
20. Jang TN, Fung CP, Yang TL, Shen SH, Huang CS, Lee SH. Use of pulsed- field gel electrophoresis to investigate an outbreak of Serratia marcescens infection in a neonatal intensive care unit. J Hosp Infect. 2001; 48(1): 13-9.

Table 1: Statistical results related to length of PICU stay until infection and variables: year, age, gender, location and diagnosis.

Variables	Distribution of sociodemographic and clinical variables.		Length of stay of the CVC until infection			
	N	%	Mean	Median	Interquartile range	p-value
Year						
2016	31	25,41%	15,46	11,5	15,50	
2017	50	40,98%	14,85	11	16,00	
2018	20	16,39%	14,04	9	14,75	0.646*
2019	19	15,57%	15,5	13,5	13,50	
2020	2	1,64%	7	7	0	
Age						
29 days to 1 year old	89	72,95%	15,02	12	13	
1 to 2 years old	13	10,66%	18,3	11	20,50	
2 to 5 years old	10	8,20%	9	6,5	6,25	0.199*
5 to 10 years old	6	4,92%	11	10	12	
10 to 18 years old	4	3,28%	17,5	16	29,5	
Gender						
Male	67	54,92%	14,29	10	12	0.498**
Female	55	45,08%	15,32	12	15	
Location						
PICU	56	45,90%	14,77	11,5	16,75	0.408**

Surgical ICU	66	54,10%	14,75	11	13,50	
Diagnosis						
Surgical	65	53,28%	13,72	10	10,00	0.957**
Clinical	57	46,72%	15,94	13	18,50	
Total	122	100,00%	14,76	11	14,25	

Table 2: Absolute and relative frequencies of diagnosis and comorbidities at admission.

Variables	N	%
Diagnosis at admission		
Cardiopathy	65	53,28%
Pneumonia	23	18,85%
Bronchiolitis	10	8,20%
Others	24	19,67%
Comorbidities		
None	27	22,13%
Cardiopahy	61	50,00%
Genetic Syndrome	14	11,48%
Others	21	17,21%

Table 3: Comparison of PICC and CVC and association with puncture site.

Variables	PICC	CVC	p-value
Insertion Site	**n (%)**	**n (%)**	
Jugular Vein	-	82 (64.06)	
Femoral Vein	-	14 (10.94)	<0.001*
Subclavian Vein	-	3 (2.34)	
Upper and Lower Limbs	29 (22.66)	-	

*Note: CVC: Central Venous Catheter; PICC: Peripherally Inserted Central Catheter; *Fisher's chi-square test.*

Table 4: Microorganisms that cause PBSI at HJAF PICUs.

Microorganism	N	%
None	21	17,21%
Serratia marcescens	13	10,66%
Staphylococcus epidermidis	13	10,66%
Pseudomonas aeruginosa	10	8,20%
Klebsiella pneumoniae	10	8,20%
Enterobacter cloacae	8	6,56%
Staphylococcus aureus	8	6,56%
Candida albicans	6	4,92%
Escherichia coli	5	4,10%
Acinetobacter baumannii	5	4,10%
Enterococcus fecalis	3	2,46%

Candida parapsilosis	3	2,46%
Staphylococcus hominis	2	1,64%
Bulkhoderiacepacia	2	1,64%
Stenotrophomonas maltophilia	2	1,64%
Staphylococcus haemolyticus	2	1,64%
Candida tropicalis	1	0,82%
Enterobacter asburiae	1	0,82%
Enterococcus faecium	1	0,82%
Aeromonas salmonicida	1	0,82%
Haemophilus influenzae	1	0,82%
Klebsiella oxytoca	1	0,82%
Staphylococcus warneri	1	0,82%
Micrococcus luteus	1	0,82%
Streptococcus pneumonie	1	0,82%

Note: PBSI: Primary Blood Stream Infection; PICU: Pediatric Intensive Care Unit; HJAF: Dr. Jeser Amarante Faria Children's Hospital.

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The Resilience of 3rd and 4th Grade Students. Semester, in Times of Covid 19, at the Autonomous University of Chihuahua Case: Faculty of Accounting and Administration

By Dra. Myrna Isela García Bencomo, Dra. Brenda Guadalupe Burciaga Sánchez, Dr. Jesús Robles Villa & M. A. Karinna Idalia Holguín Magallanes

Abstract- The general objective was to identify the resilience of 3rd and 4th grade students. Semester in time of Covid 19 at the Faculty of Accounting and Administration of the Autonomous University of Chihuahua. It was carried out from March to December 2021. It was a mixed research, of an applied, non-experimental, transactional, hypothetical-deductive, field type with bibliographic support, with a sampling frame obtained from the list of students from the periods January-June and August-December 2021 for the 3rd and 4th semester, provided by the Academic Secretary of the Faculty of Accounting and Administration of the Autonomous University of Chihuahua. Non-probabilistic sampling, for convenience.

Keywords: resilience, student, academic resilience, Covid-19.

GJMR-C Classification: DDC Code: 940.547252092 LCC Code: D805.J3

Strictly as per the compliance and regulations of:

The Resilience of 3rd and 4th Grade Students. Semester, in Times of Covid 19, at the Autonomous University of Chihuahua Case: Faculty of Accounting and Administration

La resiliencia de los Alumnos de 3º y 4º. Semestre, en Tiempos de Covid 19, en la Universidad Autónoma de Chihuahua Caso: Facultad de Contaduría y Administración

Dra. Myrna Isela García Bencomo [α], Dra. Brenda Guadalupe Burciaga Sánchez [σ], Dr. Jesús Robles Villa [ρ] & M. A. Karinna Idalia Holguín Magallanes [ω]

Resumen- El objetivo general fue identificar la resiliencia de los alumnos de 3º y 4º semestre en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua en tiempo de Covid 19. La cual se efectuó de marzo a diciembre del 2021.Fue una investigación mixta, de tipo aplicada, no experimental, transeccional, hipotética-deductiva, de campo con apoyo bibliográfico, con un marco muestralobtenida de la lista de alumnos de los períodos enero-junio y agosto-diciembre del 2021 de 3º y 4º semestre, proporcionada por la Secretaria Académica de la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua. Los principales resultados fueron de las clases virtuales, donde lo quemás gusto fueron las actividades con un 40%. Principales conductas positivas durante la pandemia 60% corresponde a solidaridad, posteriormente la autoresponsabilidad, principales sentimientos un 20%, comprensión con un 15% y reflexión con un 5%, un 40% tenía sentimientos de frustración, 30% de aburrimiento, 20% coraje y 10% tristeza. La relación con la familia 40% respondió que fue una buena relación, las otras tres opciones fueron con un 20% cada una de ellas, sin conflictos, bien y más integrados. Se aprobaron tanto la hipótesis general, como específicas y se lograron el objetivo general y los específicos.

Palabras clave: resiliencia, alumno, resiliencia académica, Covid-19.

Abstract- The general objective was to identify the resilience of 3rd and 4th grade students. Semester in time of Covid 19 at the Faculty of Accounting and Administration of the Autonomous University of Chihuahua. It was carried out from March to December 2021. It was a mixed research, of an applied, non-experimental, transactional, hypothetical-deductive, field type with bibliographic support, with a sampling frame obtained from the list of students from the periods January-June and August-December 2021 for the 3rd and 4th semester, provided by the Academic Secretary of the Faculty of Accounting and Administration of the Autonomous University of Chihuahua. Non-probabilistic sampling, for convenience. The main results were from the virtual classes, where what they liked the most were the activities with 40%. Main positive behaviors during the pandemic 60% correspond to solidarity, later self-responsibility, main feelings 20%, understanding 15% and reflection 5%, 40% had feelings of frustration, 30% boredom, 20% courage and 10% sadness. The relationship with the family 40% responded that it was a good relationship, the other three options were with 20% each one of them, without conflicts, well and more integrated. Both the general and specific hypotheses were approved and the general and specific objectives were achieved.

Keywords: resilience, student, academic resilience, Covid-19.

I. Introducción

El primer caso de COVID-19 se detectó en México el 27 de febrero de 2020. El 30 de abril, 64 días después de este primer diagnóstico, día a día el número de contagios fue aumentando de una forma exponencial, alcanzando un total de 19,224 casos confirmados y 1,859 fallecidos (Suarez , Oroz Ruiz, & E.Ronquillo, 2020).

Esto obligó a la Secretaría de Educación Pública a efectuar el cierre en todas las escuelas desde pre-escolar hasta superior lo cual se efectuó el 22 de marzo del 2020.

A principios del 2020 se hizo presente el Covid 19 esto obligó tanto a los docentes como a los alumnos el afrontar la educación a través de la modalidad virtual, logrando que esto fuera no solo una manera de tomar las clases, sino también una nueva forma de educación, aplicando y utilizando todas las herramientas tecnológicas y pedagógicas de ese momento, siendo esto aún más difícil para los jóvenes alumnos, puesto que no todos tienen las herramientas tecnológicas necesarias para poder llevar las clases de manera virtual. De aquí surge la pregunta eje ¿Cómo se identifica la resiliencia de los alumnos de 3º y 4º semestre en tiempo de Covid19 en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua? Y la pregunta específica. ¿Cuáles son las principales conductas positivas que

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tienen los alumnos de 3º y 4ºsemestre en tiempos de pandemia?

Se buscó como objetivo general. Identificar la resiliencia de los alumnos de 3º y 4º. Semestre en tiempo de Covid 19 en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua. Así como objetivo específico:Definir las principales conductas positivas que tienen los alumnos de 3º. y 4º. Semestre en tiempos de Covid 19.

De los principales resultados el 100% tuvo únicamente clases virtuales, lo que más les gusto de estas clases fueron las actividades con un 40%, las principales conductas que se presentaron fueron%. Principales conductas positivas durante la pandemia 60% corresponde a solidaridad, posteriormente la autoresponsabilidad, principales sentimientos un 20%, comprensión con un 15% y reflexión con un 5%, un 40% tenía sentimientos de frustración, 30% de aburrimiento, 20% coraje y 10% tristeza. Se aprobó la hipótesis general y a través de todas las preguntas se logró contestar, tanto las preguntas generales como específicas, así mismo se lograron los objetivos generales y específicos.

a) Antecedentes

A finales del mes de diciembre del 2019, Wuhan, China se convirtió en el epicentro de un brote de neumonía de etiología desconocida que no cedía ante tratamientos actualmente utilizados. Día a día los contagios iban aumentando de forma exponencial, no solo en China Continental sino también en diferentes países. El agente causal fue identificado, un nuevo coronavirus (2019-nCoV) posteriormente clasificado como SARS-CoV2 causante de la enfermedad COVID-19. El 11 de marzo del 2020 la Organización Mundial de Salud declara a esta enfermedad como una pandemia (Koury & Hirshhaut, 2020).

México detecta el primer caso el 27 de febrero de 2020 en la Ciudad de México, el cual resulto positivo, y se trataba de un mexicano que había viajado a Italia y presentaba algunos síntomas. Siendo el 28 de febrero cuando se confirmaron dos casos más: un italiano de 35 años, residente de la Ciudad de México, y un ciudadano mexicano del estado de Hidalgo que se encontraba en el estado de Sinaloa. La fase 1 de COVID-19 comenzó ese día. En esta fase, los casos de infección son importados del extranjero y no hay casos de contagio local; el número de personas infectadas con el virus es limitado y no hay medidas estrictas de salud, excepto acciones con el objetivo de difundir las acciones preventivas.

El gobierno federal decretó el 24 de marzo el inicio de la fase 2 de la pandemia COVID-19 en el país, tras registrar las primeras infecciones locales. En esta fase se suspenden principalmente ciertas actividades económicas, se restringen las congregaciones masivas y se recomienda permanecer en el domicilio a la población.

El 21 de abril del 2020 se dio por iniciada la fase 3 por COVID-19 en México, ya que se tenía evidencia de brotes activos y propagación en el territorio nacional con más de mil casos. Las medidas tomadas en esta fase fueron la suspensión de actividades no esenciales del sector público, privado y social, así como la extensión de la Jornada Nacional de Sana Distancia hasta el 30 de mayo (Suarez, Oroz Ruiz, & E.Ronquillo, 2020).

Actualmente, México suma 17 mil 408 nuevos casos de coronavirus SARS-CoV-2, acumulando un total de 2 millones 771 mil 846 contagios y 239 mil 79 muertes, de acuerdo con el informe técnico dado a conocer por la Secretaría de Salud.

En un comunicado, la dependencia contabiliza:

- 484 nuevas muertes
- 5 millones 30 mil 535 casos negativos
- 108 mil 535 casos activos estimados
- 2 millones 171 mil 95 personas recuperadas de la enfermedad

La Ciudad de México, el Estado de México, Jalisco, Nuevo León, Veracruz, Sinaloa, Quintana Roo y Tabasco son las entidades con mayor número de casos activos. Seguida de Guerrero, Nayarit, Sonora, Guanajuato, Baja California Sur, San Luis Potosí, Yucatán, Oaxaca, Hidalgo, Puebla, Michoacán, Tamaulipas, Querétaro, Colima y Coahuila, como las entidades con más de mil casos activos, concentrando el 95 por ciento de los casos activos del país (Milenio, 2021).

Se sabe que los estudiantes universitarios se enfrentan a muchos desafíos en el contexto educativo, y el impacto de éstos ha demostrado poder tener una variedad de efectos negativos tanto a nivel psicológico (como depresión y burnout), así como sobre la salud (alteraciones en el sistema inmunológico) y la conducta (fracaso escolar y bajo rendimiento académico). Sin embargo, la evidencia nos muestra que algunos estudiantes tienen la capacidad de enfrentarse con éxito a estos desafíos y no dejarse abatir por experiencias académicas negativas. Estos estudiantes se animan más fácilmente aun con las adversidades y en general consideran los eventos negativos como superables.

En este sentido, el concepto de resiliencia *académica* ayuda a explicar este proceso y entender por qué algunos estudiantes que experimentan altos niveles de estrés son capaces de resistir e incluso pueden prosperar en esas condiciones(Meneghel, 2014).

b) Problema de investigación

A principios del 2020 se hizo presente el Covid 19 esto obligó tanto a los docentes como a los alumnos

a enfrentar la educación a través de la modalidad virtual, haciendo que esta fuera no solo una manera de tomar las clases, sino también una manera de arrostrar las adversidades, para los alumnos es más difícil todavía puesto que no todos tienen las herramientas tecnológicas necesarias para poder llevar las clases de manera virtual.

c) Pregunta eje

¿Cómo se identifica la resiliencia de los alumnos de 3º y 4º semestre en tiempo de Covid 19 en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua?

Preguntas específicas

- ¿Cuáles son las principales conductas positivas que tienen los alumnos de 3º y 4º semestre en tiempos de pandemia?
- ¿Cómo se reconoce la resiliencia de los alumnos del 3º y 4º semestre?

Objetivo General

Identificar la resiliencia de los alumnos de 3º y 4º semestre en tiempo de Covid 19 en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua.

d) Objetivos específicos

- Definir las principales conductas positivas que tienen los alumnos de 3º y 4º semestre en tiempos deCovid19.
- Reconocer la resiliencia entre los alumnos de 3º y 4º semestre ante el Covid 19

e) Justificación

La pandemia de enfermedad por coronavirus (COVID-19) ha provocado una crisis sin precedentes en todos los ámbitos. En la esfera de la educación, esta emergencia ha dado lugar al cierre masivo de las actividades presenciales de instituciones educativas en más de 190 países con el fin de evitar la propagación del virus y mitigar su impacto.

En el ámbito educativo, gran parte de las medidas que los países han adoptado ante la crisis se relacionan con la suspensión de las clases presenciales en todos los niveles, lo que ha dado origen a tres campos de acción principales: el despliegue de modalidades de aprendizaje a distancia, mediante la utilización de una diversidad de formatos y plataformas (con o sin uso de tecnología); el apoyo y la movilización del personal y las comunidades educativas, y la atención a la salud y el bienestar integral de las y los estudiantes. (C.E.P.A.L., 2020).

También en la Universidad Autónoma de Chihuahua, se tomaron medidas con objeto de no perder clases, se aprovechó el tiempo de vacaciones para preparar a los maestros con:

- Capacitación inmediata del personal docente en las plataformas de la universidad.
- Capacitación a docentes para la elaboración del material didáctico para enfrentar esta contingencia.

Cuando los alumnos regresaron ya estaba listo tanto las plataformas, como personal docente y administrativo, para continuar las clases en la modalidad virtual, sin embargo, no todos los alumnos estaban preparados para esta modalidad, la mayoría de ellos no contaban con las herramientas tecnológicas adecuadas, ni recursos económicos para comprar dichas herramientas y por otro lado prevenir el abandono escolar.

f) Delimitación del problema

Esta investigación se efectuó de marzo a diciembre del 2021 entre los alumnos de 3º y 4º semestre de la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua.

g) Hipótesis general

Ht Existe resiliencia en los alumnos de 3º y 4º semestre en tiempo de Covid 19 en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua.

h) Hipótesis específicas

Ht2 Las principales conductas positivas que tienen los alumnos de 3º y 4º semestre en tiempos de Covid 19 son:

- Solidaridad
- Comprensión
- Autorresponsabilidad
- Reflexión
- Coraje

Ht3 La resiliencia se reconoce por la manera que enfrentan los alumnos las adversidades como es el Covid 19.

i) Marco teórico

Lo que en su momento el día 14 de marzo de 2020 fuera para algunos motivo de festejo, celebración y júbilo por el anuncio emitido del Secretario de Educación Pública, Esteban Moctezuma Barragán, referente al adelanto de las vacaciones de semana santa como medida preventiva para mitigar los contagios de la nueva enfermedad COVID-19, en la actualidad, el sentir de millones de niñas, niños, jóvenes, madres, padres, maestros, directivos y demás implicados en el ámbito educativo se ha vuelto totalmente adverso, tomando diferentes posturas ante la nueva manera de impartir educación.

La alternativa de querer llevar la educación a través de plataformas y programas educativos sólo fue resultado de atestiguar las grandes brechas de desigualdad social que existen en el país, ya que no solo es el hecho de contar con los medios y recursos, sino también saber utilizarlos. He aquí otro de los retos a los que se han enfrentado principalmente maestros y

alumnos, el uso, manejo y acceso a las TIC (Tecnologías de la Información y las Comunicaciones), TAC (Tecnologías del Aprendizaje y el Conocimiento) y TEP (Tecnologías del Empoderamiento y la Participación). (Mendoza-Cardozo, 2020).

Sin embargo, no todo está perdido, porque hay una parte sumamente importante, la capacidad del ser humano de enfrentarse a las adversidades y es ahí donde la resiliencia toma un protagonismo realmente importante.

El tema de la resiliencia está dejando de ser un tema emergente para convertirse en un tema central en los campos de la psicología y de la psicología positiva específicamente, así como también de otras disciplinas como la pedagogía y la resiliencia al ser abordada ampliamente permite que se realice un ejercicio importante en el campo de la teorización como lo es el de reflexionar sobre ella lo que permitirá conceptualizarla y valorarla desde una perspectiva renovada, concibiéndola como la capacidad de la persona, de los seres humanos para sobreponerse a los riesgos de la existencia no sólo superándolos sino desarrollando al máximo su potencial (Noriega -Aguilar, Angulo-Arjona, & Angulo-Noriega, 2015).

La resiliencia se propone como una definición pragmática, que hunde sus raíces en las realidades educativas, con la finalidad de desarrollar habilidades para surgir de la adversidad, adaptarse, recuperarse y acceder a una vida significativa y productiva. Para Grotberg la resiliencia es la capacidad humana universal para hacer frente a las adversidades de la vida, superarlas e incluso ser transformado positivamente por ellas. Para Egeland, Carlson, Sroufe la resiliencia es el progreso de competencias a pesar de los obstaculos. Son dos los componentes esenciales de la resiliencia: la resistencia frente a los estragos, asimismo la capacidad para proteger la propia integridad bajo presión y más allá de la resistencia, la capacidad de forjar un comportamiento vital positivo pese a las circunstancias difíciles (Vanistendael y Lecomte, 2002). El concepto incluye, además, la capacidad de una persona o sistema social de enfrentar adecuadamente los problemas, de una forma socialmente aceptable. Para Cyrulnik (2002) la resiliencia es un proceso, un conjunto de fenómenos armonizados, en el cual la persona afronta un contexto, afectivo, social y cultural. (Villalobos-Torres & Castelán-García, S/F).

La perspectiva individual también incluye características psicológicas que promueven respuestas positivas ante una situación conflictiva: la confianza en uno mismo, el sentido de la autonomía, la motivación para incidir de forma efectiva sobre el entorno, la capacidad de autorregulación emocional, la capacidad de encontrar solución a dilemas interpersonales (Rutter 1987; Schooner *et al.* 2004), etc. Desde este punto de vista, estas cualidades resultan decisivas en episodios críticos de la vida de las personas, modificando la reacción hacia factores de riesgo. Esta dimensión personal se puede interpretar como una condición necesaria pero no suficiente para llegar a la resiliencia.

La escuela constituye una segunda dimensión relevante de la resiliencia. El clima escolar, y en especial la relación con profesores y compañeros, influye de manera decisiva en las probabilidades de éxito académico de estudiantes que se encuentran en situaciones de adversidad; las escuelas pueden aportar elementos clave: equipos directivos con capacidad de liderazgo, presencia de profesores motivados, apoyo de mentores, actividades extracurriculares, etc. También puede ser clave la capacidad de la escuela de forjar complicidades con agentes comunitarios y con las propias familias. La mejora de los vínculos familia-escuela es una de las estrategias más importantes establecidas por organismos internacionales como la Comisión Europea (2011) y la OCDE (2012) para reducir el fracaso escolar y el abandono prematuro de los jóvenes del sistema educativo. (Klose, 2015).

Según algunos expertos en resiliencia, Edith Grotberga (2006) la define como la capacidad de una persona para afrontar las adversidades de la vida, aprender de ellas, superarlas e incluso transformarse en persona. Según Vadebenito, Loizo y García (2009), lo definen como la capacidad de una persona para enfrentar eventos adversos, superar dificultades y verse fortalecida o transformada por las experiencias. Bajo las posturas antes mencionadas, algunos teóricos como Werner (1989) y Guajardo, Saavedra y Villalta (2008) manifiestan que existen factores protectores que intervienen en las personas para desarrollar la resiliencia, favoreciendo su inclusión dentro de un entorno con escenarios adversos.

En el campo de la educación se han expresado diferentes posturas hacia el proceso de enseñanza y aprendizaje, por ejemplo, Jean Piaget (1970), Lev Vygostky (1979), Albert Bandura (1982) y Abraham Maslow (1967), según sus diferentes contextos históricos, expresan diferentes conceptos, que de alguna manera están relacionados con las formas en que los estudiantes superan y demuestran actitudes resilientes a pesar de las deficiencias académicas. Según Castelan y Villalobos (2007), las instituciones educativas con directores y docentes resilientes son generalmente más exitosas y tienden a mantener un alto rendimiento académico. También apoyan a los estudiantes vulnerables para que fortalezcan y desarrollen la resiliencia a fin de desarrollar habilidades para una vida significativa y productiva. (Villegas-Aguilera, Flors-Alanis, Alvarado-Martínez, & Meza-Mejía, 2017).

Marco conceptual

Resiliencia

De acuerdo con el diccionario de la RAE, la resiliencia es la habilidad de adaptación delas personas ante un estado o situación adversos. Trasladada al contexto educativo, donde está tan de actualidad, se entiende por resiliencia la capacidad del estudiante de superar las dificultades y retos que conlleva obtener buenos resultados en un hogar en situación poco favorecida. (www.rae.es, s.f.).

j) Alumno

Alumno es un concepto que proviene de *alumnus*, un término latino. Esta palabra permite nombrar al *estudiante*o al *aprendiz* de una cierta *materia* o de un *maestro.* Un alumno, por lo tanto, es una persona que está dedicada al *aprendizaje.* (https://definicion.de, s/f).

k) Resiliencia académica

Proceso de enfrentar las dificultades en contexto académico y el logro de resultados positivos en situaciones de estrés (Meneghel, 2014).

l) Covid-19

La COVID-19 es la enfermedad causada por el nuevo coronavirus conocido como SARS-CoV-2. La OMS tuvo noticia por primera vez de la existencia de este nuevo virus el 31 de diciembre de 2019, al ser informada de un grupo de casos de «neumonía vírica» que se habían declarado en Wuhan (República Popular China (Organización Mundial de la Salud, 2019).

II. Criterios Metodológicos

La *naturaleza o enfoque* de la investigación fuemixta, cuantitativa, cuando a las variables es posible asignarles cantidades a través de valores numéricos y cualitativos cuando las variables se pueden describir.

La investigación FUE de *tipo aplicada,* ya que pretendió abordar un problema, en su etapa inicial, para posteriormente generar alternativas de solución.

La investigación fue de *carácter no experimental* ya que no se manipularon las variables de estudio y se trabajó sobre situaciones o hechos ya existentes. *Transeccional* ya que se aplicó en un solo momento.

Método hipotético-deductivo, el cual consiste en partir de aseveraciones en calidad de hipótesis y buscar refutar o falsear tales hipótesis, deduciendo de ellas conclusiones que deben confrontarse con los hechos (Bernal, 2009).

La presente investigación mixta, es un estudio de caso, el cual para Bernal (2009) es un procedimiento metodológico para estudiar a profundidad y en detalle una unidad de análisis dentro del universo poblacional a partir de uno o varios temas de interés por parte del investigador, siendo estos temas relevantes lo que en todo momento guían su estudio. (Bernal, 2009).

En la parte técnica se utilizó el programa de google forms para la formulación de preguntas y respuestas, posteriormente se empleó el mismo programa para realizar las gráficas de pastel con los resultados. Por otro lado, se efectuó una pregunta donde deseábamos saber cuál fue la experiencia personal de los jóvenes que participaron en esta investigación

Modo de campo con apoyo bibliográfico.

El trabajo de investigación se llevó a cabo en la Facultad de Contaduría, Administración y Economía de la Universidad Autónoma de Chihuahua de marzo a diciembre del 2021. En los semestres de 3º y 4º. Únicamente.

Población de interés con la que se trabajaron únicamente los alumnos de 3º. Y 4º. Semestre de la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua, que de manera voluntaria quisieron participar.

Marco muestral lista de alumnos de los períodos enero-junio y agosto-diciembre del 2021 de 3º y 4º. Semestre, proporcionada por la Secretaria Académica de la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua.

Tipo de muestreo no probabilístico, por conveniencia.

La *unidad de análisis* fue los alumnos de los períodos enero-junio y agosto-diciembre del 2021 de 3º y 4º. Semestre, proporcionada por la Secretaria Académica de la División.

a) Variables

Dependiente: La resiliencia de los alumnos de 3º y 4º. Semestre,

Independiente. En tiempos de covid 19

b) Indicadores

- Tecnología
- Actitud (conductas)
- Familia
- Escuela

c) Recolección de datos

Se utilizó la encuesta, como método de recolección de datos y la técnica de cuestionario, el cual está integrado por tres partes: primero datos generales del participante. Segundo, los indicadores y finalmente interpretación de los resultados.

d) Codificación de la información

Los datos se manejaron a través de la hoja de Excel

e) Procedimiento

- Se propuso el tema, ya que se estaba observando un cambo interesante en la conducta de los alumnos sobre todos en los del 3º y 4º semestre, los cuales se mostraban interesados en tener

buenas calificaciones y en aprender lo más que se pudiera de sus maestros.

- Se pidió a la Secretaría Académica la lista de alumnos.
- Se efectuó el protocolo de investigación.

III. Resultados y Conclusión

Esta investigación se efectuó de marzo a diciembre del 2021 en los alumnos del 3er semestre se aplicó el instrumento a 12 mujeres y 9 hombres y entre los alumnos de 4º. Semestre 10 mujeres y 6 hombres los cuales quisieron participar de manera voluntaria. 20% de las mujeres entre 20-22 años y 20% de los hombres en esa edad, de 20-21 80% de las mujeres y 62% de los hombres, finalmente un 18% de los hombres entre 23-24 años de edad.

A través de las preguntas de los sentimientos y las conductas positivas se pudo responder ampliamente a la pregunta general ¿Cómo se identifica la resiliencia de los alumnos de 3º y 4º. Semestre en tiempo de Covid 19 en la Facultad de Contaduría y administración de la Universidad Autónoma de Chihuahua? y a las específicas: ¿Cuáles son las principales conductas positivas que tienen los alumnos de 3º y 4º. Semestre en tiempos de pandemia? ¿Cómo se reconoce la resiliencia de los alumnos del 3º y 4º semestre? Esta fueron las principales respuestas de los alumnos el porcentaje mayor 60% corresponde a solidaridad, posteriormente la autoresponsabilidad, con un 20%, comprensión con un 15% y reflexión con un 5%, En relación a la familia un 40% respondió que fue una buena relación, las otras tres opciones fueron con un 20% cada una de ellas, sin conflictos, bien y más integrados. Estas respuestas también nos permitieron lograr el objetivo general y los específicos que eran Identificar la resiliencia de los alumnos de 3º y 4º semestre en tiempo de Covid 19 en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua.

En relación a la Hipótesis general se aprobó ya que se pudo probar que efectivamente existe resiliencia en los alumnos de 3º y 4º. Semestre en tiempo de Covid 19 en la Facultad de Contaduría y Administración de la Universidad Autónoma de Chihuahua. Y las respuestas anteriores también permitieron aprobar las dos hipótesis específicas.

En relación a la pregunta que se hizo, como parte de esta investigación La mayoría contestó que en un principio fue difícil acoplarse a las clases virtuales, a estar en casa, a los problemas de la internet y de la computadora, pero que conforme fueron avanzando los días esto fue cambiando y en estos últimos meses a sido sumamente tranquilo, consideran que si hubo aprendizaje de las clases y de ellos mismos, hablando de un desarrollo personal y de cómo se dieron cuenta que pueden hacer muchas cosas, aun estando en casa y por otro lado la convivencia en términos generales con su familia fue muy buena.

IV. Recomendaciones

La principal recomendación es hacer otra investigación cuando ya se regrese a clases presenciales, esto, para conocer cómo sería la integración de estos grupos que estuvieron en la modalidad virtual por la pandemia e identificar cuáles son sus fortalezas obtenidas de la situación difícil que han vivido durante sus estudios universitarios.

Bibliografía

1. Bernal, C. A. (2009). Metodología de la investigación. México: Pearson
2. C.E.P.A.L. (08 de 2020). https://www.cepal.org. Obtenido de https://www.cepal.org: https://www.cepal.org/es/publicaciones/45904-la-educacion-tiempos-la-pandemia-covid-19
3. https://definicion.de. (s/f). https://definicion.de/estudiante/. Obtenido de https://definicion.de/estudiante/: https://definicion.de/estudiante/
4. https://www.gob.mx. (04 de 2020). https://www.gob.mx/mejoredu/articulos/10-sugerencias-para-la-educacion-durante-la-emergencia-por-covid-19. Obtenido de https://www.gob.mx/mejoredu/articulos/10-sugerencias-para-la-educacion-durante-la-emergencia-por-covid-19: https://www.gob.mx/mejoredu/articulos/10-sugerencias-para-la-educacion-durante-la-emergencia-por-covid-19
5. https://www.gob.mx. (19 de 05 de 2020). https://www.gob.mx/inapam/es/articulos/resiliencia-comunitaria-en-tiempos-de-covid-19?idiom=es. Obtenido de https://www.gob.mx/inapam/es/articulos/resiliencia-comunitaria-en-tiempos-de-covid-19?idiom=es: https://www.gob.mx/inapam/es/articulos/resiliencia-comunitaria-en-tiempos-de-covid-19?idiom=es
6. https://www.observatoriorh.com. (19 de 03 de 2021). https://www.observatoriorh.com/orh-posts/coronavirus-10-actitudes-positivas-para-afrontarlo-con-exito.html. Obtenido de https://www.observatoriorh.com/orh-posts/coronavirus-10-actitudes-positivas-para-afrontarlo-con-exito.html: https://www.observatoriorh.com/orh-posts/coronavirus-10-actitudes-positivas-para-afrontarlo-con-exito.html
7. Klose, P. M. (2015). La rescliencia en la educación. Universidad de Zaragoza, 15-23.
8. Koury, J., & Hirshhaut, M. (2020). Reseña historica del covid 19: ¿como y porque llegamos a esta pandemia? Acta Odontológica, 19-23.
9. Mendoza-Cardozo, L. (19 de 06 de 2020). Educación futura: la educación en tiempos de covid-19. Obtenido de https://www.educacionfutura.org/la-educacion-en-mexico-en-tiempos-de-covid-

19/: https://www.educacionfutura.org/la-educacion-en-mexico-en-tiempos-de-covid-19/
10. Meneghel, I. (2014). https://www.want.uji.es. Obtenido de https://www.want.uji.es/el-rol-de-la-resiliencia-en-el-ambito-academico/#:~:text=Nos%20referimos%20a%20la%20resiliencia,positivos%20en%20situaciones%20de%20estr%C3%A9s.
11. Milenio. (27 de 07 de 2021). www.milenio.com/política/méxico-registra-17-mil-casos-covid-19-24. Obtenido de www.milenio.com/política/méxico-registra-17-mil-casos-covid-19-24: www.milenio.com/política/méxico-registra-17-mil-casos-covid-19-24
12. Noriega -Aguilar, G., Angulo-Arjona, B., & Angulo-Noriega, G. (2015). La resciliena en la educación, la escuela y la vida. Perspectiva docente: Textos y Contextos, 42-48.
13. Organización Mundial de la Salud. (2019). www.oms.org. Obtenido de www.oms.org.
14. Suarez, M., Oroz Ruiz, S., & E.Ronquillo, d. (2020). Epidemiología del COVID 19. Covid 19 Information, 3-5.
15. Villalobos-Torres, E., & Castelán-García, E. (S/F). La resciliencia en la educación. CEPindalo, 2-10.
16. Villegas-Aguilera, B. L., Flors-Alanis, I., Alvarado-Martínez, E., & Meza-Mejia, M. d. (2017). Resiliencia: factorprotector en el rendimiento académico de estudiantes universitarios. CIENCIA-UANL.
17. www.rae.es. (s.f.). www.rae.es. Obtenido de www.rae.es.

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Emergence of Multidrug Resistant *Enterococcus Species* Isolated from Clinical Samples in North India

By Puneeta Singh, Shalabh Malik & Vandana Lal

Abstract- *Background: Enterococci species* have become increasingly recognized as Multidrug resistant pathogens. This study aimed to determine the antimicrobial resistance profile of *Enterococcus* spp., *Enterococcus faecalis,* and *Enterococcus faecium* from various clinical specimens in Delhi, India.

Methods: The study was conducted at *Dr Lal path Labs*, Delhi from January 2020 to April 2022. Various clinical samples were collected and processed for bacterial isolation and susceptibility testing to antimicrobial agents. Samples were inoculated onto blood agar and CHROMagar media(only for urine isolates). The isolates were identified to genus and species level by cultural characteristics and MALDITOF-MS. Sensitivity testing to 11 antimicrobials was done using the VITEK- XL broth microdilution method.

Keywords: high-level gentamicin resistance (HLGR), vancomycin resistant enterococci (VRE), Enterococcus faecalis (E.faecalis), Enterococcus faecium (E.faecium), Tigecycline.

GJMR-C Classification: DDC Code: 616.0145 LCC Code: QR82.S78

Strictly as per the compliance and regulations of:

Emergence of Multidrug Resistant *Enterococcus Species* Isolated from Clinical Samples in North India

Puneeta Singh [α], Shalabh Malik [σ] & Vandana Lal [ρ]

Abstract- ***Background:*** *Enterococci species* have become increasingly recognized as Multidrug resistant pathogens. This study aimed to determine the antimicrobial resistance profile of *Enterococcus* spp., *Enterococcus faecalis,* and *Enterococcus faecium* from various clinical specimens in Delhi, India.

Methods: The study was conducted at *Dr Lal path Labs*, Delhi from January 2020 to April 2022. Various clinical samples were collected and processed for bacterial isolation and susceptibility testing to antimicrobial agents. Samples were inoculated onto blood agar and CHROMagar media(only for urine isolates). The isolates were identified to genus and species level by cultural characteristics and MALDITOF-MS. Sensitivity testing to 11 antimicrobials was done using the VITEK- XL broth microdilution method.

Result: A total of 5475 isolates were investigated. Among these, *E. faecalis* was the most common species isolated, accounting for 5272 (96.3%) of the isolates, followed by *E. faecium* 171 (3.1%) and 32 (0.5%) other *Enterococcus spp. E.casseliflavus* (5), *E. gallinarum* (13), *E. hirae* (3) and *E. avium* (11). The maximum number of isolates were from urine 4373 (79.9%), followed by the isolates from pus 366 (6.7%), fluid (4.5%), genital vaginal (4.7%), blood (3.5%), and respiratory (0.6%).

The resistant pattern of these isolates showed predominantly resistance to antibiotics such asCiprofloxacin, Levofloxacin, Daptomycin, and Tetracycline. High- level Gentamicin resistance (HLGR) was higher in *E. faecium* (66%) than in *E. faecalis* (48%).A total of 1141 (20.8%) isolates were found to be Vancomycin resistant. *E. faecium* tended to be considerably more resistant than *E. faecalis.* Bothspecies, were associated with multidrug resistance to Daptomycin, Linezolid, Teicoplanin, and Vancomycin, whereas all *Enterococcal* isolates were found susceptible to Tigecycline.

Conclusion: This study reveals anemergence of high rates of multidrug-resistant *Enterococci* and the prevalence of Vancomycin- resistant strains. Thus, newer antimicrobials warrant periodic surveillance of antibacterial susceptibilities to detect emerging resistance and prevent the spread of Multidrug and Vancomycin –resistance along with minimum inhibitory concentrations (MIC).

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Keywords: high-level gentamicin resistance (HLGR), vancomycin resistant enterococci (VRE), Enterococcus faecalis (E.faecalis), Enterococcus faecium (E.faecium), Tigecycline.

I. Introduction

Enterococci are Gram-positive cocci that occur in pairs or short chains, nonspore forming, catalase and oxidase-negative, and facultative anaerobic and are ubiquitous microorganisms that could be present in different environments such as soil, water, sewage, and plants [11]. *Enterococcus* is a part of the normal flora of the intestine of a wide variety of hosts—humans and other mammals, birds, reptiles, and insects—but for reasons that are not entirely clear, they emerged in the 1970s and 1980s as a global significant public health concern and now established as the leading cause of multidrug-resistant nosocomial infections of the bloodstream, urinary tract, surgical wounds, and other sites [1,2, 4, 7,10, 12]. *E. faecalis* is responsible for 80-90 percent and *E. faecium* 5-10 percent of the human *Enterococcal* infections[2, 3, 4, 8, 9, 12].

It is noteworthy that the *Enterococcus* species (*E. faecalis*, *E. faecium*) that were recognized before 1950, are capable of causing human infection. Presently *E. faecalis*is the most pathogenic species, but*E. faecium*is considered to be the more resistant to antimicrobials in humans [1].Since then, the proportion of antibiotic resistance particularly Vancomycin and Penicillin, has increased in *E. faecium* isolates [2, 10, 11]. A high mortality rate of *Enterococcal* infections is due to increasing Multidrug resistance (MDR) of the many antimicrobials, which include the β lactam antibiotics, the aminoglycosides, and most importantly, glycopeptides like Vancomycin warrant continued surveillance and early detection of VRE along with Minimum Inhibitory Concentrations (MIC) [12].

Other species, including *Enterococcus avium*, *E.gallinarum, E.casseliflavus, and E.hirae*, also have been isolated from human infection; such, cases are rare and considered opportunistic [1,16] *Enterococcus gallinarum,* and *Enterococcus casseliflavus* infections are of particular interest because of their intrinsic Vancomycin resistant, an antibiotic used to treat the

aminoglycoside-resistant enterococcal infections that became problematic in the mid-1980s [14,16].

Therefore, the study was done to know the emergence of Multidrug resistance of *Enterococcus spp*. to determine the diversity of species in various clinical isolates and identify suitable drugs for improving empirical therapy, focusing on Vancomycin susceptibility.

II. Materials and Methods

The present study was conducted in the Department of Microbiology, *Dr Lal Path labs*, Delhi, India, from January 2020 to April 2022. A total of 96,526 clinical samples such as urine, pus, blood, sputum, vaginal swab, and body fluids were collected and analyzed for routine culture at the Department of Microbiology. Of these samples, 5475 isolates of *Enterococci* were identified, with the majority being isolated from urine samples(4373).

The samples were inoculated on various agar plates, such as MacConkey's agar, blood agar, and CHROMagar, was used for the semi-quantitative urine culture and incubated overnight at 37°C. Identification of the Enterococcal isolates was done through colony characteristics, MALDI-TOF system (Bruker Daltonics), and VITEK-2 automated system (bioMérieux, India) using micro dilution method for antimicrobial susceptibility testing. Penicillin, Ciprofloxacin, Levofloxacin, Daptomycin, Linezolid, Vancomycin, High-level Gentamicin, Tetracycline, Teicoplanin, Tigecycline, and Nitrofurantoin were tested on Vitek XLusing the GP card P628 along with a control strain of ATCC *E.faecalis* 29212 and the antibiotic susceptibility pattern was interpreted as per the Clinical and Laboratory Standards Institute (CLSI) guidelines, 2022.

III. Statistical Analysis

The analysis done using the statistical software package Myla (Biomerieux) to compare age, antibiotic susceptibility pattern with MIC were included as variables in this study between various clinical isolates among *Enterococcus* species.

IV. Results

From various clinical samples, 5475 *Enterococcus* species were isolated in 2 years and four months, and the infection rate was estimated to be 5.7%. Among these, *E. faecalis* was the commonest 5272 (96.3%) species isolated, followed by E. faecium171 (3.1%), and 32 (0.5%) were other *Enterococcus* spp. (*E.casseliflavus* (5), *E. gallinarum* (13), *E. hirae* (3), and *E. avium* (11) [Table 1].

The maximum number of isolates were from Urine 4373(79.9%), followed by the isolates from Pus 366(6.7%), fluid (4.5%), genital vaginal (4.7%), blood (3.5%), and respiratory (0.6%) [Table 1].In this study, Urinary tract infections are mainly caused by *E. faecalis* and *E. faecium.* At the same time, there have only been 32 cases of other *Enterococcus* spp. (i.e., *E. hirae*, *E. avium*, *E. casseliflavus* and *E. gallinarum*) can cause clinical infections in the blood, pus, and fluid, such cases are rare and considered opportunistic. Out of 171 isolates of *Enterococcus faecium* accounted for most of these isolates were isolated from blood, followed by *pus, urine, and fluid*[Table 1].

The maximum number of *Enterococcus* isolates, 1832 (33.5%), were obtained from the young adults age group (13-35), followed by elderly adults (>65), 1428 (26.1%)[Fig.1] and 3359 (61.3%), of the *Enterococcus spp.* were isolated from the males, and 2116 (38.7%) were isolated from female patients.

Table 1: Distribution of *Enterococcus* species from various clinical specimens.

Enterococcus species	Blood	Pus	Fluid	Respiratory	High vaginal	Urine
E. faecalis (n=5272)	135	314	212	28	245	4338
E. faecium (n=171)	50	37	34	6	9	35
E. casseliflavus (n=5)	4	0	1	0	0	0
E. gallinarum (n=13)	7	3	2	0	1	0
E. hirae (n=3)	1	1	1	0	0	0
E. avium (n=11)	0	11	0	0	0	0
TOTAL *(n=5475)*%	197 (3.5%)	366 (6.7%)	250 (4.5%)	34 (0.6%)	255 (4.7%)	4373 (79.9%)

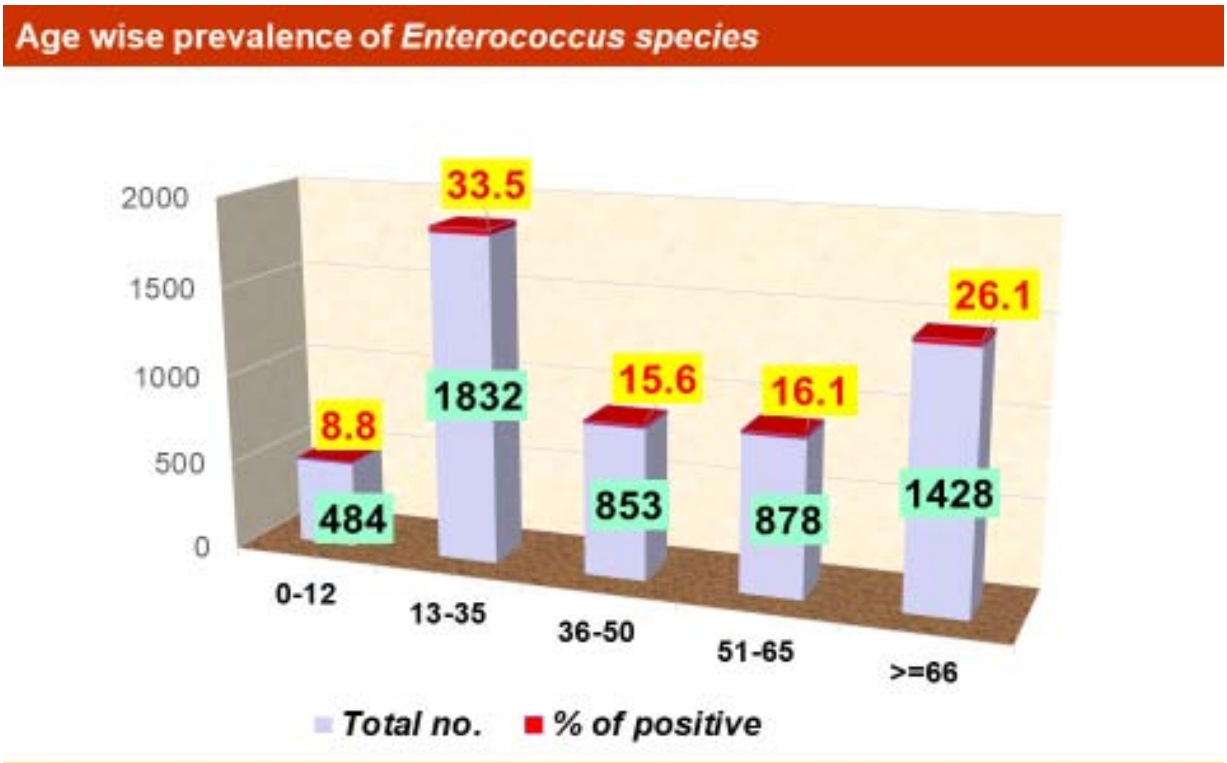

Figure 1: Age- specific distribution of Enterococcus Species

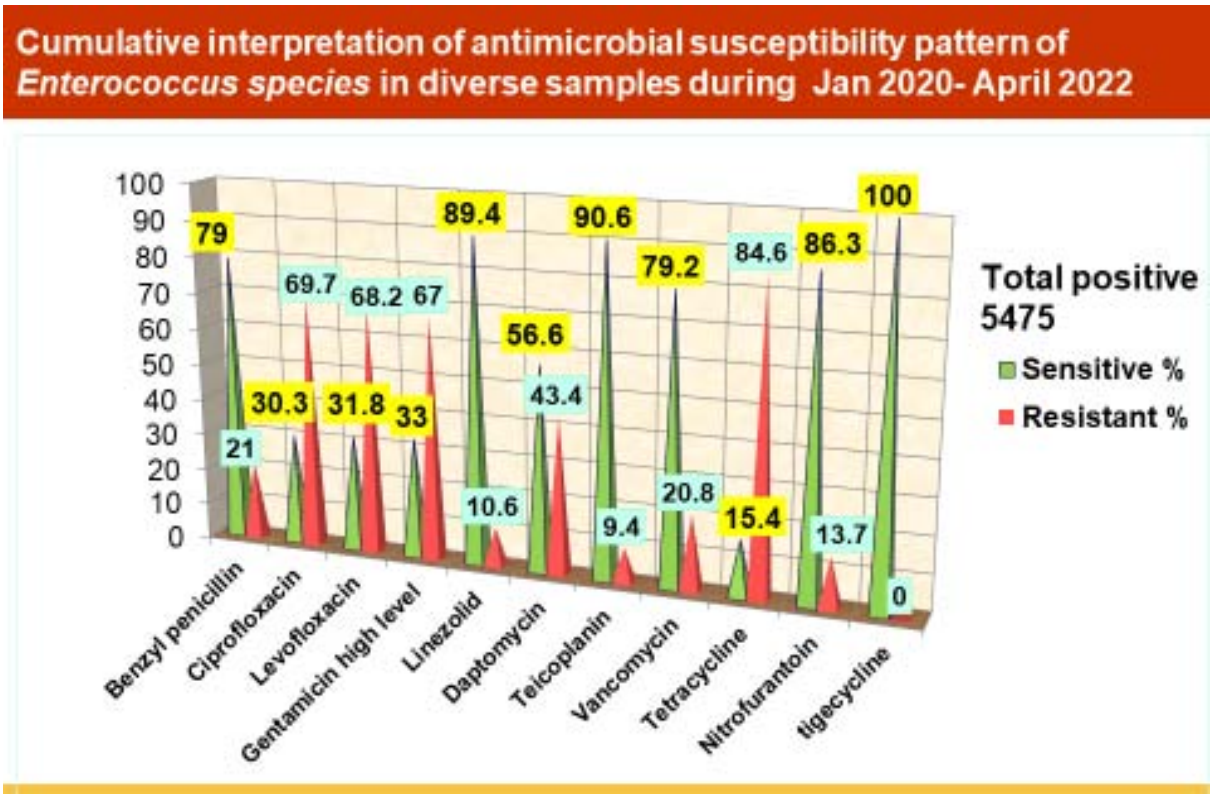

Figure 2: Cumulative interpretation of antimicrobial susceptibility pattern of *Enterococcus* species in various samples from January 2020 to April 2022

Antibiotic susceptibility was performed on all 5475 isolates, which were isolated over 2 years four months and the infection rate was estimated to be 5.7%. In our study, we have reported 21%resistance to Penicillin, and a total of 1141 (20.8%) isolates were found to be Vancomycin- resistant and had a MIC >8

µg/ml and <16 µg/ml and 32 µg/ml, which can be considered as Vancomycin intermediately resistant and resistant respectively. The resistance pattern of these *Enterococcus* isolates showed predominantly resistance to antibiotics like Ciprofloxacin (69.7%), Levofloxacin (68.2%), and Daptomycin (43.4%).

According to this data, reduced susceptibility among *Enterococcus* isolates was observed for High Gentamicin Level (67%) and the highest antibiotic resistance rate (84.6%) was shown against Tetracycline. In contrast *Enterococcus* isolates showed a low frequency of antimicrobial resistance to Teicoplanin (9.4%), Linezolid (10.6%), and Nitrofurantoin (13.7%). However, all isolates were susceptible to Tigecycline [Figure 2].

Table 2: Difference in Antibiotic susceptibility (%) among *Enterococcus* species with Cumulative MIC (50/90) from various clinical samples

Antibiotics	Range	*E.faecalis n=5272*		*E.faecium n=171*		*E. casseliflavus n=5*		*E.avium n=11*		*E. gallinarum n=13*	
		S%	$MIC_{50/90}$	S%	$MIC_{50/90}$	S%	$MIC_{50/90}$	S%	$MIC_{50/90}$	S%	$MIC_{50/90}$
Penicillin	≤ 8 - ≥16	82	2/32	18	64/64	80	2/32	50	2/64	92	2/8
Ciprofloxacin	≤ 0.5 - ≥4	30	8/8	16	8/8	100	0.5/1	38	8/8	42	8/8
Levofloxacin	≤ 1 - ≥4	32	8/8	17	8/8	100	0.5/1	25	8/8	42	8/8
Gentamicin high level	***	52	***	34	***	**	**	**	**	**	**
Linezolid	≤ 4- ≥8	90	2/4	77	2/8	100	<=1/2	50	<=2/8	100	<=1/2
Daptomycin	≤ 1- ≥8	58	2/8	**	**	**	**	**	**	**	**
Teicoplanin	≤ 8- ≥32	92	<=0.5/4	72	<=0.5/32	100	0.5/0.5	50	<=0.5/ 32	100	0.5/0.5
Vancomycin	≤ 2- ≥16	81	<=0.5/16	68	0.5/32	20	4/32	50	2/32	0	8/32
Tetracycline	≤ 4- ≥16	15	16/16	25	16/16	80	4/8	38	16/16	42	16/16
Nitrofurantoin (for urine isolates only)	≤ 16 - ≥64	89	<=16/64	33	64/128	**	**	**	**	**	**
Tigecycline	≤ 0.5 - ≥2	100	<=0.12/ <=0.12	100	<=0.12/ <=0.12	100	<=0.12<=0.12	100	<=0.12/ <=0.12	100	<=0.12/ <=0.12

***Not Tested*

The difference in antibiotic susceptibility profile of the different *Enterococcal* species isolates in this study is shown in Table 2. According to this data, Infections due to *Enterococcus faecalis* tend to be more virulent than infections due to *Enterococcus faecium,* and clinical isolates of *E. faecalis* tend to be considerably more susceptible to Penicillin than clinical isolates of *E. faecium,* (minimum inhibitory concentration for 50 and 90 percent of isolates [$MIC_{50/90}$] 2/32 µg/mL versus [$MIC_{50/90}$] 64/64 µg/mL respectively). In this study, *Enterococcus* species carry a more resistance to Quinolones and Tetracycline, which were isolated from various samples. Quinolones (MIC50/90 8/8) and Tetracycline activity (MIC50/90 16/16) recorded a high resistance rate against *Enterococcus* spp. demonstrated that 50% and 90% of isolates were within 8µg/ml and 16µg/ml, respectively. Penicillin, Linezolid, Teicoplanin, and Nitrofurantoin were sensitive to more than 80% of *E. faecalis*. Another susceptibility trait that helps distinguish these two species is that isolates of *E. faecalis* are usually susceptible to Nitrofurantoin; in contrast *E. faecium* isolates are resistant to Nitrofurantoin had a MIC50/90 (64/128µg/ml) demonstrated that 50 % and 90% of isolates were within 64µg/ml and 128µg/ml respectively [Table 2].

Vancomycin was sensitive to 81% of the *E. faecalis* and (MIC50/90 <=0.5/16) demonstrated that 50 % and 90% of isolates were within <=0.5µg/ml and 16µg/ml respectively whereas (68%) isolates of *E.faecium* were found to be Vancomycin sensitive had an MIC50/90(0.5/32 µg/ml) demonstrated that 50% and 90% of isolates were within 0.5µg/ml and 32µg/ml respectively. Furthermore, High-level Gentamicin resistance was higher in *E. faecium* (66%) than *E. faecalis* (48%).

90% of *E. faecalis* isolates were susceptible to Linezolid and Teicoplanin in comparison to *E. faecium* 77% and 72% had an MIC50/90(2/8µg/ml) and

(<=0.5/32µg/ml), respectively demonstrating that 2µg/ml and <=0.5µg/ml within 50 % and 90% of isolates were within eight and 32µg/ml respectively. In addition, all *Enterococcus* species were found to be less than 50% susceptible to Ciprofloxacin, Norfloxacin, and Tetracycline except *E.casseliflavus*. Surprisingly, other *Enterococcus* species were sensitive to most antibiotics except Vancomycin, and Tetracycline while *E. avium* were resistant to all antibiotics except Tigecycline [Table 2].

Table 3: Percentage of Vancomycin -Resistant *Enterococci* (VRE) isolated out of 5475 *Enterococcus* isolates from various samples

Specimen	VR% in *E.faecium + other Enterococcus spp*	VR% in *E.faecalis*	Total VRE
Blood	30	44	74 (1.3%)
Urine	21	892	913 (16.6%)
Pus	20	41	61(1.1%)
Fluid	16	40	56 (1.0%)
Genital vaginal	1	29	30 (0.5%)
Respiratory	3	4	7 (0.1%)
Total	91 (1.6%)	1050 (19.2%)	1141 (20.8%)

A total of 1141 VRE included 1050 *E. faecalis*, 67 *E. faecium*, 5 *E. casseliflavus* isolates, 6 *E. avium,* and 13 *E. gallinarum* isolates. Among the VRE, 1050 *E. faecalis* (892 from urine, 44 from blood, 40 from fluid, 41 from pus, and four from respiratory). And of the total, 91 *E. Faecium* and other *Enterococcus species* isolates (30 from blood and 21 from urine, 16 from fluid, 20 from pus, and three from respiratory). Vancomycin resistance was seen in 1141(20.8%) of *Enterococcus spp.*, Most of the VRE isolates were *Enterococcus faecalis* (19.2%), the rest were *Enterococcus faecium* with other species of *Enterococcus*. And in present study, the highest numbers of VRE were isolated from the urine samples (16.6%), followed by blood, pus, and fluid, respectively (as shown in Table 3).

V. Discussion

Enterococcus is one of the significant pathogens affecting all age groups. According toour knowledge, this is the first study to determine the emergence of Multidrug resistant *Enterococci* in Delhi, North India. In the present study, the isolation rate of *E. faecalis* was more than that of *E. faecium*. Similar results have been reported from studies done elsewhere [2, 3, 8, 9]. However, studies carried out abroad and in India has shown *E.faecium* to be responsible for a more significant of *Enterococcal* infections than *E. Faecalis* [1, 5].

The rate of isolation of *Enterococcus* spp. was higher from urine (79.9%) and pus (6.7%), followed by body fluids (4.5%) and blood (3.5%) as shown in Table1 similar to studies done in India [3, 12] and other report showed different rates of isolation of *Enterococcus* spp. from clinical samples, which ranged from 10 to 80% from urine, from 16 to 45% from pus, and from 3 to 36% from blood. Thus, our report and other studies indicate that variation in isolation rate depends on the geographical area and the clinical samples chosen in the study [2, 8, 9, 12,13].

The recent emergence of *E. Faecium* and *E. faecalis* as MDR nosocomial pathogens. Hence, speciation and antibiotic susceptibility testing are necessary to detect the emergence and changing drug resistance pattern. Multidrug resistance among enterococci appears to be driven by the ubiquitous nature and other factors, such as the plasticity of their genomes, and it has the ability to translocate from the gastrointestinal tract to various tissues and organs as well as their virulence and antibiotic resistance are risk factors, and the acquisition of pathogenic microbial features [7, 16].

In our study, we have reported 21 percent of the *Enterococcal* isolates was resistant to Penicillin which were in disconcordance with other studies by the East and North part of India and abroad, who reported Penicillin resistance as 100 percent [1, 3, 5]. However, other studies have reported higher rates of Penicillin resistance in 30-80 percent [1, 2, 8, 13, 14]. Results of the present study *E.faecium* reported 80% resistance to Penicillin which was in concordance with another study in South India [9].

According to our data, the highest resistance was seen against Tetracycline, Ciprofloxacin, Levofloxacin, and Gentamicin high Level (HLG),which is in agreement with other studies carried out in India and abroad [1,2,3,5,6,13]. In this study, 48% and 66% of *E. faecalis* and *E. faecium* isolated from diverse samples were resistant to HLG, respectively, similar to the study done in South India [12]. HLGR in our study was observed to be higher than that reported from other Indian studies [4, 14], thus reflecting more significant usage of Gentamicin in this region. Our study was concordance with Jain and Shridhar *et al.,* [5, 12], who have reported more resistance to HLGR among *E. faecium* as compared to *E. faecalis* isolates. Studies

conducted in other regions have reported HLGR prevalence to be as high as 70 -100 percent [2, 9].

Overall, results of the present study were in agreement with previous studies, with the higher resistance to tetracycline appears in major *Enterococcus* spp. among *E. faecalis, E. faecium* likely reflecting the widespread use of these antibiotics in Delhi [2, 5, 7, 16].

Most of the studies are in correlate with present findings that *Enterococci* identified as the most frequent uropathogenic [3, 14]. And majority of the urine infections caused by *E. faecalis* isolates, 86.3% of *Enterococcus* isolates, were found to be sensitive to Nitrofurantoin which is in agreement with the previous study [9]. Nitrofurantoin is an excellent drug against enterococcal urinary tract infection and has been used formany years. It is both bacteriostatic and bactericidal [3, 6, 14].

Vancomycin-resistant *Enterococcus* is a significant cause of concern it can be expected to be a major problem in the coming years as this might share its resistance gene with other bacterial strains, causing a potential risk of Vancomycin resistant gene transfer from *Enterococcus* to *Staphylococcus aureus* [3, 12]. Meanwhile the rate of resistance of *Enterococcus* was found to be 20.3% to Vancomycin (Table 3). In present study, the highest numbers of VRE were isolated from the urine samples (as shown in Table 3). These data are supported by the study carried out by another study [6]. In a similar earlier study on *Enterococcus* isolates from India, and abroad, the prevalence of VRE has been reported to be between 0- 30 percent [1, 2, 3, 6, 9, 13]. In our study, 1141 (20.8%) isolates were found resistant to Vancomycin, with *E.faecalis* (19.2%) showing higher resistance than *E. faecium* with other *Enterococcus spp.* (1.9%) as shown in Table 3. Our study was similar to Wada *et al*.,[15], whohad also reported more resistance among *E. faecalis* isolates though Arabi *et al.,*[2]found vancomycin resistance to be greater among *E. faecium* isolates.

Worryingly, resistance to antibiotics are used to treat VRE, like Linezolid, Daptomycin, and Teicoplanin has left us with very few therapeutic options for *Enterococcal* infection. Teicoplanin resistance was found in 9.3 percent of the isolates in our study (Figure 2), with *E. faecium* (28%) showing more resistance as compared to *E. faecalis* (8%), as shown in Table 2. Teicoplanin and Linezolid resistance in our study was observed to be higher than that reported from other Indian studies [9, 4, 5, 12, 13, 14] thus reflecting more significant usage of Teicoplanin in this region.

Enterococci are considered reservoirs of antimicrobial resistance genes, which can be transferred to humans via the food chain. Other species, including *Enterococcus avium, E.gallinarum, E. casseliflavus*, and *E.hirae*, also have been isolated from human infection and were similar to other studies [3,14,16] whereas *Enterococcus gallinarum* and *Enterococcus casseliflavus* infections of particular interest because of their intrinsic Vancomycin-resistant [14], but susceptible to other drugs but *E.avium* have shown sensitive against only Tigecycline.

Additionally, with increasing rates of Vancomycin resistance among *Enterococcus* isolates, good stewardship combined with aggressive treatment with targeted antibiotics is necessary to treat these frequently encountered infection. Our study concordance with another study that nitrofurantoin are the preferred agent for VRE in UTIs [3]. Linezolid has been shown to be an effective first-line medication for endocarditis, although it is a bacteriostatic drug, and Tigecycline may be used to treat invasive severe infections specifically considered a preferred agent for polymicrobial intraabdominal infections caused by Vancomycin-resistant *Enterococci,* still, should not be used for VRE bacteremia as it distributes primarily to tissues and achieves low serum concentrations [10,16].

VI. Conclusion

In conclusion, Penicillin in *E.faecium* and High-level aminoglycoside resistance made this ineffective a treatment option for *Enterococcal*infection in Delhi. Multidrug and Vancomycin-resistant enterococci which can be expected to be a significant persisting clinical problem in the coming years because of the use of Vancomycin, Linezolid, Daptomycin and Teicoplanin can increase the selective pressure of these antibiotics hence in near future it is necessary to know the antibiogram of the *Enterococcal* isolates in an area to formulate antibiotic policy which may help in all health care settings to contain the dissemination of the resistant. As an alternative, Nitrofurantoin can be a better treatment option for the urinary infections caused by only *E. faecalis.* In addition, Tigecycline has been shown to be effective as the drug of choice for Multidrug and Vancomycin-resistant *Enterococcal* infection in intra-abdominal and soft tissue infections in Delhi, North India.

Ethical Approval: It is not applicable.

Conflicts of Interest: There are no conflicts of interest.

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References Références Referencias

1. Abamecha A, Wondafrash B and Abdissa A. Antimicrobial resistance profile of *Enterococcus species* isolated from intestinal tracts of hospitalized patients in Jimma, Ethiopia. BMC Res Notes. 2015; 8: 213.

2. Arbabi L, Boustanshenas M, Rahbar M, Owlia P, Adabi M, Koohi SR, Afshar M, Fathizadeh S, Ali Majidpour A, Talebi-Tahe M. Antibiotic Susceptibility Pattern and Virulence Genes in *Enterococcus* spp. isolated From Clinical Samples of Milad Hospital of Tehran, Iran. Arch Clin Infect Dis.2016; 11(3); e60130.
3. Barman J, Nath R and Lahari S. Drug resistance in *Enterococcus* species in a tertiary level hospital in Assam, India. Indian J Med Res. 2016; 143(1): 107–110.
4. Fernandes SC and Dhanashree B. Drug resistance & virulence determinants in clinical isolates of *Enterococcus* species. Indian J Med Res. 2013; 137(5): 981–985.
5. Jain S, Kumar A, Kashyap B, Kaur IR. Clinico-epidemiological profile and high level aminoglycoside resistance in enterococcal septicemia from a tertiary care hospital in east Delhi. Int J Appl Basic Med Res.2011; 1(2): 80–83. doi: 10.4103/2229-516X.91149.
6. Kaarthiga S, Bhavana J, Mahantesh, Yadukul S. Study on prevalence of Vancomycin Resistant Enterococcus and high level Gentamicin resistance among Enterococcus isolates in a Pediatric tertiary care hospital. IP Int J Med Microbiol Trop Dis. 2020; 6(3): 188-190.
7. Krawczyk B. Wityk P, Gałęcka M, and Michalik M. The Many Faces of Enterococcus spp.—Commensal, Probiotic and Opportunistic Pathogen. *Microorganisms*. 2021; 9(9): 1900; https://doi.org/10.3390/microorganisms9091900.
8. Mendiratta DK, Kaur H, Deotale V, Thamke DC, Narang R, Narang P. Status of high level aminoglycoside resistant in *Enterococcus faecium* and *Enterococcus faecalis* in rural hospital of central India. *Indian J Med Microbiol*. 2008; 26: 369–71.
9. Nayak PP, Dhanashree B, Shenoy S, Kotian SM. Antibiogram and genetic relatedness of clinical isolates of Enterococcus spp. in Mangalore, India. J Infect Dev Ctries. 2018; 12(11): 985-990. doi:10.3855/jidc.9966.
10. Prieto AMG,[1] Schaik WV,[1] Rogers MRC,[1] Coque TM,[2,3,4] Baquero F,[2,3,4] Corander J and Willems, R.J.L. Global emergence and dissemination of enterococci as nosocomial pathogens: Attack of the clones? *Front. Microbiol*. 2016; 7: 788.
11. Ramos S, Silva V, Dapkevicius MLE, Igrejas G, Poeta P. Enterococci, from Harmless Bacteria to a Pathogen. *Microorganisms* 2020; 8(8): 1118; https://doi.org/10.3390/microorganisms8081118.
12. Shridhar S and Dhanashree B. Antibiotic Susceptibility Pattern and Biofilm Formation in Clinical Isolates of *Enterococcus spp. Interdisciplinary* Perspectives on Infectious Diseases. 2019; Article ID 7854968 https://doi.org/10.1155/2019/7854968 (VRE sensitive HLGR resistant and Similar to pus isolation)
13. Sreeja S, Sreenivasa Babu P.R. and Prathab AG. The Prevalence and the Characterization of the Enterococcus Species from Various Clinical Samples in a Tertiary Care Hospital. J Clin Diagn Res. 2012; 6(9): 1486–1488.
14. Tuhina B, Anupurba S, Karuna T. Emergence of antimicrobial resistance and virulence factors among the unusual species of enterococci, from North India. Indian J Pathol Microbiol. 2016; 59: 50-5.
15. Wada Y, Harun AB, Yean CY, and Zaidah AR. Vancomycin-Resistant Enterococci (VRE) in Nigeria: The First Systematic Review and Meta-Analysis. *Antibiotics*. 2020; 9(9), 565; https://doi.org/10.3390/antibiotics9090565.
16. Zaheer R, Cook SR, Barbieri R, Goji N, Cameron A, Petkau A, Polo R, Tymensen L, Stamm C, Song J, Hannon S, Jones T, Hurch D, Booker CW, Amoako K, Domselaar GV, Read RR & McAllister TA . Surveillance of Enterococcus spp. reveals distinct species and antimicrobial resistance diversity across a One-Health continuum. Scientific Reports. 2020; 10: Article number-3937.
17. Clinical Laboratory and Standards Institute. Performance Standard for Antimicrobial Susceptibility Testing; M100. Vol. 31. Wayne, PA, USA: Clinical Laboratory and Standards Institute; 2022.

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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 or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

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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.
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7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

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3. Final approval of the version of the paper to be published.

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

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

Acknowledgments

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

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Preparing your Manuscript

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

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

Manuscript Style Instruction (Optional)

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

Structure and Format of Manuscript

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

A research paper must include:

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

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

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

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

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

Format Structure

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

All manuscripts submitted to Global Journals should include:

Title

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

Author details

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

Abstract

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

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

Keywords

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

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

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

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

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

Numerical Methods

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

Abbreviations

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

Formulas and equations

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

Tables, Figures, and Figure Legends

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

Figures

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

Preparation of Eletronic Figures for Publication

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

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

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Tips for writing a good quality Medical Research Paper

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Informal Guidelines of Research Paper Writing

Key points to remember:

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

Final points:

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

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

The discussion section:

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

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

General style:

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

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

Mistakes to avoid:

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

Title page:

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

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

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

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

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

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

Approach:

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

Introduction:

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

The following approach can create a valuable beginning:

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

Approach:

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

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

Procedures (methods and materials):

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

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

Materials:

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

Methods:

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

Approach:

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

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

What to keep away from:

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

Results:

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

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

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

Content:

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

What to stay away from:

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

Approach:

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

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

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

Figures and tables:

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

Discussion:

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

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

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:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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