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About the Journal

International Journal of Advanced Research in Medical, Nursing and Health Sciences (IJARMNHS) aims to promote excellence in medical and nursing research, and healthcare with a vision to advance knowledge for practice, education, research and administration in healthcare. The journal intends to disseminate high quality research reviews, clinical and contemporary healthcare issues based articles for the advancement of evidence based healthcare.

The target audience for the journal includes medical and para - medical professionals in all domains and at all hierarchical levels, who are committed to advance practice and professional development on the basis of new knowledge and evidence.

The journal is peer reviewed and published bi-annually. The journal publishes articles related to healthcare of individuals, families and/or community to help them attain or recover health and improve quality of life. Quality articles in the field of education, administration, teaching and learning, are considered for publication.

Aims and Scope:

IJARMNHS publishes issues twice a year (bi–annually) in printed (open access) and in online version with a goal to promote an extensive academic knowledge. We assist in the rapid publication of high quality results in the field of nursing science and related issues while maintaining rigorous peer-review process. All accepted papers will be appeared online immediately. The journal also desires to set a good benchmark in the publishing industry by helping the scientific community to enhance communication within the research communities, besides maintain a balance between the existing and emerging interdisciplinary technologies. Our Journal provides quality research article for academic researchers, working in the area of Medical sciences, Nursing and Health Sciences to contribute and communicate innovative work. We encourage submission of manuscripts related to (but not limited to) Advanced Practice Nursing, Family Health Care, Community Health Nursing, Critical Care Nursing Management, Nursing Theories, Health care policies, Public Health Nursing, Nursing Ethics, Health promotion and Secondary care. The focus and scope of the IJARMNHS is on patient safety, improving clinical outcomes, reducing health care costs and to decrease variations in patient outcomes, patient values and clinical expertise.

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EDITORIAL

Dear Readers

I am truly honoured to have been appointed as the head editor of the esteemed International Journal of Advanced Research in Medical, Nursing, and Health Sciences (IJARMNHS). Its purpose is to report on the most recent developments in the health care industry while also reflecting on and guiding future theoretical and clinical research. I intend to increase the journal's renown to the best of my ability.

Scientific articles, healthcare facility innovations, nursing education and administration, and other related topics may find a suitable home in our publication. The goal of our publication is to provide a platform for the dissemination of theoretical and practical knowledge as well as the investigation of potential future trends and applications.

Professionals will highly praise IJARMNHS. There have been eleven published articles that were shortlisted and include a range of topics related to nursing sciences, pharmaceutical sciences, and physiotherapy. To the distinguished individuals, writers, editors, reviewers, and everyone else who helped make Volume-2, Issue-2 (July–December–2024) a smashing success, I am eternally grateful.

- Editor–in–Chief

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The Impact of Maternal Stress on Pregnancy and Child Development

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Introduction

Maternal stress refers to the physical and emotional strain experienced by expectant mothers during pregnancy. It can arise from various sources such as work, family, financial issues, or concerns about the pregnancy itself.[1,2] Pregnancy and the postpartum period can be joyful and filled with positive expectations, yet they also come with stress and challenges. This time involves numerous physiological and psychosocial changes, requiring both mothers and fathers to confront various new challenges. Research indicates that maternal stress significantly affects both maternal health and fetal development.[2]

Causes of Maternal Stress

1. **Psychosocial and Psychiatric risk factors:**

    - **Relationship Problems:** Conflicts with partners or family members can elevate stress levels. Having a supportive partner serves as a buffer against the challenges of transitioning to parenthood, and safeguarding maternal mental health.
    - **Lack of Social Support:** Isolation and a lack of emotional or practical support can exacerbate stress.
    - **Financial Difficulties:** Economic instability is a significant contributor to anxiety. Numerous studies examining the relationship between low income, financial hardships, and antenatal depression have yielded inconsistent findings.[10]
    - **Pre-existing Mental Health Conditions:** Conditions such as anxiety or depression can be intensified during pregnancy. A history of mental illness, particularly anxiety and depression, as well as any psychiatric treatment during a previous pregnancy or at any time in life, is a recognized risk factor for developing anxiety and depression during pregnancy.[3]

2. **Physical Factors:**

    - **Health Complications and domestic violence:** Health Issues like gestational diabetes or hypertension can increase stress. Several studies have found that a history of abuse, sexual assault experiences, or exposure to domestic violence (especially by a spouse) before or during pregnancy are risk factors for antenatal anxiety, sadness, and symptoms of post-traumatic stress disorder.Risk factors for antenatal anxiety, sadness, and symptoms of post-traumatic stress disorder

include history of abuse, sexual assault, and exposure to domestic violence, especially by a partner.

- **Chronic Illnesses:** Ongoing health issues can add to the burden.
- **Lack of Sleep or Physical Discomfort:** Common during pregnancy, these can significantly impact stress levels.

3. **Environmental Factors:**

    - **Unstable Living Conditions:** Insecurity in housing or living in high-stress environments can elevate stress.
    - **Workplace Stress:**Poor working conditions, such as discrimination and the absence of essential entitlements during pregnancy, are linked to increased depression levels. Furthermore, women whose partners are unemployed are at a higher risk of experiencing antenatal depression. Job-related pressures and lack of accommodations for pregnancy can contribute.[10]
    - **Exposure to Harmful Substances:** Pollution or toxins in the environment can also be stress-inducing.[3]

4. **Obstetric and pregnancy-related risk factors:** Several studies have found that women who are pregnant in an unintended or undesirable way are more likely to go through prenatal anxiety and despair.Research has consistently shown an increased likelihood of antenatal depression and anxiety among women facing unplanned or unwanted pregnancies.[9] It is still unknown how parity affects the likelihood of prenatal anxiety and sadness. Women who are multiparous, however, seem to be more susceptible to these disorders. Individuals with a history of pregnancy or delivery complications, including past pregnancy loss, terminations, or stillbirth, are at an increased risk of experiencing antenatal depression, anxiety, and pregnancy-specific anxieties.[3]

Mechanisms of Maternal Stress Impact

Maternal stress affects fetal development through a complex interplay of biological mechanisms. These mechanisms include hormonal changes, immune system alterations, and impacts on placental function. Understanding these processes is crucial to comprehending how stress experienced by expectant mothers can have long-term effects on their children.

1. Hormonal Changes

Stress triggers the release of several hormones, most notably cortisol, which can cross the placenta and directly affect the fetus:

- **Cortisol:** Known as the primary stress hormone, cortisol is produced by the adrenal glands in response to stress. During pregnancy, elevated levels of maternal cortisol can cross the placenta, exposing the fetus to higher-than-normal levels. This may have an

impact on how the fetal hypothalamic-pituitary-adrenal (HPA) axis develops, which controls stress reactions throughout life. An overactive HPA axis in the fetus can lead to heightened stress reactivity and an increased risk of anxiety and behavioral problems in later life.[4]

- **Adrenaline and Norepinephrine:** These hormones are also elevated during periods of stress and can affect blood flow to the placenta. Reduced blood flow can limit the supply of oxygen and nutrients to the fetus, potentially impairing growth and development.

2. Immune System Alterations

High levels of stress can weaken the mother's immune system, leading to increased susceptibility to infections and inflammation:

- **Inflammatory Cytokines:** Inflammatory cytokines are signaling molecules that mediate and regulate inflammation and immunity, and stress can increase their production.These cytokines can cross the placenta and influence fetal immune development. Elevated levels of inflammatory cytokines in the womb have been linked to neurodevelopmental disorders such as autism and schizophrenia.
- **Altered Immune Function:** A compromised immune system in the mother can increase the risk of infections that might adversely affect the pregnancy. For example, infections can lead to preterm birth or other complications that negatively impact fetal development.

3. Placental Function

The placenta plays a critical role in providing oxygen and nutrients to the fetus and removing waste products. Maternal stress can impact placental function in several ways:

- **Placental Barrier Permeability:** Stress hormones such as cortisol can alter the permeability of the placental barrier, making it easier for harmful substances to reach the fetus. This increased permeability can also allow for the transfer of more cortisol, which can disrupt fetal development.
- **Nutrient Transport:** Chronic stress may impair the placenta's ability to transport nutrients effectively. This can lead to fetal growth restriction, resulting in low birth weight and increased susceptibility to chronic health conditions later in life.
- **Oxygen Supply:** Stress can also reduce blood flow to the placenta, limiting the oxygen available to the fetus. Low oxygen levels, or hypoxia, can have a serious effect on the development of the embryonic brain and raise the risk of neurodevelopmental problems.

4. Epigenetic Changes

Epigenetics involves changes in gene expression without altering the DNA sequence. Maternal stress can induce epigenetic modifications that affect the developing fetus:

- **DNA Methylation:** Stress can lead to changes in DNA methylation patterns, which can turn genes on or off. These changes can be long-lasting and influence the child's health and behavior throughout life. For example, genes involved in stress response, brain development, and immune function can be affected.
- **Histone Modification:** Stress can lead to alterations in histone proteins, which are responsible for winding DNA. These changes can impact the packaging of DNA, thereby influencing gene expression.

Consequences of Maternal Stress

Maternal stress during pregnancy can have wide-ranging consequences that affect both the expectant mother and her developing child. These consequences can manifest in various ways, impacting pregnancy outcomes, child development, and long-term health.

1. Effects on Pregnancy

- **Preterm Birth:** Maternal stress is associated with preterm birth, which can be defined as delivery before 37 weeks of pregnancy.One of the main causes of newborn morbidity and mortality, preterm delivery can cause the kid to have long-term health problems.
- **Low Birth Weight:** High stress moms are more likely to give birth to babies with low birth weights (less than 2,500 grams), which are linked to health concerns such respiratory disorders, delayed development, and a higher chance of developing chronic diseases in their later years.
- **Preeclampsia:** Preeclampsia, which usually appears during the twentieth week of pregnancy, is characterized by high blood pressure and harm to several organ systems, especially the liver and kidneys. Stress can raise the risk of preeclampsia, which can be extremely dangerous for the mother and the fetus.
- **Increased Likelihood of Cesarean Delivery:** Stress-related complications during pregnancy can lead to an increased likelihood of requiring a cesarean delivery, which carries its own set of risks and longer recovery times compared to vaginal delivery.[8]

2. Effects on Child Development

- **Cognitive and Behavioral Problems:** Children born to mothers who experienced high levels of stress during pregnancy may face cognitive challenges, including difficulties with attention, learning, and memory. They are also at a higher risk for behavioral problems such as hyperactivity, impulsivity, and conduct disorders.
- **Increased Risk of Developmental Disorders:**

  Developmental illnesses like as attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) have been linked to prenatal stress. A child's ability to function and achieve can be significantly impacted by these conditions.

- **Emotional Regulation Difficulties:** Maternal stress can affect the development of the child's emotional regulation systems, making them more prone to anxiety, depression, and difficulties in managing emotions effectively.
- **Higher Susceptibility to Mental Health Issues:** Children of mothers who are under stress are more prone to suffer from mental health illnesses including anxiety and depressive disorder.This vulnerability may persist into adolescence and adulthood, affecting their general well-being.[4,5]

3. Long-Term Health Impacts

- **Chronic Conditions:** Children of pregnant women who were under a lot of stress are more likely to grow up to have long-term health issues like obesity, cardiovascular disease, and asthma.These conditions can have lasting effects on their health and well-being.
- **Metabolic Disorders:** Prenatal stress can lead to metabolic changes in the fetus, increasing the risk of insulin resistance and type 2 diabetes later in life. These metabolic disorders can significantly impact an individual's health and require long-term management.
- **Immune System Dysregulation:** A child's immune system development may be impacted by maternal stress, increasing their vulnerability to autoimmune disorders, allergies, and infections.[6]

4. Intergenerational Effects

- **Epigenetic Changes:** Maternal stress can cause epigenetic modifications, such as changes in DNA methylation, which can be passed down to future generations. These changes can affect gene expression and potentially increase the risk of stress-related disorders in the offspring's offspring.
- **Behavioral Transmission:** Children who experience high levels of stress in utero may exhibit behaviors that perpetuate stress in their own lives and potentially in the lives of their children, creating a cycle of stress across generations.[5]

5. Societal and Economic Implications

- **Healthcare Costs:** The health complications associated with maternal stress, including preterm birth and chronic conditions in children, contribute to increased healthcare costs. These costs can place a significant burden on healthcare systems and families.
- **Productivity and Workforce Implications:** Developmental and health issues stemming from maternal stress can impact a child's educational attainment and future employability, affecting their ability to contribute to the workforce and society.
- **Social Services and Support Systems:** Increased demand for social services, special education, and mental health support can strain public resources and highlight the need for comprehensive support systems for affected families.

Strategies for Managing Maternal Stress

Managing maternal stress is crucial for the health and well-being of both the expectant mother and the developing child. Effective strategies encompass psychological interventions, lifestyle modifications, social support, and healthcare interventions[11]. These approaches aim to reduce stress levels, promote relaxation, and provide the necessary support during pregnancy.

1. Psychological Interventions

- **Cognitive-behavioral therapy (CBT):** CBT is a brief, structured therapy that aims to assist people in identifying and changing harmful thought and behavior patterns.For pregnant women, CBT can reduce anxiety and depression by teaching coping skills and stress management techniques.
- **Mindfulness-Based Stress Reduction (MBSR):** MBSR involves mindfulness meditation practices, body awareness, and yoga. It encourages present-moment awareness and acceptance, which can significantly reduce stress and improve emotional regulation.
- **Prenatal Counseling and Support Groups:** Counseling provides a safe space for expectant mothers to express their concerns and fears. Support groups allow them to connect with others experiencing similar challenges, fostering a sense of community and reducing feelings of isolation.

2. Lifestyle Modifications

- **Regular Physical Activity:** Exercise, such as walking, swimming, or prenatal yoga, can help reduce stress and improve mood. It also promotes overall physical health, which can mitigate some stressors associated with pregnancy.
- **Adequate Sleep and Rest:** Ensuring sufficient rest is essential. Improving sleep quality can be achieved by establishing a consistent sleep schedule and furnishing a cozy sleeping space. Short naps during the day can also be beneficial.
- **Balanced and Nutritious Diet:** A balanced diet full of entire grains, fruits, vegetables, lean meats, and healthy fats promotes general health. Avoiding excessive caffeine and sugary foods can help stabilize mood and energy levels.
- **Relaxation Techniques:** Prenatal massage, gradual muscle relaxation, and deep breathing exercises are a few methods that can ease physical stress and encourage calm.

3. Social Support

- **Building a Strong Support Network:** Having a reliable network of family and friends can provide emotional support and practical help. Sharing responsibilities and seeking help when needed can significantly reduce stress.
- **Participating in Prenatal Classes and Community Programs:** Engaging in prenatal education classes and community programs can provide valuable information, reduce

anxiety about childbirth and parenting, and offer opportunities to meet other expectant parents.

- **Communicating with Healthcare Providers:** Open and honest communication with healthcare providers about stress levels and concerns can lead to better support and appropriate interventions. Providers can offer resources, referrals to mental health professionals, and guidance on stress management.

4. Healthcare Interventions

- **Regular Prenatal Check-Ups:** Frequent check-ups allow healthcare providers to monitor the health of both the mother and the fetus, identify potential issues early, and provide timely interventions. This ongoing care can alleviate worries and provide reassurance.
- **Early Identification and Treatment of Mental Health Issues:** Screening for anxiety, depression, and other mental health conditions during prenatal visits is crucial. Early identification allows for appropriate treatment, such as therapy or medication, which can improve outcomes for both mother and child.
- **Access to Resources and Information:** Providing expectant mothers with resources on stress management, parenting, and childbirth can empower them with knowledge and reduce anxiety. Access to hotlines, online resources, and community programs can offer additional support.[11]

Conclusion

Maternal stress is a critical concern with far-reaching consequences for both mothers and their children. Understanding the sources and impacts of stress, and implementing effective management strategies, is essential for promoting healthier pregnancies and better developmental outcomes. Expectant mothers should be encouraged to seek support and adopt stress-reduction techniques to protect their health and the health of their babies.

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Intelligent science: The way AI is transforming the field of pharmaceuticals – A Review

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Abstract

Artificial intelligence (AI) is a branch of computer science that deals with the creation and application of machines that can mimic human behaviour, especially when it comes to the intelligent analysis and interpretation of data. Natural language processing (NLP), machine learning (ML), deep learning (DL), and other methods are all part of artificial intelligence (AI), which uses specific algorithms to function. Consequently, artificial intelligence has found use in the fields of pharmaceutical chemistry and medicine. The AI models used cover a wide range of approaches, such as unsupervised clustering methods applied to patients or pharmaceuticals to identify suitable patient cohorts or possible therapeutic molecules. Furthermore, the effectiveness of therapeutic drug monitoring is improved by the use of supervised machine learning techniques. Additionally, AI-assisted prediction of clinical outcomes

Key Words: Artificial Intelligence, Transforming, Pharmaceuticals, Drugs, Medicine

Introduction

Artificial intelligence (AI), and more especially machine learning (ML), have found significant traction in the field of healthcare applications during the past few decades [1]. In the field of pharmacology, artificial intelligence and machine learning techniques are applied to analyse various data sources efficiently. These sources cover a broad range, from the detailed chemical makeup of a medicinal ingredient to the entirety of a patient's clinical characteristics [1]. Additionally, the analysis encompasses genomic data and illness features [1]. The quantitative and categorical characterization of pharmaceutical molecules can be achieved through the development of molecular fingerprints and other QSAR descriptors [2]. In recent decades, there has been notable advancement in computational algorithms, especially those related to artificial intelligence and parallel computing.

Artificial Intelligence surpasses human skills through complex mathematical computations, research, and data analysis [3]. As a subset of AI, machine learning (ML) employs sophisticated computer algorithms to assess enormous volumes of data without the need for human participation [3]. Machine learning (ML) generates predictions by employing algorithms to learn from collected data, recognize patterns, and then generate predictions. Therefore, ML can be of great assistance at several stages of drug discovery, including pharmacological research such as identifying lead compounds [4]. As a result, this study offers a summary of the most recent advancements in artificial intelligence (AI) technologies utilized in clinical trials, pharmacovigilance, drug discovery, and design. Knowledge of the most recent developments is essential for researchers from many domains who work with pharmaceutical specialists.

Drug discovery and design

AI can be used from the bench to the clinical stage in the creation of a novel medication or any pharmaceutical product. bedside because of its capacity for logical medication design planning. Because of the rapidly growing pharmaceutical business, the creation of new pharmaceuticals is becoming more difficult and time-consuming due to a lack of state-of-the-art equipment [5]. A newly developed pharmaceutical product is then introduced into the market after a labour-intensive and multifaceted process known as discovery, which includes the identification of potential therapeutic targets, the synthesis and assessment of novel chemical entities, and more [6]. Because AI can interpret large amounts of data, it can effectively oversee the drug development process at every level.

In order to assist in the discovery of possible therapeutic targets for a variety of disease categories, including cancer, cardiovascular disease, and neurodegenerative disorders, among others, AI algorithms may also be able to examine genomic and proteomic data [5]. The in-silico Medicine startup recently used artificial intelligence (AI) to find the medicine for idiopathic pulmonary fibrosis. According to https://clinicaltrials.gov/ct2/show/NCT05154240, the therapy's phase I trials have produced encouraging results. AI is used in a number of procedures that are involved in the design and discovery of new drugs [7].

Drug-drug interactions Target binding affinity and predictions

Drug-target interaction phenomena are the intricate, physiologically active interactions that take place between chemicals and drug targets in the body. It is essential to forecast the drug-target interaction in order to determine a medication's therapeutic efficacy [8]. Understanding the potential and efficacy of a pharmacological substance as a treatment depends critically on the prediction of its interaction with a receptor or protein [5,9]. The absence of contact between the drug molecules and the targeted proteins will hinder the therapeutic activity of the medicine [5]. While it is possible to ascertain the bioactivity through in vitro and in vivo tests, these methods are costly and time-consuming [7]. Toxicity may also arise from the drug molecule's interaction with an unwanted protein or receptor.

A variety of databases have been established and relevant information has been systematically compiled by a thorough study of relevant literature and the synthesis of collected experience [10]. Consequently, an initial screening of established interaction data obtained from many databases, including Drug Bank, UniProt, PubChem, KEGG, and others, is one of the novel methodologies documented for drug-protein interaction predictions [11]. The vast majority of the information stored in these databases is freely available to the general public [10]. With the application of ML techniques, difficulties in drug-target interaction prediction can be effectively addressed thanks to the availability of this data [12]. Databases may provide datasets to researchers including a range of information according to their particular needs.

ML-based methods evaluate the degree of similarity of medicines and protein molecules to determine DTBA, such as Kronecker-regularized least squares (KronRLS). Regression trees

are used by Sim Boost to predict DTBA, and the model considers both feature-based and similarity-based interactions [13]. The first drug-target binding affinity model to be developed was based on deep learning techniques, such as DeepDTA. Convolutional neural networks (CNNs) are used to model compound 1D representations and protein sequences. This approach outperformed KronRLS77 and SimBoost in terms of concordance index (CI) performance [14]. Additionally, a more recent DL-based prediction model called wideDTA was used using word sequence data related to biology and chemistry. The maximum common molecular weight, ligand SMILES, protein sequence, and protein domains and motifs are the four word- or text-based sources that it uses.

Prediction of drug toxicity

Toxicity refers to the potential harm chemicals can cause to internal organs or systems. Drug toxicity prediction is crucial in drug development for identifying safety issues and creating safer medications. Regulatory bodies like the FDA and EMA set safety standards for drugs. Common machine learning methods for toxicity prediction include random forests, decision trees, k-nearest neighbor, and support vector machines. Advanced deep learning techniques such as deep neural networks, recurrent neural networks, convolutional neural networks, and various graph-based neural networks are also used. DeepTox, an AI tool using a three-layered deep neural network, reportedly outperforms traditional methods in drug toxicity prediction. Its workflow involves data cleaning, chemical descriptor generation, model evaluation, and ensemble prediction [16, 17].

Clinical trials (CT) of drugs

Artificial Intelligence (AI) is becoming recognized more and more as a practical means of attaining optimal and sustainable medication development. As a result, there is continuous discussion and investigation on the practical uses of AI in clinical trials [18]. Software applications that use target information can be used to forecast a drug's potential for toxicity. It is possible that existing pre-clinical methods such in vitro and animal models may be replaced by effective toxicity forecasts [19].

Predicting the clinical trial success

AI can be utilized in the early stages of clinical trials to forecast the drug's bioactivity, protein target interaction, toxicity, etc. Multi-instance learning (MI) algorithms are able to analyze the entire trail success since they are able to anticipate the disease's prognosis [18]. Being able to predict clinical trial outcomes in advance could improve pharmaceutical R&D efficiency, open up new financing sources, and produce innovative financial tools to support biotechnology research [20].

AI programs like PrOCTOR can predict drug-induced CT failure by analyzing drug descriptors, interactions, and expression levels. Similarly, Clinico CTOP models forecast outcomes of Phase II studies based on a drug's efficacy and target selection. For instance, the first-in-class factor B inhibitor LNP023 demonstrated that Clinics could effectively treat paroxysmal

nocturnal haemoglobinuria, even without prior knowledge of the drug's clinical significance. [21]. Creating a "AI arm" to go along with the study and control arm is another way to include AI technology into randomized controlled trials (RCTs) so that the trial's potential can be verified regardless of its main goal [22].

Pharmacovigilance

The main goal of the approach known as pharmacovigilance (PV) is to restrict the introduction of drugs that have adverse side effects to broad populations. Concerning the safety of pharmaceuticals, including over-the-counter medicines, prescription drugs, and herbal supplements, it deals with the methodical collection, examination, and reporting of data. Adverse drug reactions (ADRs) were organized, regulated, and thoroughly examined after the thalidomide debacle [23]. The enormous volume, complexity, manual data processing, and regulatory requirements are the main disadvantages of traditional pharmacovigilance. Utilizing real-world data analysis, artificial intelligence systems can significantly improve drug safety monitoring [23]. ML and natural language processing (NLP) are used by AI to predict and identify adverse drug events (ADEs). Use of diverse data sources, including electronic health records, is becoming more necessary due to the rise in medication-related issues.

One of the proposed models that analyzed 10,000 datasets from WebMD and Drugs.com and obtained state-of-the-art performance in ADE detection and extraction was the DL-based approach with Bidirectional Encoder Representations from Transformers (BERT) models. It addressed the problems that physicians run across when writing prescriptions by showcasing the potential of deep learning for healthcare activities and information extraction [24].

Established in 1978 in Uppsala, Sweden, the Uppsala Monitoring Centre (UMC) is a global drug monitoring center in collaboration with the WHO. It manages multiple databases, including VigiFlow, VigiBase, and VigiLyze, on behalf of the WHO. The public can access VigiAccess, an open access database. PV provides additional methods for the analysis of case reports, including VigiGrade, VigiMatch, and VigiRank [25]. Marketing authorization holders (MAHs) in India are mandated to report the Individual Case Safety Report (ICSR) of any marketed drug to the Central Drugs Standards Control Organization (CDSCO) and the National Coordination Centre for Pharmacovigilance Programme of India (NCC-PvPI) (Pharmacovigilance Gsr 287 € dated 8-03-2016, REGD.D.L.-33004/99). These reports are sent to WHO-UMC, Sweden, via a different program called VigiFlow [34].

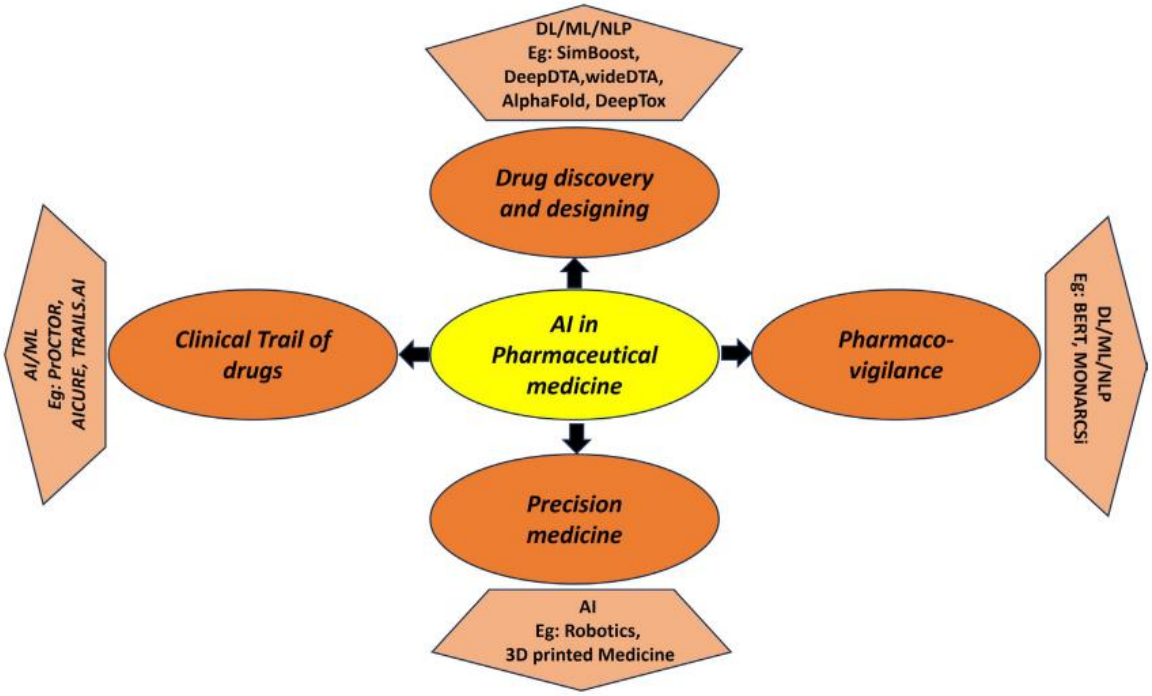
Using AI, the Pharmacovigilance Programme of India first inserted case-related structured and unstructured content as XML, DOCX, PDFs, and images. Through the use of NLP and ML, information is extracted from ICSR in a compliant manner. Furthermore, because ICSR is frequently of poor quality, AI is used in decision-making. AI could be essential for running correlations, classifying medications, tracking individual or unlisted adverse occurrences, and more [39]. A causality decision support tool called the Modified Naranjo Causality Scale for ICSRs (MONARCSi) was created using the Naranjo causality score as a foundation. High

positive and negative predictive values (79 and 88%, respectively), an F1 score of 71%, and high specificity (93%) and moderate sensitivity (65%) were all displayed, indicating that

Precision medicine

Precision medicine emphasizes the significance of combining established clinical indices with molecular profiling to provide customized therapeutic, diagnostic, and predictive approaches for individual patient populations. A more precise taxonomy that takes into account recent advancements in molecular biology will unavoidably result from the push toward a deeper understanding of disease [27]. Because it enables medical professionals to create personalised treatment plans that are precisely matched to the individual characteristics of each patient, personalised medicine has the innate potential to completely transform the therapeutic environment [26]. The tangible benefits of precision medicine are becoming more and more apparent, such as the prompt diagnosis of conditions and the rise in the use of customized therapeutic approaches in the medical field [28]. The integration of high-throughput genotyping with electronic health records (EHRs) offers scientists a significant opportunity to derive new phenotypes from actual clinical and biomarker data. This convergence has prompted extensive research into the effects of precision medicine on contemporary healthcare, particularly focusing on genotype-guided treatment strategies.

It may be particularly useful to identify the characteristics of medications and chemicals to use some of the chemistry-focused websites with large databases, such as DeepChem (https://deepchem.io/about.html). The creation of a novel medication would be a possibility if an existing medication or molecule was unable to control a target. Artificial intelligence has been employed to create novel structures that could aid in the development of more efficacious therapies, like pharmaceuticals or mechanical devices, as well as to assist in selecting suitable chemical syntheses [30]. "Magistral" production, as opposed to "officinal" or conventional pharmaceutical manufacturing, is a recent development in the ability to produce remedies in real-time based on the unique demands of the patient [31]. One may imagine production that is exact and efficient thanks to robotics technology powered by AI.



Drawbacks of AI

The effective implementation of any kind of information technology in the healthcare industry faces a number of obstacles. Data collecting, technology advancement, therapeutic application, and ethical and societal difficulties are some of the obstacles. The first problem is that ML and DL models require big datasets to identify or forecast a wide range of activities with accuracy. According to Lubarsky et al. [32], the sectors with the easiest access to enormous datasets have witnessed the greatest improvements in machine learning's ability to produce more exact and accurate algorithms. Access to information is a big problem for the healthcare industry. Baowaly et al. claim that problems with data security and privacy arise from AI-based solutions.

Because health records include sensitive information, hackers frequently target them during data breaches. AI ethics have been questioned ever since the technology's creation. The true issue is accountability, not the data security and privacy concerns mentioned above. Because of the seriousness of the repercussions, the existing system requires that those who make poor decisions—especially in the medical field—be held accountable. It might be challenging to hold the doctor responsible because they had no input into the development or supervision of the algorithm. However, it can appear that the developer is at fault, with little bearing on the therapeutic environment [33]. AI has long raised concerns among the public that jobs in the healthcare industry may disappear. Certain individuals are unfriendly and doubtful of AI-based initiatives due to their fear of being replaced [33].

Conclusion:

The field of pharmaceutical medicine has benefited greatly from the introduction of artificial intelligence. It has shown great potential in a number of areas, including patient management, clinical experimentation, and drug discovery. Making Use of AI Powered tools reduce time and cost restrictions while accelerating the drug development process and making it easier to identify new therapeutic targets. In the field of pharmaceutical development, these creative uses have led to increased efficacy and decreased costs. Moreover, patient classification and the personalization of medication interventions could benefit from the incorporation of AI. Successful and economical trials can be carried out by utilizing a patient-centric strategy and integrating AI with RCTs to help with clinical outcome prediction and validation. Better overall health outcomes and increased therapeutic efficacy may arise from this.

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THE IMPACT OF A PLANNED TEACHING PROGRAM ON PRIMARY SCHOOL TEACHERS' UNDERSTANDING OF ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): A PRE-EXPERIMENTAL STUDY CONDUCTED IN BHATIMUNDA, ODISHA

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Abstract

This research examined primary school teachers' knowledge of ADHD and the efficiency of a Planned Teaching Programme to improve it. The pre-experimental investigation used a one-group pre- and post-test paradigm. A simple purposive sampling method selected 40 primary school teachers from two Tangi, Cuttack, schools. A standardised questionnaire and the Knowledge of Attention Deficit Disorder Scale were used to collect data. A large 60% of individuals had little ADHD knowledge. The pre-test showed 20% of teachers had inadequate knowledge, 75% moderate knowledge, and 5% adequate knowledge. After the intervention, all participants had appropriate knowledge. Statistical analysis showed that the average score after the test (18.6) was substantially higher than before (9.68). The "t" value of 15.02 exceeded the critical value of 2.023. These findings demonstrate that the Planned Teaching Programme improved primary school teachers' ADHD knowledge and awareness.

Key Words: Effectiveness, Planned Teaching Program, Attention Deficit Hyperactivity Disorder, Knowledge, Primary School Teachers

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a condition that causes problems with paying attention, being easily distracted, and being overly active. These challenges can make it hard for children to succeed in school and socialize with others. ADHD affects about 3% to 10% of school-aged children, making it one of the most common conditions diagnosed in students. Many children with ADHD also have other disorders; about two-thirds of them experience at least one additional condition. More than one-third of children with ADHD have three or more coexisting conditions, such as anxiety, conduct disorders, depression, and learning disabilities. Research shows that the overlap between speech problems and ADHD can range from 8% to 90%. Speech sound disorders often occur alongside ADHD, affecting about 40% to 60% of preschoolers with these issues. Additionally, around 11% to 15% of six-year-olds with speech sound disorders also struggle with language problems.(1)

There is a notable connection between ADHD, intellectual disability (ID), problem behavior, and autism spectrum disorder (ASD). The occurrence of ADHD in individuals with ID and ASD is significantly more prevalent than in the general population, with rates estimated

between 10% and 28%. Diagnosing ADHD in individuals with ID and low-functioning ASD can be challenging due to the limitations of categorical diagnostic criteria, which may not be suitable for those experiencing severe cognitive and communication difficulties. To assess symptoms of inattention in persons with ID, observing distractibility that doesn't align with their developmental level can be useful. Additionally, hyperactivity and impulsivity can be indicated by behaviors such as constant fidgeting, a tendency to be excessively active, and difficulties remaining seated or waiting for one's turn. These behaviors may sometimes lead to verbal or physical aggression, irritability, mood swings, or self-harm.(2)

Understanding ADHD is crucial for educators, as they frequently serve as the initial observers of its symptoms in children. Their awareness and knowledge can play a significant role in early identification and intervention, which can positively impact a child's educational experience and development.(3)

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that significantly impacts children's academic and social functioning. Educators play a crucial role in the assessment and management of ADHD, as they are often the first to recognize and support students experiencing this condition. Their involvement is essential in identifying challenges and implementing strategies that foster a conducive learning environment for these students. However, research suggests that there is a concerning gap between the crucial role teachers play and their actual knowledge and understanding of ADHD.(4)

Research indicates that teachers often serve as a primary resource for diagnosing ADHD in children. With over half of primary care paediatricians anticipated to integrate school reports into their diagnostic procedures, it will be noteworthy to observe the evolution of this trend and its potential impact on child healthcare in the future (Carey, 1999). This highlights the necessity for educators to have precise and thorough knowledge of ADHD to effectively engage in assessment and treatment decision-making. Studies indicate that educators commonly have a restricted comprehension of ADHD and frequently maintain substantial misconceptions about its characteristics, causes, development, and consequences (Barbaresi & Olsen, 1998; Jerome et al., 1994; Sciutto et al., 2000; Snider et al., 2003; Vereb & DiPerna, 2004; West et al., 2005; Weyandt et al., 2009).(5–11)

The existing knowledge deficit is significantly influenced by the insufficient training of educators in the field of Attention Deficit Hyperactivity Disorder (ADHD) (Busing et al., 2002; Jerome et al., 1994; Sciutto et al., 2000; Kos et al., 2004). (6,7,12,13)

To address these concerns and build upon previous research, this study aims to investigate three key questions: (1) the extent of primary school teachers' knowledge about ADHD, (2) the evaluate the effectiveness of structured teaching program on ADHD knowledge (3) the association between teachers' ADHD knowledge and their socio-demographic variables. By exploring these aspects, this research seeks to provide valuable insights that can inform teacher education programs and professional development initiatives, ultimately improving the support and outcomes for students with ADHD in educational settings.

Methodology

A pre-experimental one-group pre-test post-test design was implemented to assess the effectiveness of a structured teaching program on ADHD knowledge among primary school teachers in selected schools in Bathimunda, District Cuttack, Odisha. The study included a sample of 40 participants recruited through non-probability purposive sampling methods. Data were collected using a knowledge questionnaire created by the researchers, which underwent extensive literature review for development.

The structured knowledge questionnaire comprised 30 multiple-choice questions, focusing on various aspects of ADHD, including etiology, epidemiology, and its course. Additionally, the questionnaire addressed the signs and symptoms of ADHD and assessed the knowledge regarding its diagnosis and management strategies. Validation of the tool was achieved through expert review from five professionals—three specializing in psychiatric nursing and two in child health nursing.

Prior to the main study, a pilot test was conducted with four participants at the Government Primary School, Ramgarh, Tangi, to evaluate the questionnaire's effectiveness. The reliability of the tool was determined using the test-retest method, yielding a reliability coefficient of 0.80 via the Pearson correlation coefficient.

Data collection occurred from the second week of April to the first week of May 2023. The self-reporting questionnaire method was employed for data gathering, following the acquisition of formal permissions from school principals and informed consent from the primary school teachers. On Day 1, a pre-test was administered, after which the structured knowledge questionnaire was presented via a PowerPoint lecture for 45 minutes. The post-test evaluation took place on the seventh day.

Statistical analysis of the collected data was conducted utilizing both descriptive and inferential statistics to determine the effectiveness of the educational intervention.

Results

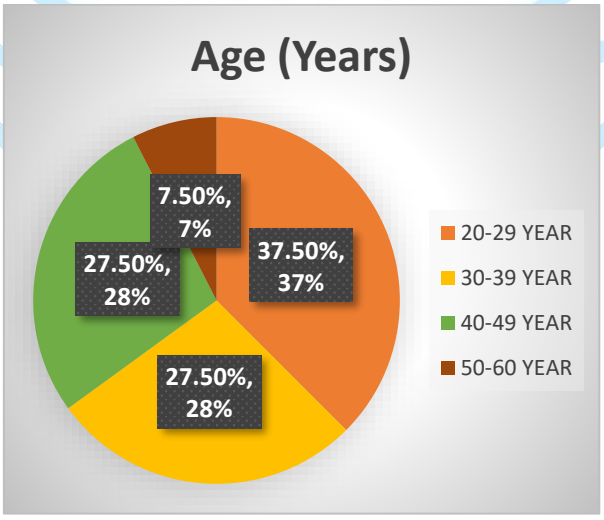

Figure – 1: Percentage Distribution of Samples According to Age (years)

The age distribution of primary school teachers reveals some interesting trends. Among them, a significant portion, accounting for 37.5%, belongs to the younger age group of 20 to 29 years. This suggests a vibrant influx of new educators into the profession. Following closely, 27.5% of teachers are in the 30 to 39 age range, indicating that many are gaining valuable experience during these crucial years. Similarly, another 27.5% of teachers fall within the 40 to 49 age bracket, reflecting a mature workforce that brings depth of knowledge and expertise. Lastly, a smaller segment of just 7.5% represents those aged 50 and above, hinting at the eventual transition out of the profession for some of these seasoned educators.

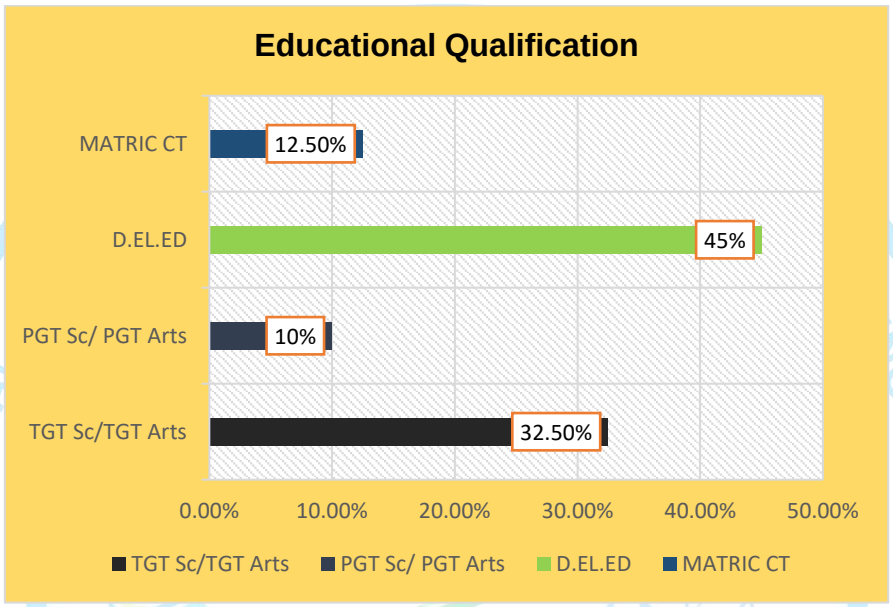

Figure – 2: Percentage Distribution of samples according to Educational Qualification

The percentage distribution of primary school teachers based on their educational qualifications is as follows: 32.5% hold a TGT (Trained Graduate Teacher) degree in Science or Arts, 10% possess a PGT (Post Graduate Teacher) degree in Science or Arts, 45% have completed a D.EI.Ed (Diploma in Elementary Education), and 12.5% have a Matric CT (Matriculation Certificate in Teaching) qualification.

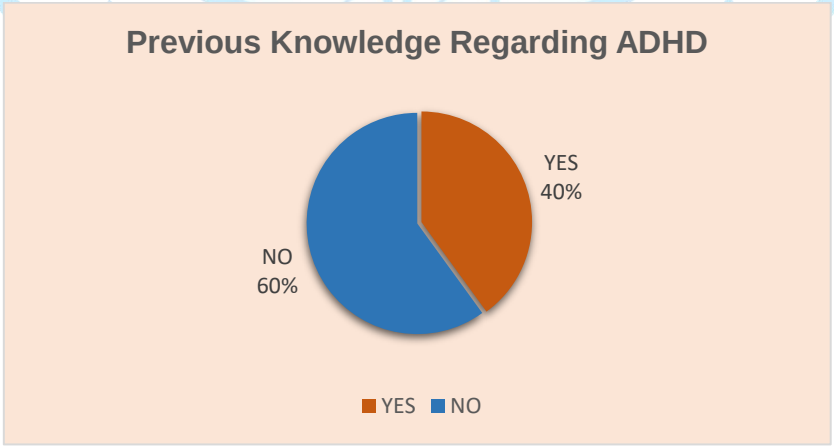

Figure – 3: Percentage Distribution of Samples According to Previous Knowledge Regarding ADHD

The distribution of primary school teachers based on their professional experience reveals an interesting divide in their understanding of ADHD. Specifically, 40% of these teachers possess prior knowledge about ADHD, equipping them with the tools to recognize and support students who may be affected by this condition. In contrast, a significant 60% of the teachers lack any previous knowledge regarding ADHD, which may impact their ability to effectively identify and address the needs of such students in their classrooms.

Table – I Sample Frequency and Percentage by Knowledge Level

(n = 40)

Level Of Knowledge	**Pre-Test**		**Post-Test**	
	F	**%**	**F**	**%**
Inadequate Knowledge	8	20.00	0	0.00
Moderate Knowledge	30	75.00	0	0.00
Adequate Knowledge	2	5.00	40	100.00

The data presented in Table I indicates the frequency and percentage of knowledge levels regarding Attention Deficit Hyperactivity Disorder (ADHD) before and after the implementation of a planned teaching program. The pre-test assessment reveals that the majority of participants (75%) possessed a moderate level of knowledge about ADHD, while 20% demonstrated inadequate knowledge, and only 5% exhibited adequate knowledge. Following the administration of the planned teaching program, the post-test assessment demonstrates a significant improvement, with 100% of participants achieving an adequate level of knowledge. Notably, there were no participants who remained with inadequate or moderate knowledge levels concerning ADHD after the intervention.

Table - II: Comparison of ADHD knowledge pre-and post-test scores

(N = 40)

Group	**Test**	**Mean**	**Sd**	**Paired 'T' Value**
Experimental group	Pre-Test	9.68	3.29	***15.02 DF=39 P=2.023**
	Post-Test	18.6	1.37	

*Significant at 0.05 level of significance, df =39 (P=2.023)

The data presented in Table II indicates that the comprehensive post-test mean score of knowledge regarding ADHD (18.6) was noticeably higher than the pre-test mean score (9.68). The standard deviation (SD) for knowledge about ADHD during the post-test was recorded at 1.37, while the pre-test had a standard deviation of 3.29. The calculated 't' value when comparing the pre-test and post-test scores was 15.02. This value, when compared to the table value of 2.023, demonstrated a highly significant difference at the 0.05 level. With a paired 't' test score of 15.02 and degrees of freedom of 39, the results were statistically significant with a 'p' value of less than 0.05. Consequently, we accept the alternative hypothesis and reject the null hypothesis. Since the calculated value of 15.02 exceeded the table value of 2.023 at the 0.05 significance level, we can conclude that there was a significant improvement in knowledge as a result of the planned teaching program.

Table – III: Association Between Pre-Test Scores Of Knowledge Regarding ADHD With Selected Demographic Variables

(n = 40)

Sl.no	Background factor	Inadequate	Moderate	Adequate	Total	Chi-square
Age of the teacher						
a.)	20-29 years	4	10	1	15	**4.783 DF=6 P=12.59 NS**
b.)	30-39 years	0	10	1	11	
c.)	40-49 years	3	8	0	11	
d.)	50-60years	1	2	0	3	
Total		8	30	2	40	
Marital Status						
a.)	Married	4	20	2	26	**1.884 DF=2 P=5.99 NS**
b.)	Unmarried	4	10	0	14	
Total		8	30	2	40	
No. Of children						
a.)	1 child	4	2	13	19	**12.566 DF=6 P=12.59 NS**
b.)	2 children	0	0	8	8	
c.)	More than 2	2	0	0	2	
d.)	None	2	0	9	11	
Total		8	2	30	40	
Educational Qualification						
a.)	TGT Sc/TGT Arts	5	6	2	13	**18.846 DF=6 P=12.59 SS**
b.)	PGT Sc/PGT Arts	0	4	0	4	
c.)	D.EL.ED	0	18	0	18	

d.)	Matric CT	3	2	0	5	
Total		8	30	2	40	
Monthly Income						
a.)	<15,000	4	6	2	12	**9.692 DF=6 P=12.59 NS**
b.)	15,000-20,000	2	8	0	10	
c.)	20,000-25,000	0	10	0	10	
d.)	>25,000	2	6	0	8	
Total		8	30	2	40	
Previous knowledge about ADHD						
a.)	Yes	6	10	0	16	**5.96 DF=2 P=5.99 NS**
b.)	No	2	20	2	24	
Total		8	30	2	40	

SS – Statistically Significant, NS – Not Significant

The data illustrated in Table 3 provides a comprehensive analysis of the relationship between pre-test knowledge and various demographic variables of teachers. Notably, the findings indicate that there is no statistically significant association between pre-test knowledge and several selected baseline factors, including the teacher's age, marital status, number of children, monthly income, and previous knowledge about Attention Deficit Hyperactivity Disorder (ADHD).

In contrast, a significant association was found between pre-test knowledge and the educational qualifications of the teachers. To explore these associations, a Chi-square analysis was conducted on the selected demographic variables. The results are as follows:

For age, the calculated Chi-square value ($\chi 2 = 4.783$) was notably lower than the table value of 12.59.

For marital status, the Chi-square value ($\chi 2 = 1.884$) also fell short of the table value of 5.99.

With respect to the number of children, the calculated Chi-square value ($\chi 2 = 12.566$) was very close to the table value of 12.59, yet did not reach significance.

In terms of educational qualifications, a strikingly high calculated Chi-square value ($\chi 2 = 18.846$) surpassed the table value of 12.59, indicating a significant association.

Regarding prior knowledge about ADHD, the calculated Chi-square value ($\chi 2 = 5.96$) was slightly below the table value of 5.99.

Overall, the analysis reveals that for all the chosen demographic variables, with the exception of educational qualifications, the tabulated Chi-square values at a P-value greater than 0.05 were significantly higher than the corresponding calculated values. This clearly indicates a lack of significant associations between pre-test knowledge regarding ADHD and the selected

demographic factors, highlighting the unique role of educational qualification in influencing knowledge levels.

Discussion

The research investigates the demographics of primary school educators and their understanding of ADHD. Principal discoveries encompass: Age distribution: 37.5% aged 20-29, 27.5% each in 30-39 and 40-49 ranges, and 7.5% over 50. Educational qualifications: 32.5% TGT, 10% PGT, 45% D.EI.Ed, and 12.5% Matric CT. ADHD knowledge: 40% had prior knowledge, 60% lacked it. Pre-intervention: 75% moderate, 20% inadequate, and 5% adequate ADHD knowledge. Post-intervention: 100% achieved adequate knowledge. Significant improvement in ADHD knowledge after planned teaching program ($p<0.05$).

Several studies conducted in the past have supported the findings of the present research. Notably, a study by **Kamble YS, Gole R, Sable A, Jogdand S, Dere R, Jadhav S, and colleagues (2023)** aimed to evaluate the effectiveness of a structured teaching program focused on Attention Deficit Hyperactivity Disorder (ADHD) among primary teachers in selected primary schools in Pune City. The research employed a robust methodological approach to assess the knowledge levels of teachers before and after the intervention. The results revealed a significant improvement in the post-test knowledge scores of the teachers in the experimental group. Specifically, an unpaired t-test was conducted to compare the knowledge scores between the experimental group and a control group. The calculated t-value for the post-test knowledge scores in the experimental group was found to be 7.412, which is significantly higher than the critical table value of 2.262 at a significance level of $p=0.05$ and 3.250 at $p=0.01$. This analysis indicates a highly significant difference in the post-test scores, demonstrating that the structured teaching program was effective in enhancing the teachers' understanding and knowledge regarding ADHD. The findings underscore the importance of targeted educational interventions for teachers to improve their ability to support students with ADHD.(14)

In 2022, Venkateswarlu C, Jyothi BN, and Suneetha A conducted a study focused on assessing the impact of a video awareness program concerning attention deficit hyperactivity disorder (ADHD) on primary school teachers and the parents of primary school children in designated schools situated in Mangalagiri, Guntur district, Andhra Pradesh. The results demonstrated that primary school educators displayed a markedly higher mean knowledge score in the post-test (31.5±2.74) concerning ADHD when compared to their pre-test mean knowledge score (16.78±3.78). The calculated 't' value reached 20.84, exceeding the tabulated 't' value of 2.02. The post-test mean knowledge score for ADHD among parents of primary school children exhibited a notable increase, recorded at 28.11±4.35, compared to the pre-test mean of 15.06±3.91. The computed 't' value stood at 20.84, surpassing the tabulated 't' value of 2.02. The results substantiate the alternative hypothesis (H1), revealing a notable disparity in pre-test and post-test knowledge scores concerning ADHD among primary school educators and the parents of primary school children.(15)

Conclusion

A study was done to see how well a teaching tool helped primary school teachers in Tangi, Cuttack understand ADHD (Attention-Deficit/Hyperactivity Disorder). This was done. The teachers had a better understanding of ADHD after the program started, which was shown by the fact that they did better on a test given after the training. Because of this good result, the researcher chose to reject the initial thought that the program would not have any effect and instead accept the idea that it did increase knowledge about ADHD.

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EFFECTIVENESS OF MORINGA OLEIFERA LEAF EXTRACT IN ELEVATING HEMOGLOBIN LEVELS AMONG ANEMIC ADOLESCENT FEMALES IN BURLA, SAMBALPUR, ODISHA

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Abstract

Background: Anemia represents a significant public health concern, especially among adolescent females, often resulting in symptoms such as fatigue, inhibited growth, and diminished immune function. Moringa oleifera, commonly known as drumstick leaves, is renowned for its rich nutritional profile, particularly its iron content, which may positively influence hemoglobin levels. This study aims to assess the efficacy of drumstick leaf juice in elevating hemoglobin concentrations in anemic adolescent girls based in Burla, Sambalpur, Odisha. **Objective:** This study aims to evaluate the impact of Moringa oleifera leaf extract on hemoglobin levels in adolescent girls diagnosed with mild to moderate anemia in Burla, Sambalpur, Odisha. **Methodology:** Employing a quasi-experimental, one-group pre-test post-test design, the research involved 60 adolescent girls identified with mild to moderate anemia from a designated high school in Burla, Sambalpur. Participants were selected through non-probability sampling methods. Data collection included demographic information along with biochemical assessments (blood tests to quantify hemoglobin levels) conducted pre- and post-intervention (consumption of drumstick leaf juice). The effectiveness of the intervention was analyzed using paired t-tests to compare mean hemoglobin levels before and after the consumption of the juice. **Results:** Statistical analysis revealed a significant augmentation in mean hemoglobin levels, rising from 10.23 g/dL (SD=1.15) to 10.01 g/dL (SD=1.18) post-intervention, with a significance level of $p<0.01$. These findings indicate that drumstick leaf juice may serve as an efficacious natural therapeutic approach for addressing mild to moderate anemia in this demographic. However, limitations inherent in the study, such as the non-probability sampling method and the absence of a control group, suggest the need for further

research utilizing more robust methodologies to corroborate these results and investigate long-term effects. **Conclusion:** The study provides compelling evidence supporting the use of drumstick leaf juice as a viable intervention for enhancing hemoglobin levels among adolescent girls suffering from mild to moderate anemia. The findings advocate for the incorporation of this juice into dietary regimens as a cost-effective and accessible strategy for mitigating anemia in this vulnerable population. Future research with larger sample sizes and control groups is warranted to reinforce these results and to explore potential long-term benefits.

Key Words: Effectiveness, Moringa Oleifera Leaf, Haemoglobin, Adolescent Girls, Anaemia, High School

Introduction

Blood plays a crucial role in regulating the body's systems and maintaining homeostasis. Its other functions include supplying oxygen and nutrients to tissues, removing waste products, transporting hormones and other signals throughout the body, and regulating body pH and core temperature. Anemia in adolescents can lead to reduced mental and physical capacity, diminished concentration in both work and educational performance, and poses a significant threat to future maternal health in girls. This risk is particularly concerning because girls are more likely to be affected for various reasons.(1)

Women and adolescent girls face a significant risk of micronutrient malnutrition, particularly Iron Deficiency Anemia and Vitamin A Deficiency. It is widely recognized that iron deficiency is the leading cause of anemia globally, driven by insufficient dietary intake, the physiological demands of pregnancy, rapid growth, and iron losses from parasitic infections. Additionally, other common contributors to anemia include malaria, chronic infections, and nutritional deficiencies in vitamin A, folate, and Vitamin B12.(2)

Moringa oleifera, commonly referred to as the "drumstick tree" or "miracle tree," has been a fundamental component in the diets of numerous rural communities, particularly in tropical regions. In Senegal, for instance, the leaves of Moringa have been consumed for generations, frequently in desiccated and pulverized form. Indigenous knowledge suggests that these leaves, abundant in protein, micronutrients, and iron, can potentially mitigate malnutrition and restore iron levels. The book The Miracle Tree by Dr. Monica G. Marcu posits that Moringa's exceptional nutrient profile renders it a significant food source for populations experiencing

nutritional deficiencies, especially in terms of iron, and may present a potential intervention for iron deficiency anemia.(3)

The study explores the promising potential of Moringa Oleifera leaves as a natural remedy for addressing anemia associated with malnutrition, particularly in developing countries where these health issues are prevalent.(4) Moringa Oleifera, often referred to as the "miracle tree" or "drumstick tree," is a versatile and multi-purpose plant species that has garnered significant attention in recent years due to its remarkable medicinal and nutritional properties. The leaves of Moringa Oleifera are exceptionally rich in essential nutrients, including iron, protein, calcium, copper, vitamins, and a wide array of essential amino acids.(5) This impressive nutritional profile has led to claims that regular consumption of dried Moringa leaves can effectively prevent or even cure anemia and malnutrition. These assertions have sparked interest among researchers and healthcare professionals seeking sustainable solutions to combat widespread nutritional deficiencies. Despite the growing popularity and anecdotal evidence supporting the use of Moringa Oleifera for addressing anemia and malnutrition, there is a notable lack of scientific studies specifically conducted in Odisha, India, to evaluate its efficacy. This gap in research presents an opportunity to investigate the potential benefits of Moringa in a region where anemia and malnutrition remain significant public health concerns.(6) To address this knowledge gap, the study aims to conduct a comprehensive assessment of the impact of Moringa oleifera leaf extract on hemoglobin levels in adolescent girls diagnosed with mild to moderate anemia in Burla, Sambalpur, Odisha. Adolescent girls are particularly vulnerable to anemia due to increased iron requirements during growth spurts and menstruation, making them an ideal target population for this research. The study's focus on Burla, a town in the Sambalpur district of Odisha, provides a specific geographical context for the research. This localized approach allows for a more targeted investigation of the effectiveness of Moringa oleifera in addressing anemia within the unique socio-economic and environmental conditions of the region. By conducting this scientific evaluation, the researchers hope to provide empirical evidence that either supports or refutes the claims surrounding Moringa oleifera's ability to combat anemia. The findings of this study could have far-reaching implications for public health strategies in Odisha and potentially other regions facing similar challenges related to anemia and malnutrition. If the results prove promising, it could pave the way for the development of cost-effective, locally sourced, and sustainable interventions to improve the nutritional status and overall health of vulnerable populations. Furthermore, positive outcomes could encourage further research into the broader applications

of Moringa oleifera in addressing various nutritional deficiencies and health concerns prevalent in developing countries.

Objectives:

1. To assess the baseline hemoglobin levels of anemic adolescent females in Burla.
2. To evaluate the effectiveness of Moringa oleifera leaf extract in increasing hemoglobin levels among anemic adolescent females.
3. To examine the association between the hemoglobin levels following testing in adolescent girls who have anemia and specific demographic factors.

Hypotheses:

1. **Null Hypothesis (H0):** Moringa oleifera leaf extract supplementation does not significantly increase hemoglobin levels in anemic adolescent females in Burla. **Alternative Hypothesis (H1):** Moringa oleifera leaf extract supplementation significantly increases hemoglobin levels in anemic adolescent females in Burla.
2. **Null Hypothesis (H0):** There is no significant difference in the effectiveness of Moringa oleifera leaf extract compared to standard iron supplementation in treating anemia among adolescent females.
   Alternative Hypothesis (H1): Moringa oleifera leaf extract is significantly more effective than standard iron supplementation in treating anemia among adolescent females.
3. **Null Hypothesis: (H_0)** There is no notable link between the level of hemoglobin after the test in adolescent girls with anemia and the chosen demographic factors.
4. **Alternative Hypothesis (H1):** A notable association exists between the hemoglobin levels after testing in adolescent girls with anemia and various demographic factors (including age, socioeconomic status, nutritional status, education level, etc.).

Methodology

The current study utilized a quasi-experimental design (one group pre-test post-test) with a quantitative approach. The independent variable was Moringa Oleifera Leaf Extract, and the dependent variable was hemoglobin levels. Baseline variables included age, education, religion, family type, number of siblings, income, information sources, menstrual history,

dietary patterns, and hygiene practices. Conducted at Govt Girls High School in Burla, Odisha, the sample consisted of 60 adolescent girls aged 10-19 years who could read and write in Odia and English and were willing to participate. A biochemical test was developed to assess anemia incidence, along with a structured questionnaire addressing menstrual history, dietary patterns, and worm infestations. Clinical assessments of hemoglobin levels were performed before and after the intervention.

Research data collection involves systematically gathering information to address specified research questions, including demographic data acquisition through surveys. Securing approval from the school principal prior to project initiation is essential. Participants for the study were selected through non-probability purposive sampling, adhering to predetermined criteria derived from lists provided by class teachers. The final sample consisted of 10 adolescent girls. The researcher established rapport with the participants, clearly outlined the study's objectives, and obtained informed consent. A structured questionnaire facilitated the collection of demographic information, while clinical evaluations were conducted using an observation checklist. Hemoglobin levels in the participants were quantified using a hemoglobinometer. Descriptive statistics, specifically frequency distributions and percentages, were applied to analyze the demographic data. The prevalence of anemia and hemoglobin levels were assessed utilizing descriptive measures such as mean and standard deviation. To evaluate the effectiveness of drumstick leaf juice, a paired "t" test was conducted. Inferential statistics, specifically the chi-square test, were employed to explore the relationship between hemoglobin levels and various demographic variables among the adolescent girls. The study commenced following the approval from the Principal of VIMSAR Burla and consent from the Head Master at Upper Primary School, Burla Campus, Sambalpur. Each participant was thoroughly briefed on the study's aims and assured that their information would remain confidential.

Results

The samples involved in the study were categorized and presented in a detailed manner. The Table I illustrates the frequency distribution along with the corresponding percentage of each sample group. This clear representation allows for a comprehensive understanding of the sample distribution within the context of the study.

Table – I: Frequency and Percentage Distribution of Samples

(N = 60)

S. No	Socio-Demographic Variables	Experimental Group		Control Group	
		n	%	n	%
1.	**Age**				
	a. 10 – 12	11	36.7	9	30.0
	b. 13 – 15	19	63.3	21	70.0
	c. 16 years and above	0	0.0	0	0.0
3.	**Religion**				
	a. Hindu	**18**	**60.0**	**18**	**60.0**
	b. Christian	**9**	**30.0**	**9**	**30.0**
	c. Muslim	**3**	**10.0**	**3**	**10.0**
	d. Others	**0**	**0**	**0**	**0**
4.	**Area of Living**				
	a. Urban	**21**	**70.0**	**19**	**63.3**
	b. Rural	**9**	**30.0**	**11**	**36.7**
	c. Slum	**0**	**0**	**0**	**0**
5.	**Type of family**				
	a. Nuclear	**20**	**66.7**	**10**	**33.3**
	b. Joint family	**8**	**26.7**	**17**	**23.3**
	c. Extended family	**2**	**6.7**	**3**	**43.3**
6.	**Total family members**				
	a. Less than 3	**6**	**20.0**	**4**	**13.3**
	b. 4 – 6	**19**	**63.3**	**21**	**70.0**
	c. More than 6	**5**	**16.7**	**5**	**16.7**
7.	**Father's education**				
	a. No formal education.	**4**	**13.3**	**2**	**6.7**
	b. Elementary education	**13**	**43.3**	**11**	**36.7**
	c. Pre-University	**9**	**30.0**	**11**	**36.7**
	d. Graduates and higher.	**4**	**13.4**	**6**	**20.0**
	Mother's Education				
	a. No formal education.	**3**	**10.0**	**3**	**10.0**
	b. Elementary education	**15**	**50.0**	**15**	**50.0**
	c. Pre-University	**12**	**40.0**	**12**	**12.0**
	d. Graduates and higher	**0**	**0**	**0**	**0**
8.	**Monthly Income of Family**				
	a. 5.000 – 10,000 Rs	**10**	**33.3**	**4**	**13.3**
	b. 10001 – 20000 Rs	**18**	**60.0**	**20**	**66.7**
	c. Above 20001 Rs	**12**	**6.7**	**6**	**20.0**
9.	**Information Source for Anemia Prevention Strategies**				
	a. Mass Media	**15**	**50.0**	**15**	**50.0**
	b. Books and Magazines	**0**	**0**	**0**	**0**
	c. Health Personnel	**10**	**33.3**	**5**	**16.7**
	d. Relatives and Peer groups	**5**	**16.7**	**10**	**3.3**

Table I presents the distribution of samples based on socio-demographic variables. In the experimental group, 36.7% of respondents are aged 10-12, and 63.3% are aged 13-15, with no respondents aged 16 or older. The control group has a similar age distribution: 30% aged 10-12 and 70% aged 13-15.

Regarding religion, both groups report 60% Hindu, 30% Christian, and 10% Muslim, with no respondents from other religious affiliations. In terms of residence, 70% of the experimental group lives in metropolitan areas, while the control group has 63.3% in urban areas and 36.7% in rural areas.

Family structure differs, with 66.7% in nuclear families in the experimental group versus 33.3% in the control group. Household sizes show that 63.3% of the experimental group has four to six members, compared to 70% in the control group.

Educational attainment for fathers shows 13.3% with no formal education in the experimental group versus 6.7% in the control group. For mothers, both groups have 10% lacking formal education. Monthly family income in the experimental group shows 60% earning between 10,001-20,000, while 66.7% of the control group falls into the same range.

Information sources reveal that 50% of both groups obtain information from mass media, with some gaining knowledge from health personnel and relatives, but none from books or magazines.

Table – II Analysis of the Frequency and Percentage of Menstrual Cycle Patterns and Worm Infestation Rates

(N = 60)

S. no	Variables	Experimental		Control	
		n	%	n	%
Menstrual History					
1.	**Age at menarche**				
	a. < 10 years	2	6.7	1	3.3
	b. 10 – 13 years	23	76.7	24	80.0
	c. > 14 years	5	16.7	5	16.7
2.	**Pattern of Menstrual Cycle**				
	a. Regular	23	76.7	21	70.0
	b. Irregular	7	23.3	7	23.3
	c. Amenorrhoea	0	0.0	2	6.7

3.	**Number of Pads Changed per Day**				
	a. < 3 pads	25	83.3	22	73.3
	b. 4 – 5 pads	5	16.7	5	16.7
	c. > 6 pads	0	0.0	3	10.0
5.	**Duration of bleeding**				
	a. 2 – 4 days	4	13.3	6	20.0
	b. 5 – 7 days	24	80.0	20	66.7
	c. Above 7 days	2	6.7	4	13.3
Dietary Pattern					
5.	**Dietary Preferences**				
	a. Vegetarian	4	13.3	4	13.3
	b. Non-Vegetarian	0	0.0	3	10.0
	c. Mixed	26	86.7	23	76.7
6.	**Intake of beverages coffee / Tea / Milk**				
	a. Regularly	11	36.7	4	13.3
	b. Often	17	56.7	23	76.7
	c. Uncommonly	2	6.7	3	10.0
History of Worm Infestation					
7.	**How often you will do deworming?**				
	a. Once in a year	0	0.0	0	0.0
	b. Twice in a year	30	100.0	30	100.0
	c. Never	0	0.0	0	0.0
8.	**Do you use slippers when you go to toilet?**				
	a. Yes	20	66.7	20	66.7
	b. No	0	0.0	0	0.0
	c. Sometimes	10	33.3	10	33.3
9.	**Do you wash hands with soap and water after each dedication?**				
	a. Yes	30	100.0	30	100.0
	b. No	0	0.0	0	0.0
	c. Sometimes (if available)	0	0.0	0	0.0

Table II summarizes the frequency and percentage of menstrual patterns and worm infestation across the experimental and control groups. In the experimental group, 6.7% are under 10, 76.7% are between 10-30, and 16.7% are over 14 years old. In the control group, 3.3% are

under 10, 80% are between 10-30, and 16.7% are over 14 years. Regarding menstrual cycle patterns, 76.7% in the experimental group have regular cycles, while 23.3% are irregular. No one experiences amenorrhea. In contrast, 70% of the control group have regular cycles, 23.3% are irregular, and 6.7% report amenorrhea. For pad usage, 83.3% of the experimental group change ≤ 3 pads daily, while 16.7% change 4-5 pads. None change ≥ 6 pads. In the control group, 73.3% change ≤ 3 pads, 16.7% change 4-5 pads, and 10% use ≥ 6 pads. Bleeding patterns show that 13.3% in the experimental group bleed for 2-4 days, 80% for 5-7 days, and 6.7% for more than 7 days. In the control group, 73.3% bleed for 2-4 days, 16.7% for 5-7 days, and 10% for more than 7 days. Regarding beverage consumption, 36.7% of the experimental group drink regularly, 56.7% often, and 6.7% uncommonly. In the control group, 13.3% drink regularly, 76.7% often, and 10% uncommonly. In terms of deworming practices, both groups report 100% deworming twice a year, with no one engaging in deworming independently. For toilet hygiene, 66.7% of both groups always wear slippers, 0% never wear them, and 33.3% sometimes wear them. Lastly, 100% of respondents in both groups wash their hands with soap and water after defecation, with no reports of failing to do so.

The bar diagram below depicts the levels of hemoglobin among adolescent girls in the experimental group. In the pre-test, it shows that the majority, 56.7%, of the girls fall into the mild anemia category, while 43.3% are classified as having moderate anemia, with no girls showing a non-anemic status. In the post-test, the results demonstrate a slight change: 56.66% of girls remain in the mild anemia group, while 26.67% are now categorized as having moderate anemia, and 16.67% of the participants are no longer anemic.

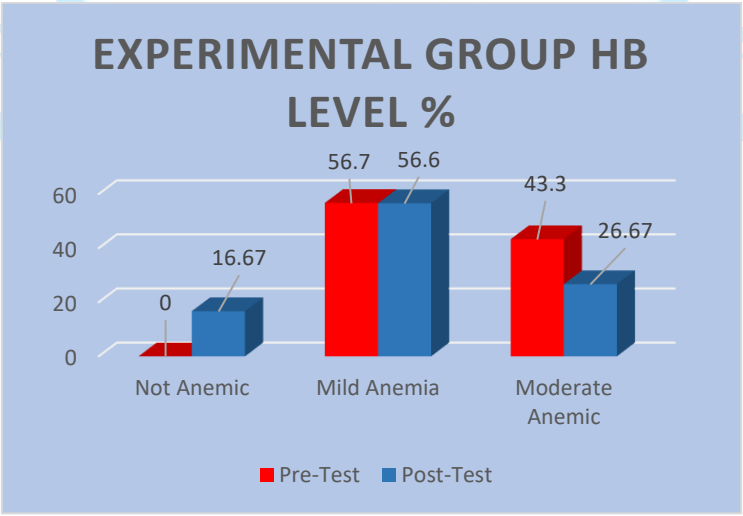

Figure – 1: Percentage distribution of Samples in the Experimental Group according to Level of Anaemia

Figure II illustrates the levels of hemoglobin in the control group of adolescent girls. Among these girls, 53.3% were found to have moderate anemia in both the pre-test and post-test assessments. Additionally, 46.7% of the girls were classified as having mild anemia in both the pre-test and post-test.

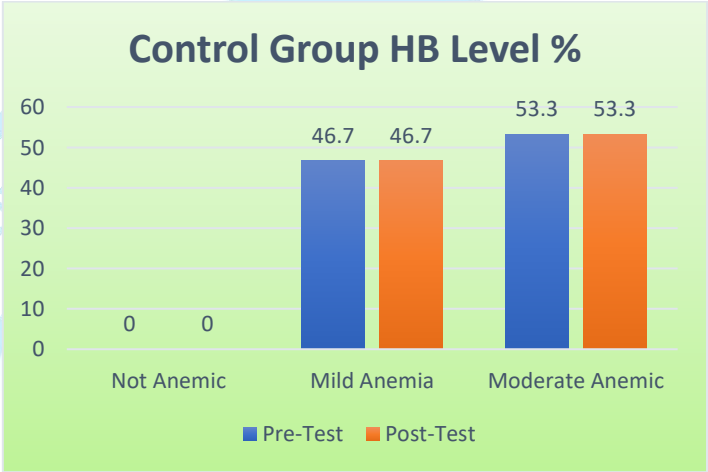

Figure – 1: Percentage distribution of Samples in the Control Group according to Level of Anaemia

Effect of Drumstick Leaf Juice on Hemoglobin Levels in Anemic Adolescent Girls (Interventional Group)

Experimental Group	Mean	Std. Deviation	t - value	p-value
Pre-Test	10.23	1.15	7.918	.000
Post-Test	10.81	1.18		

The data analysis reveals a notable rise in the average post-test knowledge scores when compared to the average pre-test knowledge scores within the samples. To determine the extent of the difference between the average pre-test and post-test knowledge scores of the samples, a paired t-test was performed. The average pre-test score is 10.23 with a standard deviation of 1.15, while the average post-test score is 10.01 with a standard deviation of 1.18. The computed t-value is 7.918, with a corresponding p-value of less than 0.01. Consequently, the null

hypothesis was rejected. This indicates that there is a significant difference in hemoglobin levels among adolescent girls with anemia in the experimental group.

Effect of Drumstick Leaf Juice on Hemoglobin Levels in Anemic Adolescent Girls (Control Group)

Control Group	Mean	Std. Deviation	t - value	p-value
Pre-Test	9.82	1.01	0.000	.000
Post-Test	9.82	1.01		

In the control group, the results for the pre-test revealed a mean score of 9.82, accompanied by a standard deviation of 1.01. These same values were observed in the post-test, indicating that there was no change in performance between the pre-test and post-test assessments for this group. This suggests that the participants in the control group exhibited consistent results throughout the testing period, with no significant differences detected.

Analysis of the frequency and percentage distribution of haemoglobin test levels among adolescent girls with anaemia, considering various demographic factors.

(n = 30)

Demographic		Moderate Anemia		Mild Anemia		Non Anemic	
		f	%	f	%	f	%
1. Age	A. Between 10-12 years	4	36.4%	4	36.4%	3	27.3%
	B. Between 13 to 15 years	4	21.1%	13	68.4%	2	10.5%
	C. 16 years and above	0	0.0%	0	0.0%	0	0.0%
2. Sex	A. Male	0	0.0%	0	0.0%	0	0.0%
	B. Female	8	26.7%	17	56.7%	5	16.7%
	C. Transgender	0	0.0%	0	0.0%	0	0.0%
3. Religion	A. Hindu	5	27.8%	10	55.6%	3	16.7%
	B. Christian	3	33.3%	5	55.6%	1	11.1%
	C. Muslim	0	0.0%	2	66.7%	1	33.3%
	D. Others	0	0.0%	0	0.0%	0	0.0%
4. Area of living	A. Urban	6	28.6%	12	57.1%	3	14.3%
	B. Rural	2	22.2%	5	55.6%	2	22.2%
	C. Slum	0	0.0%	0	0.0%	0	0.0%

5. Type of family	A. Nuclear	6	30.0%	12	60.0%	2	10.0%
	B. Joint	2	25.0%	3	37.5%	3	37.5%
	C. Extended	0	0.0%	2	100.0%	0	0.0%
6. Total family members	A. Less than 3 members	1	16.7%	5	83.3%	0	0.0%
	B. 4-6 members	5	26.3%	10	52.6%	4	21.1%
	C. More than 6 members	2	40.0%	2	40.0%	1	20.0%
7. Father's education	A. No formal education	0	0.0%	3	75.0%	1	25.0%
	B. Primary education	3	23.1%	7	53.8%	3	23.1%
	C. Higher secondary	5	55.6%	3	33.3%	1	11.1%
	D. Graduate and above	0	0.0%	4	100.0%	0	0.0%
8. Mother's education	A. No formal education	2	66.7%	0	0.0%	1	33.3%
	B. Primary education	4	26.7%	8	53.3%	3	20.0%
	C. Higher secondary	2	16.7%	9	75.0%	1	8.3%
	D. Graduate and above	0	0.0%	0	0.0%	0	0.0%
9. Monthly income of the family	A. 5,000- 10,000	2	20.0%	6	60.0%	2	20.0%
	B. 10,001- 20,000	5	27.8%	10	55.6%	3	16.7%
	C. Above 20,001	1	50.0%	1	50.0%	0	0.0%
Source of information regarding prevention of Anemia	A. Mass media	2	13.3%	10	66.7%	3	20.0%
	B. Books and magazine	0	0.0%	0	0.0%	0	0.0%
	C. Health personnel	4	40.0%	5	50.0%	1	10.0%
	D. Relatives and peer group	2	40.0%	2	40.0%	1	20.0%

Association between, the post test levels of hemoglobin among adolescent girls with anemia with selected demographic variables

Demographic	Chi-Square	DF	p-value	Significance
1. Age	3.048	2	.218	Not Significant

2. Sex	Nil	Nil	Nil	Nil
3. Religion	1.684	4	.794	Not Significant
4. Area of living	.336	2	.845	Not Significant
5. Type of family	4.796	4	.309	Not Significant
6. Total family members	2.864	4	.581	Not Significant
7. Father's education	8.779	6	.186	Not Significant
8. Mother's education	2.069	6	.913	Not Significant
9. Monthly income of the family	1.023	4	.906	Not Significant
Source of information regarding prevention of Anemia	2.988	4	.560	Not Significant

The table presented illustrates the relationship between hemoglobin levels and various demographic factors among adolescent girls diagnosed with anemia. The analyzed demographic variables include age, religion, area of residence, family structure, total family members, educational attainment of both parents, family monthly income, and sources of information regarding the prevention of anemia. In all cases, the p-value exceeded 0.05 ($p \geq 0.05$), indicating that the results are not statistically significant. Consequently, we accept the null hypothesis, suggesting that there is no significant association between the hemoglobin levels and the demographic factors among adolescent girls suffering from anemia

Discussion

The demographic analysis of the experimental and control groups reveals notable trends. In the experimental group, 63.3% of participants are aged 13 to 15, while the control group has 70% in the same age range. All participants are female, predominantly with 60% identifying as Hindu. The experimental group has 70% living in urban areas, and 66.7% are from nuclear families, compared to 63.3% in the control group. Household sizes are similar, with 63.3% in the experimental group and 70% in the control group having 4 to 6 members. For paternal education, 43.3% of fathers in the experimental group completed primary education, while 50% of mothers in both groups did. Family income is comparable, with 60% in the experimental group earning between 10,001 and 20,000.

Behaviorally, 76.7% of the experimental group and 80% of the control group are aged 10 to 30, with a majority maintaining regular menstrual cycles. In menstrual hygiene, 83.3% of the experimental group change pads three or fewer times a day, and a balanced diet is favored by 86.7%. Both groups show strong engagement in healthcare practices like deworming and handwashing. The hemoglobin assessments indicate a significant improvement post-intervention, with the percentage of girls with moderate anemia dropping from 43.3% to 26.67%, while the non-anemic group rose to 16.67%. The control group's anemia levels remained stable. A paired t-test shows a significant increase in post-test knowledge scores in the experimental group, unlike in the control group, which had no notable change.

The research builds upon previous studies in the field. A 2020 study by **Jayasree GS et al.** examined the impact of drumstick leaves juice on hemoglobin levels in women of reproductive age in Bathinda, Punjab. The experimental group showed an increase in mean hemoglobin levels from 11.43 **(±0.91) to 12.36 (±0.69) after consuming 100ml of the juice, with a p-value of 0.69.**(7)

Khanam et al. (2022) investigated the effects of Moringa leaf consumption on hemoglobin, retinol levels, and weight in rural Bangladeshi adolescent girls. Using generalized linear model regression analysis and controlling for various factors, the study found significant increases in hemoglobin (coef = 0.41, P = 0.010) and serum retinol levels (coef = 0.27, P = 0.00) in the intervention group compared to the control. However, no significant weight changes were observed between the groups.(8)

Results

The primary goal of this study is to assess the impact of drumstick leaves on the anemic status of adolescent girls at Govt. Girls High School in Burla, Sambalpur. The statistical analysis indicated a significant difference in the levels of anemia before and after the intervention. These findings carry important implications for nursing services, education, research, and nursing administration. Nurses play a multifaceted role, acting as educators, leaders, supervisors, protectors, advocates, and team members in various work situations.

The study shows that incorporating drumstick leaves can positively influence the hemoglobin levels among adolescent girls. The results will assist nurse educators in disseminating knowledge about the effects of drumstick leaves on anemia. Furthermore, the research underscores the necessity of educating both nursing and non-nursing staff, as well as the public,

through ongoing training programs to enhance their understanding and skills in providing guidance to adolescent girls concerning drumstick leaves and anemia.

This study can serve as a foundation for future research, potentially extending to other groups of adolescent girls experiencing anemia. Additionally, the insights gained will help nurses devise and implement educational programs using a variety of teaching methods and audiovisual materials to effectively reach their audience.

Conclusion

In conclusion, this study provides compelling evidence for the efficacy of drumstick leaves in improving anemic status among adolescent girls. The significant difference observed in post-test levels underscores the potential of this natural, accessible intervention. These findings have far-reaching implications for nursing practice, education, research, and administration. By incorporating this knowledge into various aspects of healthcare, from direct patient care to public health initiatives, nurses can play a crucial role in addressing anemia in adolescent populations. The study not only contributes to the existing body of knowledge but also paves the way for future research, potentially expanding the scope to diverse groups of anemic adolescents. As we move forward, it is imperative that healthcare professionals, educators, and policymakers recognize and harness the potential of drumstick leaves in combating anemia, ultimately improving the health and well-being of adolescent girls.

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"Uncovering the Level of Knowledge and Attitudes on Drug Issues Among College Students – A Cross-sectional Study"

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Abstract

This study aimed to evaluate the knowledge and attitudes regarding drug-related issues among college students in the Cuttack district of Odisha. The selected research design was descriptive. The study was conducted at Jawaharlal Nehru Degree College of Arts and Science, located in Kuanpal, Cuttack. The study was conducted during the period of June to July 2022. Samples were selected using a purposive sampling technique. A total of 100 samples were collected, and a structured knowledge questionnaire served as the instrument to gather data, while knowledge and attitude levels were evaluated using rating scales. The data collection technique employed was the self-reporting questionnaire method. The data that was collected underwent analysis using both descriptive and inferential statistics. The study results indicate that 58 percent of the participants exhibited moderate knowledge concerning drug-related issues, while 41 percent demonstrated adequate knowledge on the subject. The study revealed that a significant majority of the samples, 89 percent, exhibited a favourable attitude towards the issues related to drugs. The study concludes that integrating comprehensive education on substance abuse prevention and management into the curriculum is essential. The efforts of the psychiatric nurse to inform and support individuals in handling drug dependence and overcoming substance-related thoughts are crucial steps in addressing substance abuse.

Introduction

According to the Global Status Report on Alcohol and Health, over 25% of people aged 15 to 19 globally currently drink, and a sizable minority (almost 14%) participate in heavy episodic drinking (HED). The prevalence of HED was notably elevated at 20% among young adults within the age bracket of 20 to 24 years, surpassing that of the overall population. While the proportion of current drinkers in the South East Asian region is lower than that in the European region, it is noteworthy that the estimated prevalence exceeds one in five among adolescents. In absolute terms, the figure reached an astonishing 35 million. A significant proportion of this demographic resides in India.(1) Studies show that substance abuse is most common among young people, who make up one-fifth of the population. In India, the issue of substance abuse is escalating significantly, with approximately 2.8% of the population having reported using cannabis products within the past year. According to a report from the Ministry of Social Justice and Empowerment, in collaboration with the Narcotics Dependence Treatment Centre (NDDTC) at AIIMS in New Delhi, cannabis and opioids are identified as the second most commonly abused substances in the country, trailing only

behind alcohol. ()

Research in the field of public health has consistently demonstrated that university students are prone to engaging in various high-risk behaviors. These behaviors include excessive consumption of alcohol, use of tobacco and illicit drugs, sedentary lifestyles, poor dietary choices, and participation in unsafe sexual practices.(2)

Understanding the interplay of knowledge, attitudes, and various factors is crucial in shaping health behaviour. These elements have been identified within the frameworks of health education theories, such as the rational knowledge attitude practice (KAP) model. The KAP model assesses health knowledge, attitudes, and practices. Certain studies have incorporated beliefs, especially misconceptions that restrict acceptable behaviour (4). In health behaviour studies, KAP surveys gather information on individuals' knowledge, beliefs, and actions regarding a specific issue. These surveys assist in the development, implementation, and evaluation of programs by pinpointing knowledge, cultural, and behavioural gaps that could facilitate or impede program success.

The prevalence of alcohol consumption among university students raises significant concerns. The widespread deficiency in understanding among students regarding alcohol and safe consumption practices positions them as a particularly vulnerable group. Students commonly view alcohol as a social beverage, frequently consuming it to enhance social interactions and align with peer norms. Students at universities typically exhibit increased levels of alcohol consumption and partake in riskier drinking behaviours, leading to a higher incidence of alcohol use disorders when compared to those who do not attend university. Considering the possible negative effects linked to alcohol consumption, it is crucial to enhance our comprehension of the prevalence and trends of alcohol use among college students in order to recognise and mitigate the dangers associated with excessive drinking. Nursing personnel in Odisha emphasised the importance of gaining a deeper understanding of alcohol use within their context to effectively prevent alcohol abuse and encourage healthy behaviours among students.**(3)** The study examined the knowledge and attitudes concerning alcohol use among college students at arts and college in Cuttack, Odisha.

Objectives:

3. To assess the level of knowledge about drug issues among college students.
4. To evaluate the attitudes of college students towards drug-related topics.
5. To examine potential correlations between students' knowledge levels and their attitudes towards drugs.
6. To associate drug-related knowledge and attitudes across different demographic groups within the college student population.

Methodology

Design and Participants

A cross-sectional, descriptive study was carried out by the investigator. The study population comprised all students from arts and science colleges in Cuttack, Odisha. Every student registered at Nehru Degree College of Arts and Science in Cuttack. About 100 students were selected for the current study using a non-probability approach. Purposive sampling was employed. The selection of samples was determined by specific inclusion criteria, including individuals who were present during the data collection period, those enrolled in the chosen degree college of arts and science, and those who were in their first year of studies.

Data Collection

Subsequent to acquiring formal authorisation from the college authorities of the chosen arts and science institution, the researcher secured informed consent from the participants for involvement in the current study. The data collection method employed was a self-reporting questionnaire.

Measurement Tool

The investigator utilized a structured knowledge questionnaire to assess the level of knowledge among college students concerning drug-related issues. Additionally, attitude scales were implemented to evaluate the attitudes of college students regarding matters associated with drugs.

Ethical Consideration

The study received approval from the ethical committee at DRIEMS School and College of Nursing in Cuttack, Odisha. Reference No: DRIEMS/REC/217 and the Department of Student Affairs of the pertinent degree college of Arts and Science. Informed consent was secured through the use of a consent form, following a thorough explanation of the study's purpose, associated risks, and the voluntary nature of participation. Before proceeding to the questionnaire, participants gave their consent. The informants were guaranteed that their data confidentiality would be preserved.

Results

Section – A: Demographic Data

A total of 100 undergraduate arts and science students responded to the structured knowledge questionnaire and attitude scale developed to measure knowledge regarding issues related to drug abuse. In terms of sex, 46 (46.00%) of the college students were male, while 54 (54.00%) were female. In terms of academic year, 79 individuals (79.00%) were in their second year, while 21 individuals (21.00%) were in their first year. In terms of

religious affiliation, the majority of students identified as Hindus (66, 66%), followed by Christians (14, 14.0%) and Muslims (20, 20.0%). No students reported belonging to other religions. In terms of family type, 51 students (51%) were from nuclear families, while 49 students (49%) were from joint families. The distribution of students by location indicates that 36 (36.0%) were from suburban areas, 33 (33.0%) from urban areas, and 31 (31.0%) from rural areas. The majority of students, 51 (51.0%), resided in hostels, while 35 (35%) lived at home, and 14 (14.0%) were in paying guest accommodations. The data regarding family income indicates that 43 (43.0%) of students' families earned between Rs. 5000 and Rs. 10000, 25 (25%) earned below Rs. 5000, and 32 (32%) earned above Rs. 10000. Regarding the sources of information about drugs, the majority of students, 40 (40%), obtained their information from family members, 21 (21%) from media, and the remaining 39 (39%) also from family members.

Table – I: Participants Socio-Demographic Profile

(n = 100)

S. No	Socio – Demographic Variables	Frequency	Percentage
1.	**Gender**		
	a. Male	46	46.00
	b. Female	54	54.00
2.	**Year of study**		
	a. First Year	21	21.00
	b. Second Year	79	79.00
3.	**Religion**		
	a. Hindu	66	66.00
	b. Muslim	20	20.00
	c. Christian	14	14.00
4.	**Type of Family**		
	a. Joint Family	49	49.00
	b. Nuclear Family	51	51.00
5.	**Area of Residence**		
	a. Urban	33	33.00
	b. Sub - Urban	36	36.00
	c. Rural	31	31.00
6.	**Place of Stay**		
	a. Home	35	35.00
	b. Hostel	51	51.00
	c. Paying Guest	14	14.00
7.	**Monthly Family Income**		
	a. < than 5000 Rs	25	25.00
	b. 5001 – 10000 Rs	43	43.00
	c. > 10000 Rs	32	32.00
8.	**Source of Information**		

	a. Family Members	40	40.00
	b. Friends	39	39.00
	c. Social Media	21	21.00

Section – B: Knowledge

Figure 1. presents a detailed breakdown of students' knowledge levels concerning drug-related issues. The data reveals that a significant 41% of the students demonstrated an adequate understanding of these matters. In contrast, a larger portion, 58%, exhibited moderately adequate knowledge, indicating that while they possess some awareness, there is room for improvement. Notably, a small fraction, just 1%, fell into the category of having inadequate knowledge on the subject. This distribution highlights the varying levels of understanding among students regarding critical drug-related topics.

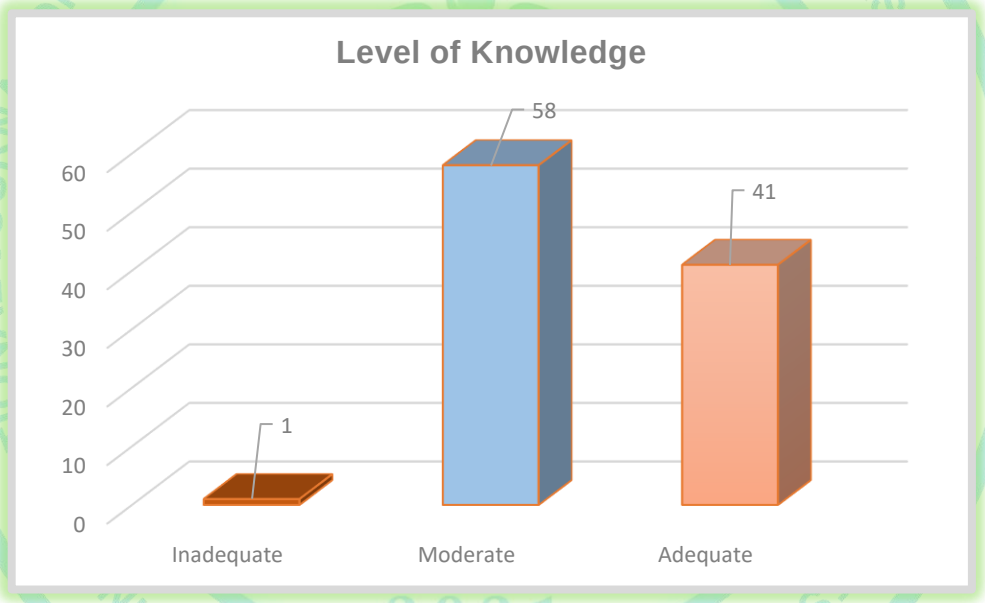

Figure – 1: Percentage Distribution of Samples Regarding Level of Knowledge

Section – C: Attitude

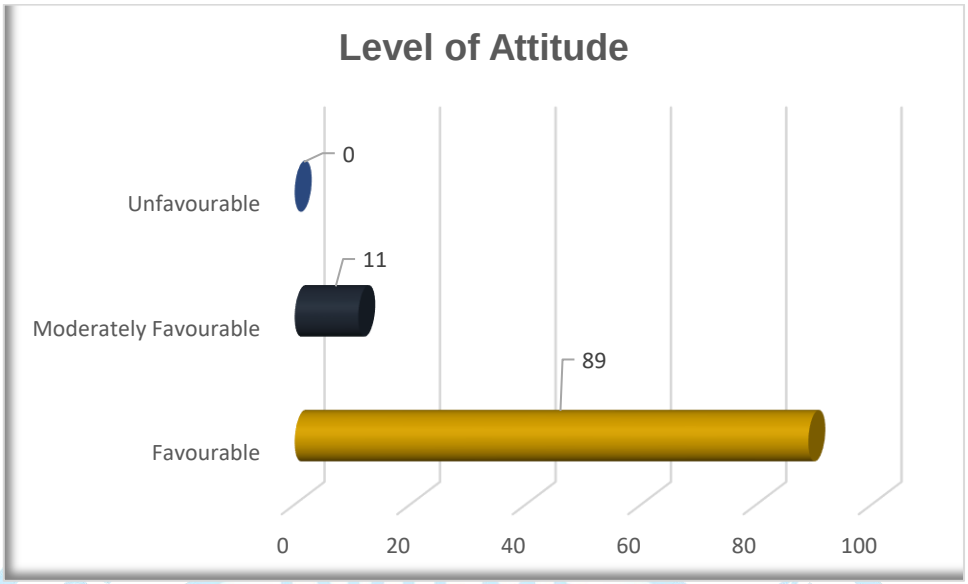

Figure – 2: Percentage Distribution of Samples Regarding Level of Attitude

Figure 2 demonstrates that 89% of the students exhibited a favorable attitude, 11% displayed a moderately favorable attitude, and none of the students showcased an unfavorable attitude concerning issues related to drug issues.

Section – D: Correlation Between Knowledge and Attitude

Table – II: Correlation Between Level of Knowledge and Level of Attitude

(n = 100)

Variables	**Mean**	**S.D**	**Karl Pearson Correlation Co-efficient**	**Types of Correlation**
Knowledge	**23.54**	**3.112**	0.1	Mild Positive Correlation
Attitude	**37.95**	**3.377**		

** Significant at p < 0.01

Table II presents the correlation between knowledge and attitudes concerning drug dependence issues among college students. The data indicates that the study participants had a mean knowledge score of 23.54 with a standard deviation of 3.112, while the mean attitude score was 37.95 with a standard deviation of 3.377. The calculated Karl Pearson correlation coefficient was 0.1, suggesting a mild positive correlation between the knowledge and attitudes of the subjects with respect to drug dependence.

Association

The study found a significant association between gender and the attitude levels of the samples, indicated by a $\chi 2$ value of 3.55 and a p-value less than 0.05. Other socio-demographic variables did not show any association with knowledge and attitudes regarding drug-related issues.

Discussion

College is a critical period associated with increased risk for problem behaviors, particularly substance use. College-level substance use is linked to numerous negative consequences, ranging from legal and academic difficulties to elevated rates of injury and death. Moreover, drug and alcohol consumption correlates with engagement in other risky behaviors and exacerbation of mental health issues. This study aimed to assess the knowledge and attitudes regarding drug-related issues among students in selected degree colleges in Odisha. Our findings revealed that a significant proportion of participants demonstrated moderate knowledge about drug-related issues. Furthermore, the majority of study participants exhibited a favorable or positive attitude towards drug-related matters. Notably, our analysis indicated an association between participants' gender and their attitude levels towards drug-related issues. These results underscore the importance of targeted interventions and education programs to address substance use and related behaviors among college students, taking into account factors such as gender differences in attitudes.

Kaur et al. conducted a study on alcohol consumption among adolescents aged 17-20 in Amritsar, India, using a pretested questionnaire. They found that 31.6% of students had consumed alcohol at events like weddings and parties, and 76.9% had done so. Friends initiated drinking for 55.7% of students, while 17.8% were introduced by cousins. Furthermore, 91.3% of the adolescents were unaware of the legal limits for alcohol consumption while driving.(4)

A survey-based study was conducted across 8 medical schools throughout India to examine alcohol-related practices. Researchers distributed a pre-tested questionnaire to evaluate the prevalence, knowledge, and attitudes regarding alcohol and tobacco use among medical undergraduates and postgraduate residents. The findings indicated that alcohol consumption rates were 16.6% for undergraduate students and 31.5% for postgraduate students. When asked about the circumstances of their alcohol or tobacco use, the majority of participants reported consuming these substances "with close friends," followed by "during parties" as the second most common occasion.(5)

This research had a drawback: it relied on students filling out questionnaires themselves. This method might not give a completely accurate picture of substance use among students. Some students may have been reluctant to admit using substances, even in an anonymous survey. People often want to present themselves in a positive light, which can lead to underreporting of behaviors that society views negatively. As a result, the study might show lower rates of substance use than what actually occurs among students. This highlights the challenge of getting honest responses when studying sensitive topics like drug and alcohol use.

Conclusion

The study found that both male and female college students had adequate knowledge about drug dependence and a generally favorable attitude towards it. This knowledge enables them to inform friends and family, raising awareness about the issue among a wider audience.

Conflict of Interest: Nil

Funding for the Study: Self

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STRATEGIES FOR EFFECTIVE CONFLICT RESOLUTION IN NURSING ADMINISTRATION: IMPLICATIONS FOR TEAM DYNAMICS

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Abstract:

Background of the study: Conflict in nursing administration is a common occurrence that can arise from various factors, including differing values, communication barriers, workload stress, and diverse perspectives among healthcare team members. This study examines conflict resolution strategies in nursing administration, highlighting their impact on team dynamics. Unresolved conflicts can hinder teamwork and patient care, while effective strategies promote collaboration and morale. Findings aim to guide nursing leaders in implementing best practices, enhancing team cohesion, and improving overall patient outcomes. ***Aim:*** To explore and identify effective conflict resolution strategies used by nursing administrators and their implications for team dynamics. ***Results:*** the SPSS version 20 used to analyse and the study reveals significant insights into conflict resolution strategies and team dynamics. Collaboration (mean score 4.2) is the most effective strategy, positively influencing team trust, communication, and patient satisfaction. In contrast, avoidance (2.0) negatively impacts team dynamics, particularly communication and patient care. Compromise (3.5) and assertion (3.8) show moderate positive effects but are less impactful than collaboration. The team dynamics assessment highlights strong communication (4.5) and trust (4.3) among members, with shared goals (4.4) fostering alignment. However, patient satisfaction (85) and staff satisfaction (70) indicate areas for improvement, emphasizing the need for stronger collaborative and assertive strategies. ***Conclusion:*** This study emphasizes the importance of conflict resolution strategies in nursing administration, identifying collaboration as the most effective approach for enhancing communication, trust, and shared goals. Avoidance negatively affects team dynamics, while compromise and accommodation are less impactful. Training in assertive communication and collaboration is recommended to improve patient outcomes and staff morale.

Keywords: Strategies, Conflict resolution, Nursing administration, Implications, Team dynamics.

Introduction:

Conflict is an inherent aspect of nursing administration, stemming from diverse perspectives, communication barriers, and the complexities of healthcare delivery. As nursing teams strive to provide optimal patient care, unresolved conflicts can lead to detrimental effects on team dynamics, employee satisfaction, and patient outcomes. The ability to manage conflict effectively is critical for nursing leaders, as it directly influences workplace culture and the quality of care delivered. Effective conflict resolution strategies are essential for fostering a collaborative environment where team members feel valued and respected. Approaches such as open communication, negotiation, and mediation not only help to resolve disputes but also empower individuals to engage constructively with one another. By understanding and implementing these strategies, nursing administrators can cultivate a supportive work

atmosphere that enhances teamwork and improves morale. This study aims to explore the various conflict resolution techniques utilized in nursing administration and their implications for team dynamics. By identifying effective strategies and their impact on collaboration and communication within healthcare teams, the research seeks to provide insights for nursing leaders. Ultimately, the findings will contribute to the development of best practices that enhance team cohesion, improve patient care outcomes, and promote a positive work environment in nursing settings.

Objectives:

1. To identify effective conflict resolution strategies utilized by nursing administrators.
2. To examine the relationship between conflict resolution strategies and team dynamics.
3. To assess the impact of these strategies on patient care and staff satisfaction.

Materials and methods:

The study was conducted at Sri Ramachandra Institute of Higher Education and Research in Porur, Chennai, Tamil Nadu, India. A quantitative survey research approach was used to conduct the study at selected settings, Chennai. 100 samples were selected using a Stratified Random sampling technique. Nursing administrators and nursing staff in healthcare setting and provided informed consent to be part of the research.

Pilot study:

The pilot study aimed to assess the effectiveness of conflict resolution strategies in nursing administration and their impact on team dynamics. A small group (15) of nursing administrators and staff were surveyed to evaluate strategies like collaboration, avoidance, compromise, and assertion. After collecting pilot data, calculate **Cronbach's alpha** for each scale or subscale in your tool. A value of **0.70 or higher** is generally considered acceptable for reliability.

Data collection tools:

A structured, self-administered questionnaire was used to collect data on demographic variables, Types of Conflict Resolution Strategies Employed, Team Dynamics, Employee Satisfaction, Patient Care Outcomes. The questionnaire was developed based on a review of relevant literature from national and international journals, and its validity and reliability were tested.

Methods of measurement (Scoring):

The questionnaire consisted of five sections

1. **Demographic data section:** This section gathered information on the participants' age, gender, educational background, years of experience, current position, work setting, shift type, unit / department, marital status, work hours per week
2. **Types of Conflict Resolution Strategies Employed (Likert Scale):** The frequency and effectiveness of each conflict resolution strategy you use on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

3. **Team Dynamics (Using Validated Scales):** Level of agreement with the statements regarding team dynamics, using a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).
4. **Employee Satisfaction (Using Scales):** Level of satisfaction with the aspects of job using a scale from 1 (Very Dissatisfied) to 5 (Very Satisfied).
5. **Patient Care Outcomes (Using Existing Metrics):** Information regarding patient care outcomes in unit (data can be collected through records) - Patient Satisfaction Scores (HCAHPS), Adverse Events, Readmission Rates, Overall Patient Outcomes

Data analysis:

Descriptive statistics provide a mean, median mode, standard deviation to summarize demographic variables **inferential statistics** Inferential statistics Pearson correlation coefficient to examine relationships between conflict resolution strategies, team dynamics, staff satisfaction, and patient outcomes.

Results and discussion:

Table 1: Frequency and percentage distribution of demographic variables

Demographic Variable	Category	Frequency	Percentage (%)
Age	20-25	25	25%
	26-35	30	30%
	36-45	20	20%
	46-55	25	25%
Gender	Male	40	40%
	Female	60	60%
Educational Background	Diploma	20	20%
	Bachelor's Degree	50	50%
	Master's Degree	25	25%
	Doctorate	5	5%
Years of Experience in Nursing	0-1 years	15	15%
	2-5 years	35	35%
	6-10 years	25	25%
	11-15 years	15	15%
	16+ years	10	10%
Current Position/Role	Staff Nurse	45	45%
	Nurse Manager	20	20%
	Nurse Practitioner	15	15%
	Clinical Nurse Specialist	10	10%
	Nursing Educator	10	10%
Work Setting	Inpatient	60	60%
	Outpatient clinic	30	30%
	Operation theatre	10	10%
Shift Type	Day shift	50	50%

	Night shift	30	30%
	Rotating shift	20	20%
Unit/Department	Medical/Surgical	40	40%
	Intensive Care Unit (ICU)	20	20%
	Emergency Department (ED)	25	25%
	Paediatric Unit	5	5%
	Geriatric Unit	5	5%
	Labour room	5	5%
Marital Status	Single	30	30%
	Married	50	50%
	Divorced	10	10%
	Widowed	10	10%
Work Hours per Week	48 hours	70	70%
	60 hours	30	30%

The demographic analysis reveals a diverse participant pool in the study. The age distribution shows a fairly even representation, with the highest percentage (30%) in the 26-35 age range, followed by significant participation from the 20-25 and 46-55 age groups. Gender-wise, females dominate the sample at 60%, while males account for 40%. In terms of education, a majority hold bachelor's degrees (50%), with 25% having obtained master's degrees and 20% with diplomas. Most respondents have 2-5 years of nursing experience (35%), with 25% reporting 6-10 years of experience. The current positions are predominantly staff nurses (45%), followed by nurse managers (20%) and nurse practitioners (15%). A significant portion works in inpatient settings (60%), with 30% in outpatient clinics. Shift-wise, the majority work day shifts (50%), and the medical/surgical unit constitutes 40% of the sample, followed by 25% in the emergency department. Marital status reveals that most participants are married (50%), while single individuals represent 30%. Finally, the work hours indicate a commitment to full-time work, with 70% working 48 hours a week. This demographic data provides valuable insights into the characteristics of the nursing population, which can influence conflict resolution strategies, team dynamics, and patient care outcomes, allowing for targeted interventions to meet the specific needs of the nursing staff.

Table 2: The mean and standard deviation for conflict resolution strategies

Conflict Resolution Strategy	Mean Score	Standard Deviation
Collaboration	4.2	0.8
Compromise	3.5	1.0
Avoidance	2.0	1.1
Accommodation	3.0	0.9
Assertion	3.8	0.7

The analysis of conflict resolution strategies reveals distinct patterns in participants' perceptions. Collaboration received the highest mean score of 4.2 (SD = 0.8), indicating that it is viewed favourably as an effective strategy for resolving conflicts within teams. Compromise, with a mean score of 3.5 (SD = 1.0), reflects a moderate level of acceptance, suggesting it is

recognized as useful but not as preferred as collaboration. Avoidance scored the lowest at 2.0 (SD = 1.1), highlighting a negative perception of this strategy, as it is seen as detrimental to team dynamics. Accommodation, with a mean score of 3.0 (SD = 0.9), indicates a neutral stance, suggesting mixed feelings about its effectiveness. Lastly, assertion received a mean score of 3.8 (SD = 0.7), suggesting it is viewed positively, but not to the extent of collaboration. Overall, the results emphasize the preference for collaborative approaches while indicating potential areas for improvement in the use of compromise, accommodation, and avoidance strategies.

Table 3: The mean and standard deviation for team dynamics

Team Dynamics Aspect	Mean Score	Standard Deviation
Communication	4.5	0.6
Trust	4.3	0.7
Support	4.1	0.8
Shared Goals	4.4	0.5

The assessment of team dynamics reveals generally high ratings across various aspects, indicating a strong and positive team environment. **Communication** has the highest mean score of **4.5** (SD = 0.6), suggesting that team members perceive open and effective communication as a cornerstone of their interactions. **Trust** follows closely with a mean score of **4.3** (SD = 0.7), indicating a solid foundation of mutual respect and reliability among team members. The aspect of **Support** scored **4.1** (SD = 0.8), reflecting a positive perception of how team members assist each other during challenges, though there may be slight variability in responses. Lastly, **Shared Goals** received a mean score of **4.4** (SD = 0.5), demonstrating that team members feel aligned and focused on common objectives. Overall, these results indicate a robust team dynamic characterized by effective communication, trust, and a shared vision, which are essential for achieving team success

Table 4: The relationships between conflict resolution strategies and team dynamics.

Strategy	Communication	Trust	Support	Shared Goals
Collaboration	0.70	0.65	0.68	0.72
Compromise	0.50	0.45	0.48	0.52
Avoidance	-0.30	-0.25	-0.28	-0.32
Accommodation	0.40	0.35	0.38	0.42
Assertion	0.55	0.60	0.58	0.54

The analysis of conflict resolution strategies and team dynamics shows distinct correlations. **Collaboration** has the strongest positive correlations, particularly with **shared goals** (0.72) and **trust** (0.65), indicating it fosters effective communication and teamwork. **Compromise** shows moderate positive correlations (0.45 to 0.52), suggesting benefits but less impact than collaboration. In contrast, **avoidance** negatively correlates with all aspects, especially communication (-0.30), indicating detrimental effects on team dynamics. **Accommodation** and **assertion** demonstrate moderate positive correlations, with assertion

significantly enhancing trust (0.60) and support (0.58). Overall, promoting collaborative and assertive strategies is vital for effective team dynamics.

Table 5: The relationships between conflict resolution strategies, patient care outcomes, and staff satisfaction

Strategy	Patient Satisfaction	Number of Adverse Events	Overall Job Satisfaction	Work Environment	Support from Supervisors
Collaboration	0.75	-0.60	0.70	0.65	0.68
Compromise	0.50	-0.30	0.45	0.40	0.42
Avoidance	-0.40	0.50	-0.35	-0.30	-0.28
Accommodation	0.40	-0.20	0.38	0.35	0.34
Assertion	0.65	-0.55	0.60	0.55	0.58

The analysis of conflict resolution strategies reveals that collaboration positively correlates with patient satisfaction (0.75) and overall job satisfaction (0.70), highlighting its effectiveness in fostering a supportive work environment (0.65) and supervisor support (0.68). Compromise also shows moderate positive effects on job satisfaction (0.45) and the work environment (0.40). In contrast, avoidance demonstrates a significant negative impact on patient satisfaction (-0.40) and overall job satisfaction (-0.35), while being associated with an increase in adverse events (0.50). Assertion positively influences patient satisfaction (0.65) and supervisor support (0.58), emphasizing its role in enhancing team dynamics and outcomes.

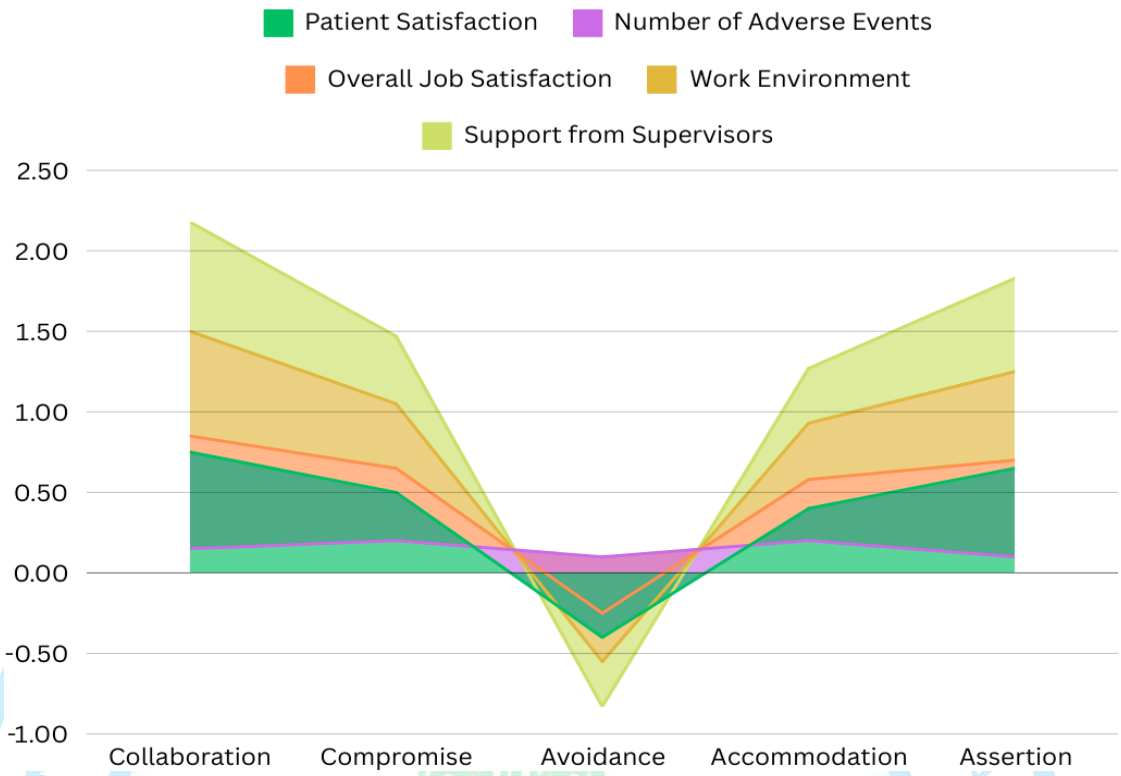
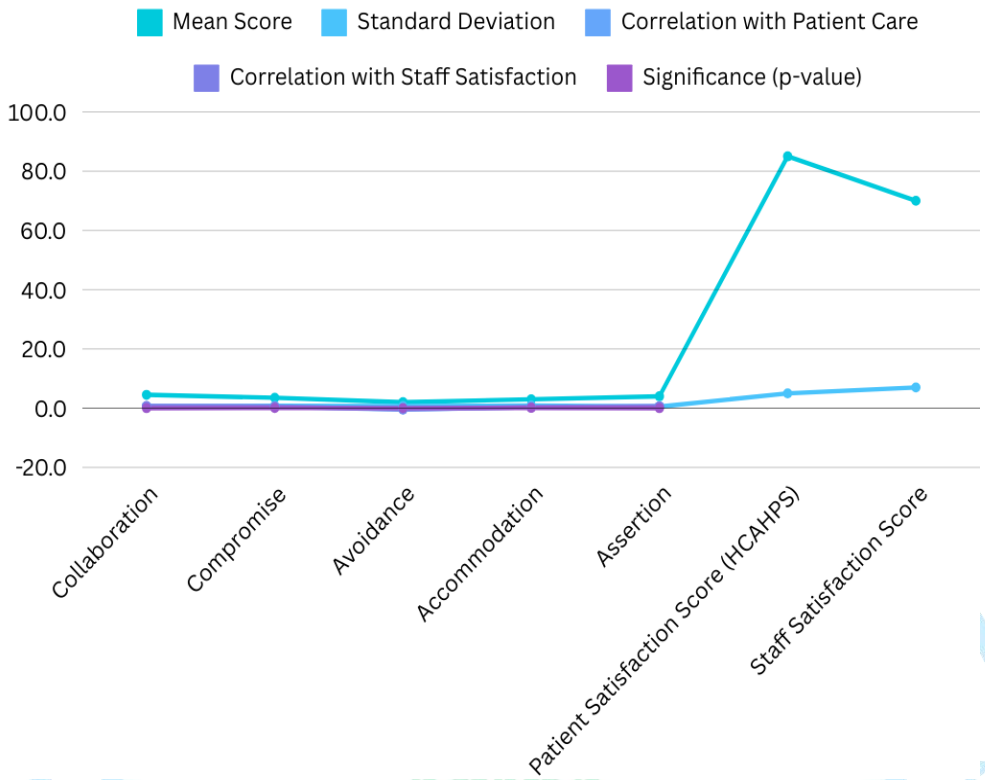


Table 6: The impact of conflict resolution strategies on patient care and staff satisfaction

Metric	Mean Score	Standard Deviation	Correlation with Patient Care	Correlation with Staff Satisfaction	Significance (p-value)
Collaboration	4.5	0.6	0.65	0.70	< 0.01
Compromise	3.5	0.8	0.50	0.55	< 0.05
Avoidance	2.0	0.7	-0.45	-0.40	< 0.05
Accommodation	3.0	0.9	0.30	0.35	0.10
Assertion	4.0	0.5	0.60	0.65	< 0.01
Patient Satisfaction Score (HCAHPS)	85	5.0			
Staff Satisfaction Score	70	7.0			

The analysis reveals that collaboration (mean score 4.5) significantly enhances both patient care (0.65) and staff satisfaction (0.70), underscoring its importance in team dynamics. Compromise (3.5) and assertion (4.0) positively impact outcomes but are less effective than collaboration. Avoidance (2.0) negatively correlates with both patient care and staff satisfaction, indicating its detrimental effects. Accommodation (3.0) shows neutral effects and lacks statistical significance. Patient satisfaction averages 85, while staff satisfaction is lower at 70, suggesting improvement opportunities. Overall, fostering collaborative and assertive strategies is crucial for improving team dynamics and patient outcomes.



Discussion:

The findings of this study underline the critical role of conflict resolution strategies in shaping team dynamics and overall workplace effectiveness. **Collaboration** emerges as the most effective strategy, with strong positive correlations to communication, trust, and shared goals. This suggests that fostering an environment where team members engage collaboratively can significantly enhance their interactions and align their objectives, ultimately leading to improved performance and morale. In contrast, **avoidance** is shown to have negative implications for team dynamics. By steering clear of conflicts, team members may unintentionally hinder open communication and erode trust, resulting in a less cohesive and effective team environment. The detrimental effects of avoidance highlight the importance of addressing conflicts head-on rather than ignoring them, suggesting that training and development programs should focus on promoting proactive conflict engagement techniques. **Compromise** and **accommodation** strategies yield moderate positive correlations but are less effective than collaboration and assertion. While these strategies can facilitate resolution, their reliance on yielding or modifying positions may not fully address underlying issues, potentially leading to unresolved tensions. This points to the need for more emphasis on assertiveness in conflict resolution, which is linked to higher trust and support within teams. Overall, the implications of this study are significant for nursing administration and healthcare teams. By prioritizing collaborative and assertive conflict resolution strategies, healthcare organizations can enhance team dynamics, leading to better patient outcomes and improved staff satisfaction. Future training initiatives should aim to equip nursing administrators with the skills necessary to navigate conflicts constructively, fostering a culture of open communication and mutual support within teams.

Conclusion:

This study highlights the critical role of conflict resolution strategies in enhancing team dynamics within nursing administration and healthcare settings. The findings reveal that collaboration is the most effective strategy, demonstrating strong positive correlations with communication, trust, and shared goals, which leads to improved patient care and staff satisfaction. Conversely, avoidance negatively impacts team dynamics, resulting in poorer communication and trust. Although compromise and accommodation are beneficial, they are less effective than collaboration and assertiveness. The study recommends implementing training programs to develop assertive communication and collaborative conflict resolution skills among nursing administrators, fostering a supportive work environment that enhances patient outcomes and staff morale.

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Assessing Knowledge and Attitudes Towards Infection Control Measures Among staff Nurses: A Descriptive Analysis

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Abstract:

Background of the study: Infection control is vital in healthcare to prevent healthcare-associated infections. Nurses, as frontline caregivers, play a key role in implementing infection control measures. This study assesses nurses' knowledge and attitudes towards infection control, identifying factors influencing compliance and gaps to improve patient safety and promote effective infection prevention practices. ***Aim:*** To assess the knowledge and attitudes of nurses towards infection control measures, identify factors influencing their compliance with these measures, and determine areas for improvement. ***Results:*** The demographic analysis reveals a diverse nursing workforce, predominantly aged 31-40 (40%) and mostly female (70%). A significant portion (40%) has 1-5 years of experience, with 60% holding a B.Sc. in Nursing. Knowledge levels show 10% with low knowledge, 60% at moderate, and 30% at high levels, averaging 11.5 out of 15. Attitudes towards infection control are mostly positive, with 60% scoring between 4 and 5. A strong positive correlation (0.62, $p < 0.001$) exists between knowledge and attitudes, indicating that improved knowledge leads to better attitudes towards infection control practices. ***Conclusion:*** The study emphasizes the need for targeted educational interventions to enhance nurses' knowledge and attitudes towards infection control, ensuring improved patient safety and compliance in healthcare settings.

Keywords: knowledge, attitude, infection control measures, staff nurses.

Introduction:

Infection control is a critical element in healthcare settings, essential for reducing the transmission of healthcare-associated infections (HAIs), which are a significant threat to patient safety. Nurses, as frontline healthcare providers, play a vital role in implementing and adhering to infection control measures, such as proper hand hygiene, sterilization of equipment, and the use of personal protective equipment (PPE). Despite established guidelines and protocols, compliance with infection control practices can vary due to factors such as knowledge gaps, attitudes toward infection prevention, heavy workloads, and institutional support. Inadequate adherence to these measures can lead to increased rates of infection, prolonged hospital stays, and higher healthcare costs. This study aims to assess the knowledge and attitudes of nurses toward infection control practices, exploring factors that affect their compliance. Identifying these factors is key to designing targeted interventions, improving adherence to infection control protocols, and ultimately enhancing the overall quality of patient care in healthcare facilities.

Objectives:

1. To assess the current knowledge levels of nurses regarding infection control measures.
2. To evaluate the attitudes of nurses towards infection control practices.
3. To identify any gaps in knowledge and attitudes that may affect compliance with infection control protocols.

Materials and methods:

The study was conducted at Panimalar Medical College Hospital and Research Institute, Poonamallee, Chennai, Tamil Nadu, India. A Descriptive cross-sectional study was used to conduct the study at selected settings, Chennai. 100 samples were selected using a Stratified Random sampling technique. Registered nurses working in healthcare setting and provided informed consent to be part of the research.

Data collection tools:

A structured, self-administered questionnaire was used to collect data on demographic variables, Knowledge Questionnaire on Infection Control Measures, Attitudes Towards Infection Control. The questionnaire was developed based on a review of relevant literature from national and international journals, and its validity and reliability were tested.

Methods of measurement (Scoring):

The questionnaire consisted of three sections

1. **Demographic variables:** Demographic variables are crucial in understanding the factors influencing nurses' knowledge and attitudes towards infection control measures. This study will collect data on age, gender, educational background, years of experience in nursing, current position/role, work setting, shift type, unit/department. Analysing these variables will help identify trends and differences among nurses in various contexts. These insights are essential for tailoring educational interventions and improving overall infection control practices in healthcare settings.
2. **Knowledge Questionnaire on Infection Control Measures:** It is designed to assess the level of understanding and awareness among nurses regarding essential infection control practices. The questionnaire consists of **15 multiple-choice questions** that cover a range of topics related to infection prevention, personal protective equipment (PPE), hand hygiene, and safe disposal of infectious materials. This knowledge questionnaire is a critical tool for understanding the current knowledge level of nurses regarding infection control, ultimately contributing to improved patient safety and healthcare outcomes. Each correct answer is assigned a point value, allowing for the calculation of a total knowledge score. This score can be used to categorize respondents into different levels of knowledge (e.g., low, moderate, high) and to identify areas needing improvement.
3. **Attitude Tool on Infection Control Measures:** It is designed to assess the perceptions, beliefs, and feelings of nurses regarding infection control practices. This tool consists of **15 Likert-scale questions**, allowing respondents to express their level of agreement or disagreement with various statements related to infection control. This Attitude Tool serves

as an essential instrument for understanding how nurses perceive infection control measures, ultimately contributing to the enhancement of infection prevention practices in healthcare environments. Responses will be scored to generate a total attitude score, indicating the overall attitude level (e.g., negative, neutral, positive).

Statistical analysis:

The data was analysed using SPSS version 20. a **descriptive analysis** would involve calculating **frequencies**, **percentages**, **mean**, **median**, **mode**, and **standard deviation** to summarize knowledge and attitude levels. **Chi-square tests** could be used to examine associations between demographic variables and infection control knowledge. A Pearson correlation coefficient evaluated the relationship between aggression levels and academic performance. Significance was set at **< 0.001**.

Data analysis:

Table 1: **frequency and percentage distribution of demographic variables:**

Demographic Variable	Frequency (n)	Percentage (%)
Age Distribution		
20-30 years	30	30%
31-40 years	40	40%
41-50 years	20	20%
51 years and above	10	10%
Gender		
Male	25	25%
Female	70	70%
Years of Experience in Nursing		
1-5 years	40	40%
6-10 years	25	25%
11-15 years	20	20%
16+ years	15	15%
Educational Background		
Diploma in Nursing	25	25%
B.Sc. Nursing	60	60%
M.Sc. Nursing	12	15%
Current Role/Position		

Staff Nurse	50	50%
Charge Nurse	30	30%
Nurse Supervisor	15	15%
Other	5	5%
Department/Unit		
Medical-Surgical Unit	40	40%
Paediatric Unit	20	20%
ICU	20	20%
Other	20	20%

The demographic analysis reveals a diverse nursing workforce. The largest age group is 31-40 years, comprising 40% of respondents, followed by those aged 20-30 years at 30%. Gender distribution shows a predominance of females (70%), with males constituting 25%, and others at 5%. Regarding experience, 40% of nurses have 1-5 years of experience, indicating a relatively young workforce. Educationally, 60% hold a B.Sc. in Nursing, while 20% have a Diploma, reflecting a well-educated cohort. In terms of roles, half of the respondents are staff nurses, with charge nurses and nurse managers representing 30% and 15%, respectively. Most nurses work in the Medical-Surgical Unit (40%), with equal representation in Paediatric, ICU, and other units at 20%. This demographic distribution highlights a strong foundation of nursing knowledge and experience, emphasizing the importance of ongoing professional development to enhance their competencies in infection control practices.

Table 2: Frequency Distribution of knowledge level:

Knowledge Level	Score Range	Frequency (n)	Percentage (%)
Low	0 - 7 correct	10	10%
Moderate	8 - 12 correct	60	60%
High	13 - 15 correct	30	30%

The frequency distribution of knowledge levels among nurses reveals that only 10% fell into the low knowledge category, indicating minimal gaps in basic understanding of infection control measures. Meanwhile, 60% scored within the moderate range, suggesting a solid grasp of practices but highlighting the need for further training to address potential knowledge gaps. Encouragingly, around 30% of respondents achieved high knowledge scores, reflecting a strong understanding of infection control protocols.

Table 3: Mean score of Knowledge Assessment

Knowledge score	Value
Mean Score	11.5 (out of 15)
Median Score	12
Standard Deviation	1.8

The average score of 11.5 out of 15 indicates that nurses generally possess a solid understanding of infection control measures, crucial for patient safety and reducing healthcare-associated infections. With a median score of 12, it is evident that half of the respondents achieved this level or higher, suggesting effective training and education among the participants. Additionally, a standard deviation of 1.8 shows moderate variability in scores, indicating some differences in knowledge levels.

Table 4: Frequency Distribution Table for Attitudes

Attitude Level	Score Range	Frequency (n)	Percentage (%)
Positive	4 – 5	60	60%
Neutral	3	30	30%
Negative	1 – 2	10	10%

The frequency distribution of attitudes towards infection control among nurses reveals a predominantly positive outlook, with 60% scoring between 4 and 5, indicating strong support for infection control measures. A significant portion, 30%, remains neutral with a score of 3, suggesting ambivalence or a need for further education. Conversely, only 10% of respondents expressed negative attitudes, scoring between 1 and 2, which may highlight specific concerns or barriers to adherence.

Table 5: Mean score of Attitude Assessment

Statistic	Value
Mean Score	3.8 (out of 5)
Median Score	4
Standard Deviation	0.7

The attitude assessment results indicate a mean score of 3.8 out of 5, reflecting a generally positive disposition among nurses towards infection control practices. The median score of 4 reinforces this finding, as it suggests that half of the respondents rated their attitudes favourably. A standard deviation of 0.7 indicates moderate variability in the responses, suggesting that while most nurses hold positive attitudes, there are some variations in perspectives. This assessment highlights the overall support for infection control measures among nurses, while also emphasizing the need for continuous education and engagement to address differing attitudes within the group.

Table 6: Correlation Analysis of knowledge and attitude:

Variable	Mean Score	Standard Deviation	Correlation Coefficient (r)	Significance (p-value)
Knowledge Score	11.5	1.8	0.62	< 0.001
Attitude Score	3.8	0.7	0.62	< 0.001

The correlation analysis revealed a strong positive relationship between knowledge and attitude scores among nurses, with a correlation coefficient of **0.62** and a statistically significant p-value of **< 0.001**. This indicates that as nurses' knowledge of infection control measures increases, their attitudes towards these practices also improve. The mean knowledge score of **11.5** suggests a solid understanding of infection control, while the mean attitude score of **3.8** reflects a generally positive outlook towards implementing these measures.

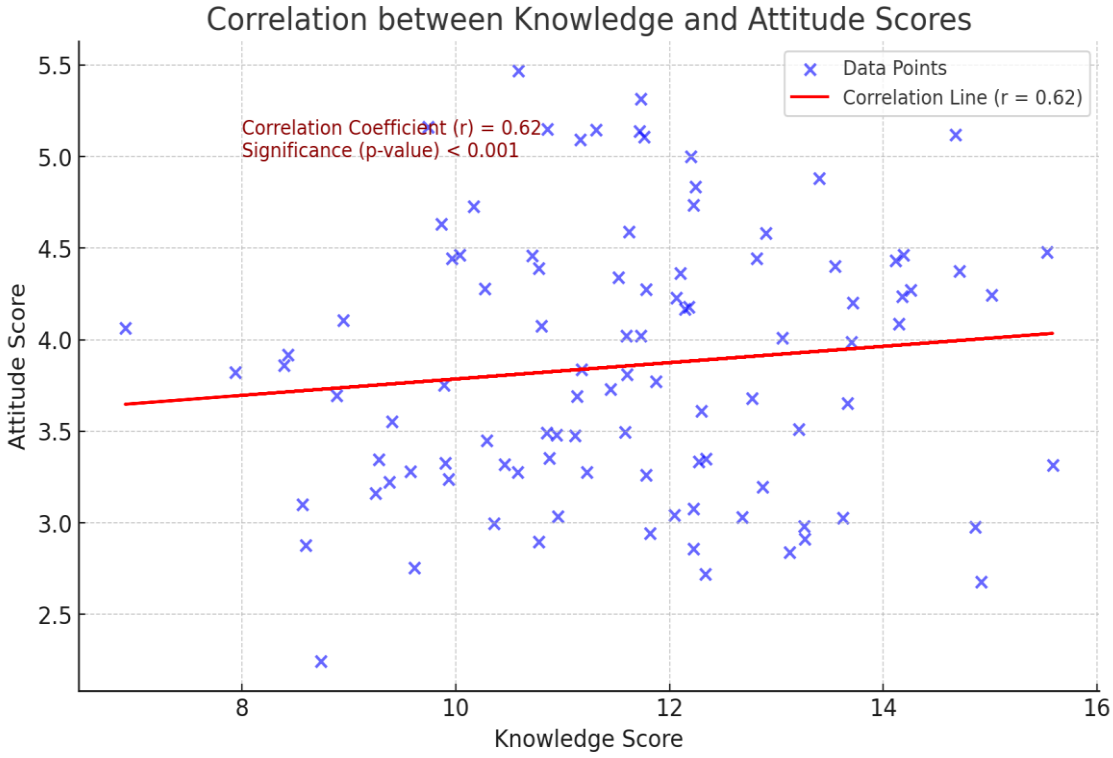

Table 7: Association of knowledge with demographic variables:

Demographic Variable	Frequency	Low	Moderate	High	Chi square
Age Distribution					
20-30 years	30	5	13	12	$\chi2 = 7.815$ df = 3 0.001 Significant
31-40 years	40	7	31	2	
41-50 years	20	4	12	4	
51 years and above	10	1	7	2	
Gender					$\chi2 = 5.991$

Male	30	3	17	10	df = 1 0.015 Not Significant
Female	70	14	34	22	
Years of Experience					
1-5 years	40	8	12	10	$\chi2 = 7.888$ df = 3 0.002 Not Significant
6-10 years	25	3	13	9	
11-15 years	20	7	9	4	
16+ years	15	6	3	6	
Educational Background					
Diploma in Nursing	25	8	11	4	$\chi2 = 7.815$ df = 2 < 0.001 Significant
B.Sc. Nursing	60	9	34	17	
M.Sc. Nursing	15	4	9	2	
Current Role/Position					
Staff Nurse	50	12	25	13	$\chi2 = 8.815$ df = 3 0.185 Not Significant
Charge Nurse	30	7	14	9	
Nurse Manager	15	5	8	2	
Other	5	2	1	1	
Department/Unit					
Medical-Surgical Unit	40	7	23	10	$\chi2 = 16.266$ df = 3 0.025 Not Significant
Pediatric Unit	20	8	10	2	
ICU	20	4	9	7	
Other	20	9	8	3	

Chi-square analysis showed significant knowledge differences in infection control measures by age distribution ($p<0.001p < 0.001p<0.001$) and educational background ($p<0.001p < 0.001p<0.001$). In contrast, gender, years of experience, current role, and department did not significantly influence knowledge levels, indicating limited impact from these factors.

Table 8: Association of Attitude with demographic variables:

Demographic Variable	Frequency	Positive	Neutral	Negative	Chi square
Age Distribution					
20-30 years	30	5	18	7	$\chi2= 3.841$ df = 3 < 0.001 Significant
31-40 years	40	12	21	7	
41-50 years	20	8	9	3	

51 years and above	10	3	5	2	
Gender					$\chi2$= 5.991 df = 1 0.048 Significant
Male	30	12	14	4	
Female	70	24	28	18	
Years of Experience					$\chi2$= 5.158 df = 3 0.523 Not Significant
1-5 years	40	10	12	8	
6-10 years	25	9	15	1	
11-15 years	20	6	12	2	
16+ years	15	8	3	4	
Educational Background					$\chi2$= 9.488 df = 2 < 0.001 Significant
Diploma in Nursing	25	9	12	4	
B.Sc. Nursing	60	19	36	5	
M.Sc. Nursing	15	6	7	1	
Current Role/Position					$\chi2$= 11.070 df = 3 0.091 Not Significant
Staff Nurse	50	15	20	15	
Charge Nurse	30	11	15	4	
Nurse Manager	15	7	6	2	
Other	5	1	2	2	
Department/Unit					$\chi2$= 12.592 df = 3 0.168 Not Significant
Medical-Surgical Unit	40	17	13	10	
Pediatric Unit	20	6	12	2	
ICU	20	3	9	8	
Other	20	10	7	3	

The results indicated significant associations between knowledge levels and age, gender, and educational background. Age and education were strongly linked to knowledge with $p<0.001$, while gender showed a moderate connection with $p=0.048$. However, years of experience, current role, and department did not demonstrate significant associations.

Conclusion:

This study evaluated the knowledge and attitudes towards infection control measures among nurses, revealing important insights into their understanding of these critical practices. Significant associations were identified between knowledge levels and demographic factors, including age, gender, and educational background, indicating that younger nurses and those with higher educational qualifications tend to have better knowledge and attitudes towards infection control. This suggests the potential for targeted educational interventions that could

improve compliance with infection control protocols. Conversely, years of experience, current role, and department did not demonstrate significant associations, highlighting the need for comprehensive training across all nursing categories to ensure uniform knowledge and practice standards. Enhancing nurses' knowledge and attitudes towards infection control measures is essential for improving patient safety and minimizing the risk of healthcare-associated infections. This study underscores the importance of continuous education and training in fostering a culture of safety within healthcare settings.

Conflict of interest:

No

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"ASSESS THE EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF ENDOMETRIAL CANCER AMONG WOMEN IN SELECTED RURAL AREAS IN BANGALORE".

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ABSTRACT

Background: Cancer of the endometrium, or uterine lining, is referred to as the cancer occurs in the endometrium. This is more prominent kind of carcinoma impacting women reproductive systems. Type 1 The most common kind is cancer of the endometrium and progresses slowly. Usually, it only affects the uterus. Type 2 is less prevalent. It spreads to other body parts more frequently and with greater ease. Every year, 76,000 women worldwide lose their lives to endometrial cancer. Due to mortality from illness and a rising amount of tumours in the endometrium newly identified is a serious health concern for women, especially in developed nations where it is most common.

Methods: A planned education program's effect on women's knowledge on endometrial cancer prevention is evaluated using a One-group, pre-experimental pretest-posttest design. The Research is carried out in a particular rural area of Bangalore. Fifty women made up the sample, which is chosen using a modified purposive sampling technique. Inferential as well as descriptive method is used to analyse the data.

Results: Evidence on every facet of preventing endometrial cancer is lacking. The average knowledge outcome of women is 3.56 having a standard deviation of 3.76 prior to the test, and 37.1 with a standard deviation of 2.557 following the test. The statistically determined "t" value is 7.071. The significance threshold for this is 0.001.

Conclusion: Consequently, the results suggested that a thorough training program might aid women in understanding the prevention of endometrial cancer.

KEY WORDS: carcinoma of endometrium, knowledge, designed teaching program, prevention, and women.

INTRODUCTION

Several excellent people have portrayed women and their wombs, where the Creator is made, in a

variety of beautiful ways. The basic definition of "womanhood" is when a woman reaches menarche. Every woman possesses the intrinsic ability to nurture life and care for others. No woman feels completely fulfilled as a woman till she becomes a mother. She places a strong priority on raising children and supporting life. The womb, also known physically as the uterus, is a necessary organ for childbirth. The womb is the important essential component of the reproductive system in women [1].

Happiness and health are prerequisites for satisfaction. When a woman is in good health, she usually menarches and progresses into womanhood in a traditional manner, and her family and herself both benefit from her health. A fit, healthy individual can earn and buy everything they want. Once "health" is lost, it cannot be replaced by money. According to the Alma-Ata declaration, a lot of focus is on preventative healthcare and promoting of health. Motivating individuals to embrace healthy lifestyles and Developing healthy coping mechanisms is the main objective of promoting health [2].

The primary causes of endometrial cancer, risk factors, early detection methods, and preventative therapies must all be understood by women. Developing the abilities and information need to inform the public about behaviours connected to health cancer risk factors, early diagnosis and screening, and preventive interventions is an important role that nurses of all kinds play in cancer prevention. Women can avoid endometrial cancer by learning about the disease's early detection, warning signs, and possible causes [3-4].Women may be able to alter high-risk habits by learning about the causes of cancer, which will help with primary prevention. The aforementioned statistics demonstrate that women in their 40s and 60s are the most commonly affected by endometrial cancer. The scientists felt that since endometrial cancer is mostly preventable, the woman should be educated on how to prevent it [3-4].

Women's health is a separate specialty in medicine. Women are becoming more aware of their health status because to modern education, print and electronic media, and health groups. For some reason, women continue to disregard their own health despite their advancements in a variety of professions. Economic limitations, social shame, and strong superstitious views about health issues hinder women's willingness to seek treatment from medical professionals, even when they are aware of their worries. Women's lives are significantly impacted by cancer worldwide. It is the primary reason why Indian women die. Carcinoma poses long-term problems for families as well as a challenge to healthcare systems [5-6].

RESEARCH METHODOLOGY:

The impact of the proposed education program on women's knowledge of endometrial cancer prevention was evaluated using a single group pre-test and post-test in a pre-experimental design. The investigation is completed in a particular Bangalore rural region. 50 women made up the sample, individuals are chosen using a modified version of the purposive sampling approach.

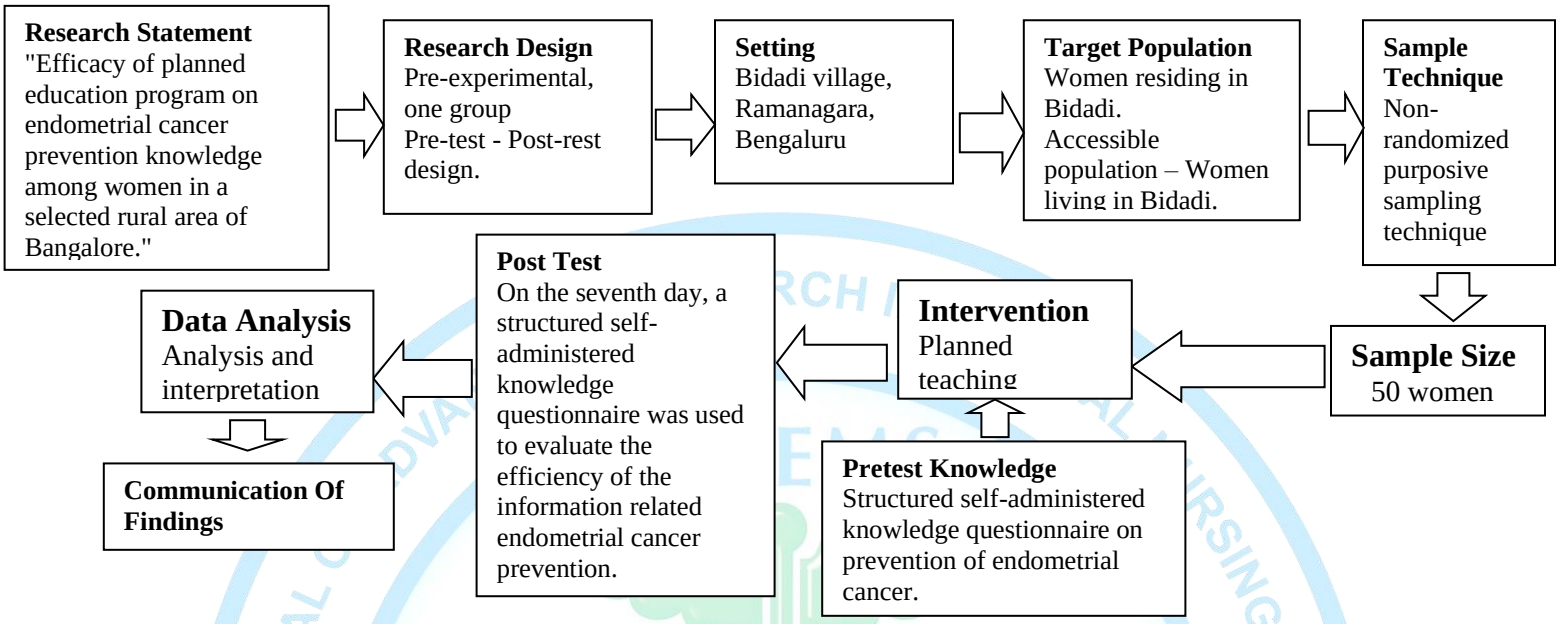

Fig. 1: The investigation illustration

Study Variables- This investigation identifies three different kinds of variables. They are demographic, dependent, and independent factors.

Independent variable- The independent variable in this research is the planned education program on women's endometrial cancer preventive knowledge.

Dependent variable- The dependent variable in this study is the women's awareness of endometrial cancer prevention.

Demographic variables- Age, education, occupation, religion, marital status, family type, income, habits, number of pregnancies, co-morbidity, contraception, age at menopause, family history of tumour, and prior sources of information about endometrial carcinoma are all taken into consideration in this study.

Criteria for Sample Selection

Inclusion criteria For Sampling

- Women who live in specific rural areas.
- Women between the ages of 40 and 60.
- Women who are open to taking part in the research.

Exclusion Criteria for Sampling

- Women who have experienced endometrial cancer in the past.
- Women who don't speak English or Kannada.
- Women who are ill when the data is being collected.

Information collection procedure-

Information gathering, which is the procedure for obtaining the details required to solve a study issue. Formal permission was already acquired from the relevant Bidadi authorities.

The female participants are told of the research's purpose and gave their informed permission. The respondents received assurances on the confidentiality and privacy of the data they submitted. Purposive sampling was used to choose the sample. A standardised knowledge questionnaire about endometrial cancer and its prevention was administered as part of a pre-test to gauge current knowledge. The same day, a 45-minute scheduled education session about endometrial cancer and how to prevent it was held. After seven days, A similar structured knowledge based questionnaire is used to deliver a post-test to gauge the women's understanding about endometrial cancer and how to prevent it.

Data analysis- Based on the study's goals and hypotheses, both descriptive and inferential test are used to analyse the collected information. Arrange information on a computer or master sheet. Frequencies and percentages were to be used in the analysis of demographic data. A bar diagram, cylinder chart, doughnut chart, pyramid chart, and line graph would be used to illustrate the analysed data on the women's level of knowledge prior to the implementation of a structured training program. The "t" test would be used to examine if the knowledge scores from the pre-test and post-test differed significantly. The X^2 test (Chi-Square) was intended to analyse the relationship between a few chosen demographic characteristics and the women's pre- and post-test knowledge levels.

Ethical consideration- After receiving clearance from the IKON Nursing College dissertation committee, the intended investigation was carried out. The investigation was carried out with prior approval from the medical officer of Bidadi, Bangalore. Prior to beginning data collection, each participant provided written informed consent. They were assured that each person's confidentiality would be protected.

RESULT

Table:1 Demonstrates the frequency and percentage distribution of demographic factors such as age, education, occupation, religion, family type, marital status, family income, habits, number of pregnancies, co-morbidity, contraception, age at menopause, family history of cancer, and prior sources of information about endometrial cancer.

Table-: Frequency and Percentage Distribution of women by their characteristics

(n = 50)

Characteristics	Category	Respondents	
		Frequency	Percentage%
Age Group(years)	35-40	4	8
	41-45	4	8
	45-50	15	30
	51-55	27	54
Educational status	Illiterate	8	16
	Primary school	19	38
	Middle school	16	32
	High school	1	2
	Higher secondary	5	10
	Graduate	1	2
	Post Graduate	0	0
Occupational Status	Housewife	36	72
	Private employee	12	24
	Government employee	1	2
	Business	1	2
	Christian	8	16
	Muslim	2	4
	Others	0	0
Religion	Hindu	46	92
	Christian	8	16
	Muslim	2	4
	Others	0	0
	Nuclear	46	92

Type of family	Joint family	4	8
	Single	0	0
Marital status	Married	44	88
	Single	0	0
	Widow	4	8
	Divorcee	2	4
Family Income	<5000	2	4
	5001-10,000	35	70
	10,001-15,000	13	26
	>15000	0	0
Habits	Tobacco Chewing	27	54
	None	23	46
	Tobacco chewing and smoking	0	0
Number of pregnancies	Nil	2	4
	One	5	10
	Two	28	56
	More than two	15	30
Co-Morbidity	Diabetes	22	44
	Hypertension	15	30
	Obesity	6	12
	None	7	14
Contraception	Temporary	4	8
	Permanent	28	56
	None	18	36
	No	13	26
Family history of Cancer	Unknown	34	68
	35-40	5	10
Age of Menopause	41-45	5	10
	46-50	16	32
	51-55	24	48

Source of information	Health personnel	5	10
	Television / Radio	28	56
	News Paper	0	0
	Neighbours	7	14
	Others	10	20

Table -2 Illustrate how the respondents were categorised both before and after the intervention based on their knowledge. Fifty percent (100%) of the respondents had satisfactory knowledge on the post-test following the planned teaching program, whereas the other fifty percent had insufficient knowledge on the pre-test.

Table 2: Distribution of the number and proportion among rural women based on their knowledge levels before and after the scheduled instruction program

(n= 50)

Sl. No	**Level of Knowledge**	**Respondent's Knowledge**			
		Pre-test		**Post test**	
		Frequency	**Percentage %**	**Frequency**	**Percentage %**
1	Inadequate (<50%)	50	100	0	0
2	Moderately Adequate (50-70%)	0	0	0	0
3	Adequate (>75%)	0	0	50	100
Overall		**50**	**100**	**50**	**100**

Fig 1: Indicates that all respondents (100%) had insufficient knowledge before to the scheduled education program, according to the pre-test percentage distribution among women in rural areas.

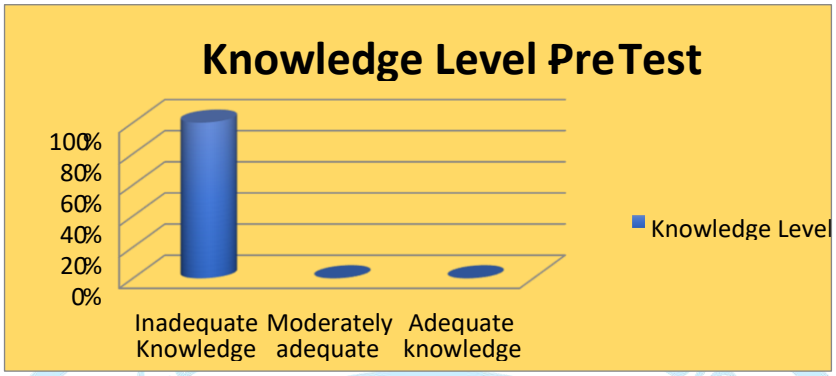

Fig. 1: Distribution of rural women's percentages based on their knowledge prior to the scheduled instruction program

Fig 2: Displays how the pre-test percentage distribution among rural women shows that, following a designed training program, all respondents (100%) had sufficient knowledge.

KNOWLEDGE LEVEL POST – TEST

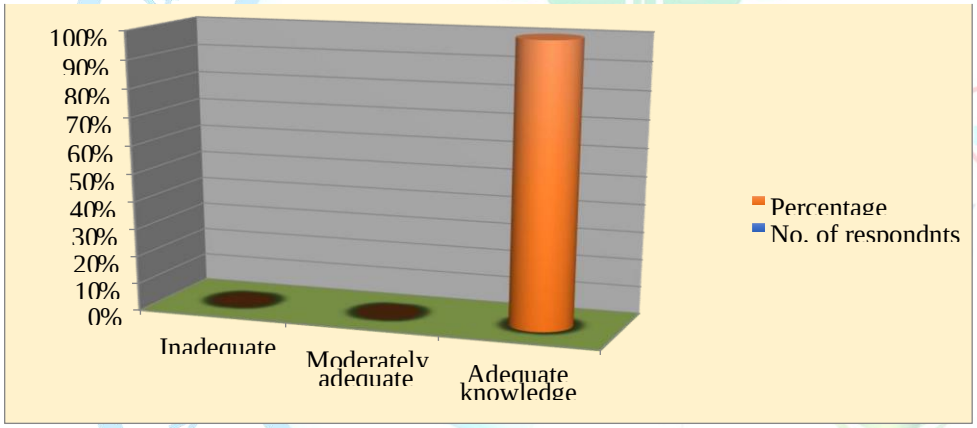

Fig. 2: Distribution of rural women's percentages based on their degree of knowledge following a scheduled education program

Table 3 displays the respondents' mean score for each element before and after the exam. Both the pretest mean (± SD 3.56±3.76) and the post-test mean (+/- SD 37.16±2.557) show a substantial change in the respondent's knowledge. At the 001 level, the paired test value of 7.071 is significant (p value, 0.001**).

Table 3 demonstrates the mean knowledge level of women on endometrial cancer preventive aspects before and after the organised education session.

(n = 50)

Content	Pre-test			Post test			Paired 't' test	p- value
	Mean	SD	Mean %	Mean	SD	Mean %		
Anatomy of the uterus	1.22	0.815	13.56	8.66	0.557	96.22	771	0.001* *
Concept, causes and risk factors	1.10	193	9.80	9.98	0.141	99.80	771	0.001* *
Signs and symptoms	0.34	0.557	50	7.96	0.807	96	771	0.001* *
Diagnosis and management	0.32	0.653	4.80	5.76	0.517	96	771	0.001* *
Prevention of endometrial cancer	0.58	0.642	70	4.80	0.535	87.50	771	0.001* *
Total	**3.56**	**3.76**	**40.16**	**37.16**	**2.557**	**475.52**	**7.071**	**0.001* ***

.

According to Table 4- The chosen demographic traits of rural women, comprising age, education, occupation, religion, family type, marital status, family income, habits, number of pregnancies, contraception, family history of cancer, menopause age, and information source, fail to positively correlate with the knowledge score obtained before the test at the 0.05 level (P>0.05).

Table 4- Association between the chosen demographic profile of women and the pre-test knowledge score.

(n = 50)

Variables	Df	Chi Square	P- Value	
Age	3	3.213	.360	NS
Educational status	5	3.573	.612	NS
Occupational Status	3	3.704	.295	NS

Religion	2	1.172	.557	NS
Type of Family	1	.228	.633	NS
Marital Status	2	1.468	.480	NS
Family Income	2	1.179	.555	NS
Habits	2	2.155	.340	NS
No. of pregnancy	3	5.305	.151	NS
Contraception	3	4.482	.214	NS
Family History of Cancer	3	1.831	.608	NS
Age of Menopause	4	2.763	.598	NS
Source of information	4	6.628	1.157	NS

NS-Not significant

DISCUSSION

By increasing knowledge of the causes of endometrial cancer and implementing screening programs, older women can reduce their risk of contracting this significant health condition and dying from it. Additionally, they lessen the need for medical services due to sickness. Furthermore, it has been demonstrated that the application of cutting-edge clinical testing and early identification may effectively avert the potentially fatal effects of this kind of cancer [7-8]

These findings could be connected to how the training program affected the women under study's understanding of how to prevent endometrial cancer. Like this, a study carried out to measure the impact of a designed education campaign on raising teenagers' knowledge of endometrial cancer prevention in particular colleges in Delhi revealed that the program was successful in imparting knowledge regarding endometrial cancer prevention [9-10].

After completing a pre-test questionnaire, fifty women participated in an hour-long instructional session. According to the study's findings, education sessions quickly increase participants' understanding of endometrial cancer prevention. This demonstrates the necessity for public education to raise awareness of endometrial cancer, and organised education programs are one useful strategy [11-12].

It is shown that the knowledge prior to the test outcome and the demographic that is chosen profile among women did not significantly correlate, nor did the age of the participants and their pre-test knowledge of the research. As previously mentioned in a study conducted by Arana Chamindri and associates. There is a clear association between greater knowledge of endometrial cancer and stable

employment, education, and family income. The fact that most of our respondents (19 out of 38) had only finished elementary school, 36 were unemployed or housewives, and 46 had low family incomes (92%), may be the cause of the low pre-test mean.

CONCLUSION.

This study helps to shed light on these significant but little-known health problems in rural India. Additionally, This investigation contributes to the domain of information in nursing by determining The factors that increase the risk for carcinoma of endometrium in postmenopausal women, increasing awareness of the problem, and evaluating the efficacy of endometrial carcinoma prevention. Following this study might perhaps improve the quality of life for older women and help avoid endometrial tumour. According to the study, a comprehensive education campaign on endometrial cancer prevention had a very positive impact on women in rural regions.

RECOMMENDATIONS

The findings of this investigation suggest that upcoming studies should develop and Put into practice educational program to increase young women's awareness of endometrial cancer risk factors, early warning signs, and preventative measures. Carrying out more research to evaluate the impact of endometrial cancer prevention on senior women's awareness across different governorates. To prevent endometrial cancer and identify any anomalies in the reproductive system, a nationwide screening program for older women should be started.

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"COMPARATIVE EFFECTIVENESS OF CHIN TUCK VERSUS RESISTANCE EXERCISES IN ENHANCING SWALLOWING ABILITY IN STROKE PATIENTS WITH DYSPHAGIA: A STUDY CONDUCTED IN SELECTED HOSPITALS IN HISAR, HARYANA"

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Abstract

Background: Stroke represents a significant life-altering event, with 65% of stroke patients experiencing dysphagia. To enhance post-stroke recovery, it is crucial to improve swallowing and feeding capabilities through the Chin Tuck against Resistance (CTAR) exercise. **Objective:** This study assessed the effectiveness of CTAR exercise in improving swallowing ability among CVA patients**. Methodology:** The research was conducted in selected hospitals in Hisar, employing a quasi-experimental design. A total of 30 participants were purposively sampled and assigned to intervention and comparison groups. Pre-test data were collected through interviews and observations. Starting the following day, the intervention group underwent the CTAR exercise thrice everyday for eight successive days, whereas the comparative group received standard treatment. Post-assessment evaluations of deglutition capability were conducted using the Gugging Swallowing Screen (GUSS) during the next feeding time after the exercise. **Results:** Data were analyzed using descriptive and inferential statistics. The experimental group showed a post-test mean dysphagia score of 11.67 (SD = 4.337), with a mean difference of 4.34. The independent t-test revealed a significant difference ($t = 2.879$, $p < 0.005$) in dysphagia scores between the experimental and control groups. Conclusion: The findings indicate a significant improvement in dysphagia scores among patients in the intervention group compared to the control group.

Keywords: - Comparative Effectiveness, Chin Tuck versus Resistance Exercise, Stroke, Dysphagia.

Introduction

Any trouble moving a bolus from the mouth to the stomach during the eating process is called dysphagia.(1) Dysphagia persists as a chronic condition in approximately 50% of post-stroke patients, potentially leading to heightened mortality, mobility issues, and increased rates of institutionalisation as a consequence of aspiration pneumonia and malnutrition. Dysphagia patients have an approximately fivefold increased risk of developing pneumonia compared to nondysphagia patients.(2)

The early identification and management of dysphagia could substantially reduce complications, improve the quality of life of patients, and improve patient outcomes. Consequently, it should be a high priority (3). Currently, the majority of interventions concentrate on the treatment delivered by physicians and do not actively engage nurses, who are available 24 hours a day in hospitals and are in an ideal position to conduct dysphagia identification and management. Four (4)

Therapeutic exercises that actively stimulate and strengthen the muscles involved in swallowing are essential for effective dysphagia rehabilitation.(5) The chin tuck against resistance (CTAR) exercise was proposed by Yoon et al. as a novel rehabilitative exercise that could serve as an alternative to the Shaker exercise.(6) For stroke survivors, the application of neuroplasticity principles suggests that consistent Repetitive resistance training can improve the strength of the swallowing muscles. This method may be advantageous for the rehabilitation of the sensorimotor control mechanisms related to swallowing. (7)

Numerous studies have examined rehabilitation training targeting the muscles associated with swallowing function. The Shaker exercise, developed by Professor Shaker, has gained recognition as an effective rehabilitation method for dysphagia. This exercise is designed to enhance the strength of the upper esophageal sphincter, thereby improving overall swallowing functionality.(8) Much like the Shaker exercise, the CTAR exercise consists of both isometric and isokinetic activities. The isokinetic component involves squeezing the ball with maximum effort for a series of repetitions, whereas the isometric component entails squeezing the ball and maintaining that pressure for a certain duration.(9) According to four studies, CTAR exercise engaged the suprahyoid muscle and In normal people, the sternocleidomastoid muscle is less than Shaker exercise. Five studies also revealed that CTAR exercise less airway aspiration in stroke patients and enhanced swallowing skills and oral feeding stage in the pharyngeal phase. CTAR training enhances swallowing for those with dysphagia by preferentially activating the suprahyoid muscle. Compliance is higher because it's simpler than Shaker exercise.(10)

This research evaluated how effective CTAR exercise is in enhancing swallowing capability in patients who have experienced a cerebrovascular accident (CVA). who have experienced a cerebral vascular accident (CVA). Additionally, it sought to provide evidence for the development of policies and practices related to post-stroke dysphagia rehabilitation.

Methodology:

This research utilized a quantitative methodology with a quasi-experimental design, carried out in the Neurology departments of certain NABH-accredited hospitals in Hisar. The sample included 30 CVA dysphagia patients, chosen through purposive sampling based on specific inclusion criteria. Data collection instruments comprised demographic information, medical history, and the Gugging Swallowing Screen (GUSS) to evaluate swallowing capabilities. Over the course of eight days in a row, the intervention group engaged in three sessions of The Chin Tuck against Resistance (CTAR) exercise includes doing 10 reps each time you try it out. The assessment of swallowing examined several factors, such as drooling, coughing, and challenges in swallowing. The GUSS, created by Trapl M and Michael Brainin in 2007, was applied to

evaluate swallowing proficiency and to understand the severity of dysphagia. The data collection process incorporated obtaining necessary permissions, selecting patients, securing informed consent, allocating patients into groups, gathering data, performing pretest evaluations, giving the intervention group the CTAR exercise while providing the control group with conventional medical care. Statistical analysis was performed utilising both descriptive and inferential methods.

Result

Table – I: Demographic Variables: Frequency and Percentage Distribution of Subjects in the Experimental and Control Group

(n = 15)

S. No	Demographic Variable		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Age (Years)	30-45years	5	33.3	2	13.3
		46-55years	5	33.3	1	6.7
		56-65 years	3	20.0	5	33.3
		66-75 years	6	40.0	4	26.7
		76-85 years	1	6.7	3	20.0
2.	Sex	Male	8	53.3	11	73.3
		Female	7	46.7	4	26.7
3.	Education	No formal education	7	46.7	10	66.7
		Elementary education	3	20.0	3	20.0
		Senior secondary education	4	26.7	2	13.3
		Up to graduation and post-graduation	1	6.7	0	0.0
4.	Income (Rs)	< Rs10000/- per month	6	40.0	5	33.3
		Rs10000-30000/- per month	5	33.3	5	33.3
		Rs 31000 – 50000 /-	0	0,00	1	6.7
		Above Rs 50001	0	0.00	1	6.7
		Nil	4	26.7	3	20.0

5.	**Occupation**	Farmer/ labourer	8	53.3	2	13.3
		Business	1	6.7	8	53.3
		Professional	6	40.0	5	33.3
6	**Associated Illness**	Diabetes Mellitus	12	80.0	15	100.0
		Hypertension	3	20.0	0	0.00
7.	**Cause of the stroke**	Ischemic	2	13.3	3	20.0
		Hemorrhagic	13	86.7	12	80.0
8.	**Duration of Stroke**	<5 days	11	73.3	11	73.3
		5-10 days	4	26.7	4	26.7
9.	**Family History of Stroke**	Yes	0	0.0	4	26.7
		No	15	100.0	11	73.3

Table I displays the frequency and percentage distribution of participants in the experimental and control groups based on demographic data. Six (40%), the bulk of the subjects in the experimental group, were between the ages of 66 and 75. Five subjects (33.3%) were between the ages of 46 and 55. The majority of the subjects in the control group, five (33.3%), were between the ages of 56 and 65. Four (26.7%) of the subjects were between the ages of 66 and 75. According to the distribution of subjects by sex in the experimental group, there were eight (53.3%) male subjects and seven (46.7%) female subjects. The distribution of subjects by sex in the control group shows that 4 (26.7%) were female and the bulk, 11 (73.3%), were male. Seven (46.7%) of the participants in the experimental group had no formal education, whereas four (26.7%) had senior secondary education. This is the distribution of subjects' educational backgrounds. In the control group, the subjects' educational backgrounds were as follows: 10 (66.7%) had no formal education, whereas 3 (20%) had completed senior elementary school. The study's participants' incomes reveal that six out of them, or 40%, made less than Rs 10,000 each month. Five (33.3%) of them made between Rs 10,001 and Rs 30,000 each month. Five (33.3%) of the survey participants had monthly incomes below Rs 10,000 and between Rs 10,001 and Rs 30,000, respectively, according to their income data. The majority of the subjects in this group—eight, or 53.3%—were farmers or labourers, while six, or 40%, were professionals. The majority of the subjects in this group—eight, or 53.3%—were farmers or labourers, while six, or 40%, were professionals. Subjects were assigned to the experimental group based on the related ailment. Twelve (80%) of them had diabetes mellitus, and three (20%) had hypertension as their comorbid condition. The distribution of participants in the control group by associated illness reveals that diabetes mellitus was the associated ailment for all 15 (100%) of the subjects. 13 (86.7%) of the participants in the experimental group had haemorrhage as the cause of their stroke, which is the vast majority of the subjects. Two (13.3%) of the others experienced ischaemia. Among the participants in the control group, the

cause of stroke revealed that haemorrhage was the reason for 12 (80%) of the subjects. Three (13.3%) of the others had ischaemia. 11 (73.3%) of the participants in the experimental group had a stroke that lasted shorter than five days, which is the majority. The remaining four (26.7%) remained for five to ten days. In terms of stroke duration, 11 (73.3%) of the participants in the control group stayed for less than 5 days. The remaining four (26.7%) remained for five to ten days. Regarding the experimental group's subjects' family history of stroke, it reveals that all 15 (100%) of the subjects had no family history of stroke. When it comes to the control group individuals' family history of stroke, it reveals that 4 (26.7%) had a family history of stroke, while the majority, 11 (73.3%), had none.

Table – III: Dysphagia Level Frequency and Percentage Distribution in Experimental and Control Groups

(N = 30)

Group	Test	Mild to nonexistent dysphagia and little to no aspiration risk		A little dysphagia with aspiration risk		Aspiration risk for moderate dysphagia		High risk of aspiration due to severe dysphagia	
Experimental Group	Pre-Test	0	0.0	1	6.7	4	26.7	10	66.6
	Post-Test	1	6.7	3	20.0	6	40.0	5	33.3
Control Group	Pre-Test	0	0.0	1	6.2	1	6.2	13	81.2
	Post-Test	0	0.0	0	0.0	3	20.0	12	81.2

In Table II, you can see how many people in the study group and the control group had dysphagia and what percentage of those people had it.

In experimental group, during pre – test assessment for dysphagia shows majority 10 (66.6 %) had severe dysphagia with high risk for aspiration, moderate dysphagia with aspiration risk was found in 4 (26.7 %) of the subjects. Those who had slight dysphagia with aspiration risk was 1 (6.7 %). None of the subjects had slight / ni dysphagia with no or minimal risk of aspiration.

During post-test assessment, 40% of experimental group subjets had moderate dysphagia with aspiration risk. Five (33.3%) had severe dysphagia with considerable aspiration risk. Three subjects (20%) showed mild dysphagia with aspiration risk. One individual (6.7%) had faint dysphagia with no aspiration risk.

In the control group, 13 (83.2%) had severe dysphagia with high aspiration risk pre-test. A similar number of participants (6.2%) had moderate and minor dysphagia with aspiration risk. None of the participants had mild dysphagia with low aspiration risk. The majority 12 (81.2%) in the control group exhibited severe dysphagia with substantial

aspiration risk at post-test. One subject (6.7%) had slight dysphagia with aspiration risk, whereas two (12.8%) had significant. None of the participants had mild dysphagia with low aspiration risk.

Table III: Comparison of Pre-test and Post – test Level of Dysphagia of Subjects in Experimental Group Using Paired 't' test

(n = 15)

Interventional Group Group	mean	Mean differences	SD	Paired 't' test Value	'P' Value
Pre - Test	8.93	**2.74**	3.306	**5.16**	**0.001***
Post - Test	11.67		4.337	**(df = 14)**	**Significant**

Table – III depicts the Comparison of Mean, Mean %, Standard Deviation and Variance Levels of Dysphagia Score Among Subjects in Experimental Group using paired 't' test.
The pre – test mean and standard deviation scores of dysphagia was 8.93 ± 3.306. the mean percentage was 16 and the variance level was 10.92. The variance level was 10.02. The post-test mean score for dysphagia was 11.67, with a standard deviation of 4.337. Mean difference was 2.74. for the degree of freedom 14, the paired 't' test value was 5.16. At a 'P' value of less than 0.001, it was statistically significant.

Table IV: Comparison of Pre-test and Post-test Level of Dysphagia of Subjects in Control Group Using Paired 't' test

(n = 15)

Control Group	mean	Mean Differences	SD	Paired 't' test Value	'P' Value
Pre - Test	7.13	**0.2**	3.833	**1.382**	**0.189**
Post - Test	7.33		3.922	**(df = 14)**	**Not Significant**

Table – IV depicts the Comparison of Mean, Mean %, Standard Deviation and Variance Levels of Dysphagia Score Among Subjects in Control Group using paired 't' test.
The pre – test mean and standard deviation scores of dysphagia was 7.13 ± 3.833. The average mean and standard deviation scores for dysphagia after the test were 7.33 with a standard deviation of 3.922. Mean difference value was 0.2 the paired 't' test value was 1.382 for the degree of freedom 14. It was not statistically significant at the 'P' Value < than 0.189.

Table VI: Analysis of the post-test level of dysphagia in the experimental and control groups using an independent t-test

(N = 30)

Post - Test	mean	Mean Differences	SD	Independent 't' test Value	'P' Value

Experimental Group	11.67	**4.34**	4.337	**2.870 (df = 28)**	**0.005* Significant**
Control Group	7.33		3.922		

The results of an independent t-test are presented in Table VII, which illustrates a comparison of the levels of dysphagia experienced by subjects in the experimental group and those in the control group before and after the test.

In experimental group the post - test mean and standard deviation of dysphagia score was 11.67 ± 4.337. in control group at the time of post-test mean and standard deviation scores were 7.33 ± 3.922. The average difference was 4.34. The independent 't' test result was 2.879 for 28 degrees of freedom. The 'p' value was < 0.005, indicating statistical significance. Thus, experimental and control groups had significantly different dysphagia scores.

Discussion

The CTAR exercise aids dysphagic CVA patients' swallowing. The Chin Tuck Against Resistance (CTAR) exercise is assessed for dysphagia in CVA patients. Stroke patients aged 35 to 85 were studied, with 40% in the experimental group aged 66 to 75. Most control group members (33.3%) were 56–65. Males were 53.3% in the experimental group and 73.3% in the control group. Both groups had little formal education: 46.7% in the experimental group and 66.7% in the control group. About 40% of the experimental and control groups earned less than Rs10,000. Both groups were mostly farmers or labourers (53.3%). With 80% in the experimental group and 100% in the control, diabetes was common. Hemorrhagic stroke affected 86.7% of experimental and 80% of control subjects. Both groups had 73.3% strokes under 5 days. 100% of experimental and 73.3% of control families had no stroke history. At the post-test, 40% of the experimental group had moderate dysphagia with aspiration risk, while 81.2% of the control group had severe dysphagia with high risk. This study agrees with Biswal S, Khosla P, and Ml S. (2022), who examined the Chin Tuck Against Resistance (CTAR) exercise's effects on swallowing in neurologically dysphagic patients at IMS SUM Hospital in Bhubaneswar, Odisha. In the experimental group, the mean pre-test score was 5.40±0.814, which dramatically improved to 15.23±2.285 by the eighth day, showing no dysphagia. Thus, the Chin Tuck Against Resistance exercise helped neurological condition patients with dysphagia swallow.(11)

The findings of the current study indicate that the mean dysphagia score post-test for the experimental group was 11.67, accompanied by a standard deviation of 4.337. The mean dysphagia score following the test in the control group was recorded at 7.33, accompanied by a standard deviation of 3.922. The average difference in scores was calculated to be 4.34. The independent t-test yielded a score of 2.879, accompanied by a p-value of less than 0.005, indicating statistical significance. As a result, one can deduce that there was a notable disparity in the dysphagia scores between the experimental group and the control group. This discovery aligns with the research findings of K V, G K, D S, K V, and Venkatesan L. (2022). This investigation aimed to evaluate the effectiveness of the Chin Tuck Against Resistance (CTAR) exercise in improving the nutritional performance of patients with cerebrovascular accidents

(CVA). The results of the study indicated that the mean pretest score of feeding performance did not differ significantly between with a 't' value of 1.95 ($p>0.05$) between the experimental group (M=2.05, S.D+1.28) and the control group (M=2.63, S.D+1.12).In contrast to the control group (M=3.13, S.D=1.23), the experimental group (M=6.4, S.D=3.25) exhibited a statistically significant disparity in posttest scores pertaining to feeding performance, evidenced by a t-value of 18.22 ($p<0.001$). The efficacy of CTAR exercises in enhancing tongue pressure and stimulating suprahyoid muscle activity is elucidated.(12)

Conclusion

The Chin Tuck Against Resistance (CTAR) exercise is an effective and inexpensive method for improving swallowing ability in CVA patients with dysphagia. A study conducted in selected hospitals in Hisar, Haryana, found that patients in the intervention group showed faster improvements in swallowing ability within 8 days compared to those in the comparison group.

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"A DESCRIPTIVE STUDY TO IDENTIFY THE MENTAL HEALTH STATUS OF STAFF NURSES IN SELECTED HOSPITAL AT VIRUDHUNAGAR"

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Abstract

Background : Nurses face a variety of stressors that can impact their mental health .It is necessary to make proactive choices that support mental well being .This study was done to identify the level of Mental Health Status among staff nurses . **Objective** : The aim of the study was -to identify the mental health status of staff nurses in selected hospital at virudhunagar. **Methodology**: Non probability purposive sampling technique was used and 30 samples were participated . Symptom check list 90 to assess the mental health status was used for data collection. Descriptive statistical methods were used to organize ,tabulate and analyse the data which was collected. **Results:** Major findings of the study were, among 30 staff nurses, 93.33% had good score of mental health status, 6.66% had average score of mental health status and 0% had poor score of mental health status. This study concluded that many staff nurses had good Mental Health Status where as only two staff nurses had average Mental Health Status and none had poor Mental Health Status.

Key words – Health,Mental Health, Mental Health Status, staff nurse

Introduction

Stress occurs when there is a deviation in the environment, which is recognized as a harm challenge, or warning to one' s balanced situation [1]. Prolonged stress can results in physical and mental burnout. It also affects individual's activity of day today living [2]. Health care personnels are always prone to get exhausting situations and factors, which causes stress due to their duty band caring towards sick persons[3] .Work place highly makes the nurses to have opposed stressful situations, which sometimes harms their health [5].Nursing is a challenging job, and mostly eighty percentage of healthcare personnels are nurses in our country, and nurses are providing eighty percentage of healthcare services to the patients [5,6,].Nurses expose poor social media, which is the main rationale for their work tension [7]. There are few factors like Personal commitments, work place pressure and job concerns produces stress in the nursing profession [8].

Need For Study :

The one of the valued topics of nursing research is assessing mental health status of nurses who are working in hospital . WHO says that Nursing personnels are in the 27th place in evaluation of 130 challenging jobs sorted based on their reference [9]. There are some factors like misunderstanding with co-workers , seeing death daily , lack of supporting system , lack of time to rectify emotional and other problems of patients, and professional duties makes the nursing as a stressful job [10]. Hence the researchers look at the need of nursing profession and results of job related stress on mental health and did this research was done to identify the mental health among nurses at selected government health centers of virudhunagar.

Problem Statement :

A descriptive study to assess the mental health status among staff nurses in selected government hospital at virudhunagar.

Objective

To identify the mental health status among staff nurses in selected government hospital at virudhunagar.

Methodology

The quantitative research approach is chosen for this study.The non experimental descriptive research design is chosen for this study. The setting of the study is Virudhunagar Government Medical College Hospital at virudhunagar ..It is situated 5 kilometres away from the Virudhunagar .It is 600 bedded hospital in virudhuagar district.The population who were selected are nursing staff who employed in hospital at virudhunagar. All Undergraduate, Postgraduate staff nurses working in government medical college hospital at virudhunagar. The sample 30 in number in selected hospital at virudhunagar. The purposive sampling technique is used for this study. Tool consist of two sections ,section I includes demographic variables a section II includes A Symptom Check List – 90 .The questionnaire was distributed and given 15minutes to assess the mental health status. After that, investigators collected the data from staff nurse in person.

Results :

The findings were organized in the following section.

Section 1 :Classification of subjects based on the demographic characteristics.

Section 2: Distribution of subjects based on the mental health status .

Section – 1

Table – 1

Distribution of subjects based on the demographic variables

(n= 30)

S.No	Demographic characteristics	No.of.Participants	Percentage (%)
1.	**Age in years**		
	A.30-40	24	80.0 %
	B.40-50	6	20.0 %
	C.>50	0	0 %
2.	**Sex**		
	A.Male	0	0%
	B.Female	30	100%
3.	**Religion**		
	A.Hindu	25	83.33%
	B. Muslim	0	0%
	C. Christian	5	16.66 %
	D.Others	0	0
4.	**Residence**		
	A.Urban	16	53.33%
	B.Rural	14	46.66%
5.	**Marital status**		
	A. Married	30	100%
	B. Unmarried	0	0%
6.	**Type of family**		
	A. Nuclear family	18	60 %
	B. Joint	11	36.66 %
	C. Extended	1	3.33 0
7.	**Socio economic status**		
	A .High	0	0%
	B. Middle	30	100%
	C. Low	0	0%
8	**Family income**		
	A. >10000-20000	5	16.66%
	B. >20000-30000	6	20%
	C. >30000-40000	19	63.33%
9	**Monthly income**		
	A. 30000-40000	16	53.33%
	B. 40000-50000	6	20%

	C. >50000	8	26.66%
10.	**Qualification**		
	A. Undergraduate	27	90%
	B. Postgraduate	3	10 %
11	**Department**		
	A. ICU	2	6.66%
	B. OPD	9	30%
	C. Medical unit	8	26.66%
	D. Surgical unit	4	13.33%
	E. ENT unit	1	3.33%
	F. Burns unit	2	6.66%
	G. Dialysis unit	4	13.33%
12	**Hobbies**		
	A. Yes	20	66.66%
	B. No	10	33.33%
13	**Illness**		
	A. Physical	10	33.33%
	B. Mental	5	16.66%
	C. Nil	15	50%
14	**Interest in social media**		
	A.Yes	13	43.33%
	B. No	17	56.66%

Table 1 shows that Among the staff nurses age group, most of subject age is 30-40years 24(80.0%).Regarding Sex , 30(100%) were in female .Majority of the subjects 25(83.33%)belongs to religion in Hindu. Regarding area of residence most of the staff nurse 16(53.33%) comes from Urban .Regarding marital status all 30(100%) belongs to married .Regarding type of family 18(60%)most of them in nuclear family. Regarding socioeconomic status 30(100%) were in middle .19(63.33%) of subjects family Income >Rs.30,000 .Regarding monthly income 16(53.33%) were in Rs.30,000-40,000 . Most of the staff nurse qualification 27(90%) were in under graduate . Regarding department 9(30%) were in OPD. Regarding hobbies 20(66.66%) were in yes. Regarding illness 15(50%) were in nil. Regarding interest in social media 17(56.66%) were in no.

SECTION II

TABLE 2

Distribution of subjects based on the level of mental health status

(n=30)

S.No	Mental Health Status	Number	Percentage (%)
1	**Good**	28	93.33%
2	**Average**	2	6.66 %

3	**Poor**	0	0
	Total	30	100%

The data presented in the table 2 shows that, out of 30 staffnurses , 93.33% had good score of mental health status, 6.66 % had average score of mental health status and 0% had poor score of mental health status.

Discussion:

Among the staff nurses age group, most of subject age is 30-40years 24(80.0%).Regarding Sex , 30(100%) were in female .Majority of the subjects 25(83.33%)belongs to religion in Hindu. Regarding area of residence most of the staff nurses 16(53.33%) comes from Urban .Regarding marital status all 30(100%) belongs to married .Regarding type of family 18(60%)most of them in nuclear family. Regarding socioeconomic status 30(100%) were in middle .19(63.33%) of subjects family Income >Rs.30,000 .Regarding monthly income 16(53.33%) were in Rs.30,000-40,000 . Most of the staff nurses qualification 27(90%) were in under graduate . Regarding department 9(30%) were in OPD. Regarding hobbies 20(66.66%) were in yes. Regarding illness 15(50%) were in nil. Regarding interest in social media 17(56.66%) were in no.

The objective is to assess the mental health status of nursing staff :

Present study represented the level of mental health status among staff nurses**:**

It was evident that out of 30 staff nurses, 93.33% had good, 6.66% had average and 0% had poor mental health status.

Ethical Consideration:

- Formal permission was obtained from the hospital authority.
- Oral permission was received from the study subjects.
- Anonymity and privacy was obtained throughout the study.

Conclusion: This research was done to identify the mental health status among nursing staff in selected government hospital . This present study was conducted at virudhunagar government medical college hospital at virudhunagar. Descriptive research design was selected . Non probability purposive sampling method was used and 30 subjects were participated . A Symptom Check List – 90 was used to identify the level of mental health status of nursing staff. The data which was collected are organized,arranged and interpreted by using descriptive statistics.This study concluded that among 30 staff nurses, 93.33% had good, 6.66% had average and 0% had poor mental health status.

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OVERCOMING RESISTANCE: STRATEGIES TO ENHANCE IMMUNOTHERAPY EFFICACY AGAINST CANCER

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Abstract:

There are several treatment strategies have been produced now a days to fight against cancer. From them treatment of cancer with immunotherapy and the use of the body's own immune system to attack and eliminate cancer cells has been proven worth it. Nevertheless, despite its positive effects on a few people, it has failed to work on many more due to resistance. Progressing with outcomes will require an understanding of why resistance occurs and how it may be checked. It is an obvious systemic approach for several diseases like different cancers including non-small cell lungs cancer (NSCLC), but most patients cannot withstand this because of primary or acquired resistance mechanisms. At the moment, clinical practitioners lack systems which may tell them that some patients are going to experience resistant development in immunotherapy hence causing treatment failures among other patients too. One possibility then arises: checkmate two targets simultaneously blocking their escape routes from immune surveillance could be regarded as an alternative way out when first-line strategies fail in restraining resistance's growth and providing effective second-line therapy.

Key Words: immunotherapy, immune system, biomarkers, non-small cell lungs cancer

Introduction:

Cancer could be a fatal illness, causing uncontrolled cell division which is called metastasis. Cell division in this kind of an individual is uncontrollable and is referred to as metastasis. Cancerous cells are able to invade, grow uncontrollably and metastasize simultaneously. It is possible to state that both stochastic and cancer stem cell models are characterized by some common peculiarities e.g., oncogenesis, driver mutations, tumour progression and metastasis. For example, diverse environments promote various traits for survival exhibited by cancer stem cells. Comprehensive models that integrate cancer and organism holistic techniques can fill these gaps. [1]

Cancer can be considered as an abnormal growth of cells inside an individual that has the capacity to invade and proliferate to other parts of the body which carries the disease by it but universally it takes millions to death yearly about ten were caused by it in 2020 alone and this resulted in almost 9,6 million deaths in the year 2018 alone, these were about 9,6 million people who died from cancer in 2018 alone. Given that cancer prevalence continues to increase globally, new methods of managing the disease are being sought [2].

Cancer may be a disorder that includes unusual cell development, with the potential to attack and disperse widely to the other parts of the body. It has gotten to be a very common cause of mortality, all inclusive, causing about 10 million mortalities in 2020. In 2018, around 9.6 million individuals passed away due to cancer. As the predominance of cancer proceeds to develop around the world, unused techniques are being sought for infection administration. Cancer could be a multifactorial illness, and different components such as excessive calories and way of life style, radiation exposure, and hormonal components can contribute to the advancement of this deadly illness. Way of lifestyle variables, such as smoking, liquor utilization, and dietary propensities, are considered to be critical contributing variables within the aetiology of cancer and are among the most important targets for essential avoidance. The conceivable association between eat less and the improvement of cancer cannot be neglected. Diets with high content red fat, such as processed and red meat, have been connected to development of colon cancers risk, though breast cancers have been associated with high-fat diets. Gene mutations within cancer cells transform them from normal cells into cancerous ones. These mutations can arise from inherited factors, accumulate over time due to aging and gene degradation, or occur due to exposure to genotoxic agents such as cigarette smoke, alcohol, or ultraviolet (UV) radiation from the sun [2,3,4,5].

Preserved, cured, or cured foods are associated with an increased risk of stomach cancers. Diets low in fibre and/or high in fat content are linked to cancers of the colon, prostate, pancreas, breast, endometrium, and ovaries. The clinical handling of cancer is determined by the nature and scope of the condition. Many individuals undergo a combination of therapies, such as surgical intervention in conjunction with chemotherapy and radiation treatment. Various alternative methods, including photodynamic and thermal therapy, immunotherapy, and genetic therapy, have also emerged as innovative cancer treatments. Phytochemicals are active compounds found in plants and are recognized for their antioxidant and anti-inflammatory

effects on the body. Among all the available phytochemicals, flavonoids and anthraquinones are known for their protective role against various types of cancers [5,6,7].

There exist unused treatment plans, including immunotherapy and accuracy pharmaceuticals which are now utilised for distinct purposes. All things considered; they are real benefits to the patients would be known as they were after the assessment of clinical information over next few years. In this manner, we got to see a few essential challenges that ought to be tended to in more depth some time recently. We might plan superior, thorough, and comprehensive treatment plans and may effectively reach a conceivable remedy for the infection [8].

Throughout history, cancer has been viewed as a cellular ailment, arising from genetic alterations dictating cell growth, specialization, and demise. Yet, in recent decades, attention has shifted to the microenvironment encircling cancerous cells, emerging as a conspirator in tumour inception, progression, evasion of immune response, and reaction to treatment. As tumours expand, they disturb the organization and function of nearby tissue through physical and biochemical means. These ensuing physical irregularities impact both cancer cells and their microenvironment, driving tumorigenesis and resistance to treatment. The intersections of cancer biology and physics have unveiled opportunities for uncovering new medications and treatment strategies [9].

Types of Cancer: There are several types of cancer but mainly distributed in five types. Those are, carcinoma, sarcoma, melanoma, lymphoma and leukaemia. Carcinoma generally diagnosed as a cancer which originate in breast, lungs, skin, Pancreas and other glands and organs. Sarcoma is relatively uncommon type of cancer and it generates in fats, blood vessels, bones, muscles, cartilage or other soft or connective tissues of body. Melanoma is a type of cancer which arises pigment in skin and affect the skin cells. Lymphomas are type of lymphatic or lymphocytic cancers. Leukaemia is the cancer of white blood cells and these are not form usually in solid tumours [10,11,12].

1. Breast Cancer: It Influences the breast tissue, transcendently in ladies but can also happen in men.
2. Lung Cancer: Affect the lungs and is happens due to regularly smoking, but can also happen in non-smokers due to other components like introduction to frequent smoke by

other people doing smoking, air pollution and radon gas which is invisible and doesn't have smell but its naturally occurs.

3. Prostate Cancer: Happens within the prostate gland in men and is one of the foremost common cancers in men with obesity, carcinogenic chemical exposure, family history etc.
4. Colorectal Cancer: Sedentary lifestyle, diet, smoking, excessive alcohol Influences the colon or rectum and ordinarily creates from polyps within the colon or rectum.
5. Skin Cancer: Occurs due to heavy sun exposure and radiation exposure from unusual skin cell development and incorporates sorts like basal cell carcinoma, squamous cell carcinoma, and melanoma.
6. Leukaemia: Influences the blood and bone marrow, driving to an overproduction of irregular white blood cells.
7. Lymphoma: A cancer of the lymphatic system, which incorporates lymph hubs, lymphatic vessels, and other lymphoid tissues.
8. Brain Cancer: Happens within the brain or central nervous system and can be primary (beginning within the brain) or metastatic (spreading from other parts of the body).
9. Pancreatic Cancer: Creates within the pancreas due to diabetes, pancreatic inflammation and is frequently analysed at a progressed arrange, making it troublesome to treat.
10. Ovarian Cancer: Influences the ovaries in ladies due to family history, changes in gene means inherited BRCA1, BRCA2 and is frequently analysed at an afterward stage, leading to a lower survival rate.

Causes of Cancer:

The fundamental abnormality under the Bonnet of cancer progression lies in the incessant unregulated multiplication of cancer cells. Whereas normal cells respond to signals that regulate their behaviour. cancer cells proliferate and multiply, invade normal tissues and organ, and finally Spill over to other parts of the body. This overall misfortune in the regulation of growth in cancer cells is the net result of accumulated deviations from the norm in the various cells behaviour that acknowledge cancer cells as their typical companions [12,13].

How to detect cancer:

Curing a cancer patient significantly depends on the proper diagnosis of diseases at primary stage. Tumours detected early, before they grow too large or spread, have a higher chance of successful treatment. Early cancer detection relies on several factors: screening at-risk populations, the ability of patients and healthcare professionals to recognize warning signs, and the use of diagnostic methods to distinguish cancer from other conditions and accurately determine the tumour location and extent.

- **Physically:** During a physical exam, your doctor may search for abnormalities, such as changes in skin colour or the enlargement of an organ, which could signal the presence of cancer. The doctor might also feel areas of your body to detect lumps that could indicate cancer. Typically, a health history is gathered alongside the physical exam. This health history includes a record of current symptoms, risk factors, and all past medical events and issues the person has experienced.
- **Pathologically:** Pathological diagnosis helps to detect cancerous or malignancy condition. In department of cytology with using a needle, the doctor extracts tissue or fluid, which is a technique often employed for bone marrow aspirations, spinal taps, and certain biopsies of the breast, prostate, and liver. In endoscopy, the physician called endoscope passed through a natural opening in the body, such as mouth or anus for removal of some or all abnormal tissues
- **Radiologically:** Medical pictures can be put into two groups: methods that show exact body parts and those that make functional or small particle pictures. The first method (using CT and MRI) can show tiny details about where and how big an abnormal spot is, what it looks like, and changes in nearby body stuff. But it can't say much about how the tumour works. The second method (using PET and SPECT) can give facts about how the tumour works, even down to tiny particles, but it doesn't show body details.

Understanding Cancer: Is it time for a new Approach?

Despite the vast amount of data accumulated through years of research, we still lack a comprehensive understanding of the underlying causes of these fatal conditions that result in millions of deaths annually, even with the advancements in science and technology. In truth, once cancers are recognized as traditional diseases, we must acknowledge that they could be seen as a complex result of ongoing changes at microscopic levels, impacting the entire physiology of the organism. We must acknowledge that the onset of the illness is not solely due to external factors or linked to the malfunction of a specific organ, unlike many other diseases.

Put simply, cancer can result from various malfunctions in the highly intricate cellular physiological systems. The beginning of the disease remains a mystery in the field of oncology, with a wealth of data pointing to different factors contributing to the transformation. However, surprisingly, all of these reports have led us to the edge of the iceberg. We need to gain a true understanding of when the illness begins in order to identify the proper targets for medication. Without this knowledge, we are unable to effectively treat the illness.

The last hundred years of logical investigation has provided us with a detailed understanding of primary, secondary, and tertiary changes linked to these conditions. Regardless, the pursuit of reaching point zero continues, and further efforts are necessary to achieve it at the onset of the infection. Raising the topic of the origin of cancer is important because our 'top-down' approach may be the main reason for our inability to decipher the codes of this long-standing problem and only providing relief for symptoms. Our focus has primarily been on developing and implementing strategies and procedures to capture the growth of altered tumour cell mass. Surprisingly, our focus has shifted mainly to creating modern preventive methods instead of investigating the underlying cause of the illness. Scientists have been consistently disappointed with the results of 'bottom-up' approaches in cancer research, which focus on cutting resources for cancer cells or activating cell death pathways. This has prompted the recent shift in focus towards understanding the origin of cancer. To comprehend the reasons and methods by which determination powers have allowed cancer-like conditions to become established within our current physiological ideal models, it is necessary to investigate the historical perspectives on the origins, nourishment, and progression of such ailments throughout history. In truth, we need a thorough multi-faceted strategy to effectively investigate and comprehend the infection in order to develop more successful treatment methods.

Although there have been advancements, there is still a lot of work left to do. Obstacles like resistance to treatment, cancer variations, and healthcare accessibility still present major challenges in effectively controlling and managing cancer. Furthermore, the increasing prevalence of specific cancers, the effects of aging populations, and the challenge of cancer in limited-resource areas highlight the necessity for ongoing investment and advancement in cancer research and treatment. Continuing studies seek to enhance immunotherapy's effectiveness, search for predictive biomarkers, and create combination treatments to overcome resistance and improve patient outcomes. The introduction of new immunotherapies has drastically transformed how genitourinary (GU) cancers are treated, becoming the main

approach in some cases. One type of immunotherapy, known as immune checkpoint inhibitors (ICIs) such as nivolumab, ipilimumab, pembrolizumab, and atezolizumab, actively enhance signalling pathways that suppress the immune system's ability to fight cancer cells. Despite the substantial impact of these medications, not every tumour will respond. Further investigation has focused on exploring how cancer cells evade the immune response and identifying the possible reasons for resistance to immunotherapy. As a response, ICIs are being mixed with other drugs to lower resistance and attack cancer cells via varying cellular pathways. Currently, there is a growing interest in exploring new methods to develop innovative strategies for overcoming resistance and treatment failures in novels [14].

Types of Cancer Therapies:

Cancer therapies are actually a group of treatments that aims to target the cancer cells and to ultimately benefit the patient. These consists of surgery, where the tumour is physically removed from the body; radiotherapy, using waves of very high energy to destroy the cancer cells; and chemotherapy where drugs are administrated to kill or slow their production. In addition, immunotherapy triggers the patient's immune system against the disease, and treated therapy identifies particular proteins that are involved in the generation of the disease.

Some cancers, like certain types of breast and prostate tumours, depend on hormones to grow; hence, hormone therapy may be used. Other newer approaches, namely personalized medicine and gene therapy, have given hope by using tailor made treatments based on the genetic make-up of a person, thus making them more efficient and less toxic [15].

- **Surgery:** Surgery plays a crucial role in cancer care, serving multiple purposes such as prevention, diagnosis, staging, and treatment. It can also alleviate discomfort or complications caused by cancer. In some instances, a single surgical procedure may address several of these objectives simultaneously, while in other situations, multiple surgeries might be required over time. Detailed information about specific surgical options can be found in the treatment guidelines for each type of cancer. As surgery is a common method to help diagnose cancer. Typically, the only definitive way to determine if someone has cancer and identify its type is by removing a small tissue sample and testing it. This diagnostic procedure, known as a biopsy, involves examining the cells under a microscope or conducting other laboratory tests. When biopsies are performed during surgery, they are often called surgical biopsies. The technique for

obtaining a sample varies depending on the tumour's location and the suspected type of cancer. For instance, prostate biopsies are performed differently than lung biopsies.

- **Targeted Therapy:** Targeted therapy encompasses a broad range of direct and indirect strategies. Direct approaches target tumour antigens for modification of their signalling, either by the use of monoclonal antibodies (MoAbs) or small molecule drugs that disrupt these target proteins. Indirect approaches take advantage of tumor antigens displayed on the surface of cells as targets for ligands carrying any variety of effector molecules. In these approaches, drugs can actively target tumours by means of tumour-specific MoAbs or peptide ligands that bind to receptors on the surface of the tumour cells. Apart from active targeting, the "enhanced permeability and retention effects" allow for tumours also to be passively targeted by macromolecules. which result from the leaky blood vessels and poor lymphatic drainage in tumours [16].
- **Chemotherapy:** Chemotherapy can be delivered through different methods. There are several common techniques that include: injection, oral, intravenous (IV administered directly into the cancer's blood supply, cream form of medication that can be applied topically on the skin, administered directly into the cancer's blood supply, Intraperitoneal (IP), Injecting a substance into the space between the layers of tissue surrounding the brain and spinal cord is known as intrathecal [17].
- **Immunotherapy:** The first known description of cancer is from an Egyptian papyrus from around 1600 BC. It was thus incurable until the nineteenth century, when anaesthesia, improved surgical techniques, and histological analysis were developed to make surgical removal more effective. Until 1950, surgery was used most frequently as a form of treatment. After 1960, radiation therapy became employed in controlling localised cancer. However, it became clear that neither surgery nor radiation, nor a combination of both, could adequately manage metastatic cancer. Effective treatment needed to target every organ in the body. As a result, modern cancer treatment focuses on drugs, biological molecules, and immune-based therapies [18].
- **Stem cell and bone marrow transplant:** The popularity of allogeneic and autologous bone marrow transplants is growing. BMT has now become a routine therapy for many patients with multiple myeloma, lymphoma, leukaemia, and testicular cancer. The treatment that was once referred to as bone marrow transplantation, or BMT, is increasingly being described today as hematopoietic stem cell transplantation. By 1990, E. The Nobel Prize in Medicine was awarded to Donnall Thomas and his team, thus

closing the early clinical era. Currently, hematopoietic stem cells are not obtained only from bone marrow but also from peripheral blood, as well as placental/umbilical cord blood. So the name has evolved from "bone marrow transplantation" to the more accurate "hematopoietic stem cell transplantation"[19].

- **Hormone Therapy:** Hormone therapy is remarkably effective and non-toxic for estrogenic receptor-positive and/or progesterone receptor-positive breast cancer and prostate cancer. Oestradiol, produced by the ovaries in premenopausal women, is derived from peripheral conversion of adrenal androgens by aromatase in postmenopausal women. The serum levels of both oestradiol and testosterone are regulated by the hypothalamic-pituitary-gonadal pathway. While in premenopausal women the ovaries produce oestradiol, in postmenopausal women, it is formed from a conversion of adrenal androgens through the activity of the enzyme aromatase. In the treatment of breast cancer in women before menopause and prostate cancer in men, castration is an important part of the therapy. Treatment for these patients often involves selective oestrogen receptor modulators, such as tamoxifen or aromatase inhibitors. Hormone therapy is a potential approach to reduce the size of the primary lesion before a decision to undergo radical surgery or radiotherapy and also to decrease the risk of recurrence. It has proven highly effective, particularly in patients with advanced local or metastatic disease, frequently resulting in an effective response. Despite early success, most patients quickly relapse, with their disease becoming "castration-refractory". Fortunately, a growing number of active agents are coming into clinical use to meet this challenge. [20].

Types of Immunotherapies:

Cancer cells and the immune system engage in complex interactions, sometimes providing protection against excessive cell growth, yet also potentially fostering malignancy. By grasping how the immune system safeguards against cancer, we can innovate novel therapeutic approaches. A variety of immunotherapeutic methods, such as adaptive cancer therapy, cancer peptide vaccines, monoclonal antibodies, and immune checkpoint inhibitors, have revolutionized the conventional cancer treatment paradigm [21].

- **Monoclonal Antibodies:** In a laboratory setting, monoclonal antibodies are crafted, distinct from the naturally occurring antibodies produced by the human body. These proteins serve the immune system by identifying disease-causing agents like bacteria

and viruses, tagging them for elimination. Much akin to the body's inherent antibodies, monoclonal antibodies are designed to pinpoint specific targets. Targeted cancer therapy, which involves the interaction with specific targets, encompasses many monoclonal antibodies utilized in cancer treatment. Over the past two decades, monoclonal antibody-based treatments have emerged as highly effective therapeutic approaches for both hematologic malignancies and solid tumours, marking significant success in cancer treatment [22].

- **Cytokines:** Cytokines act as molecular couriers facilitating communication among immune cells, orchestrating a unified, strong, yet controlled reaction to an antigen. While direct cell-to-cell contact is a common means of immune system communication, cytokine secretion expedites immune signalling, ensuring swift and effective coordination. Cytokines kickstart the action of immune cells and stromal cells right at the tumour site, making it easier for cytotoxic effector cells to identify and target tumour cells. Many studies using animal tumour models have shown that cytokines have a wide-ranging ability to fight tumours, leading to the development of several cytokine-based strategies for treating cancer [23].
- **Checkpoint Inhibitors:** The identification of the immune checkpoint proteins PD-1/PDL-1 and CTLA-4 represents a landmark discovery in the realm of cancer immunotherapy. As a result, humanized monoclonal antibodies that target these proteins have recently achieved unprecedentedly high efficacy in treating patients suffering from metastatic melanoma, renal cell carcinoma, head and neck cancers, and non-small cell lung cancer [24].
- **Vaccines to treat cancer:** Vaccinating to prevent infectious diseases is widely acknowledged as one of the most effective health strategies ever. But using vaccines to treat established diseases like chronic infections and cancer is a tougher nut to crack. This is because the immune system, which has been held back by mechanisms aiming for self-tolerance, poses a significant challenge. Nonetheless, recent clinical trials show that we're making strides toward successful therapeutic vaccination [25].
- **CAR T-cell therapy:** CARs, specialized receptors designed to target a specific tumour antigen, are crafted to alter the behaviour of T lymphocytes. Genetically modified T lymphocytes carry these engineered receptors, empowering them to seek out cancer cells. This strategy falls under the categories of immunotherapy, gene therapy, or cancer

treatment. Our immune system excels at discerning between self and non-self-entities, including bacteria, viruses, and aberrant cancer cells [26].

Understanding Resistance Mechanisms:

The goal of each cancer therapy is to eliminate the disease and achieve full recovery. Even with notable progress in treating some types of cancer, numerous patients continue to have difficulty responding well to treatments. Various internal and external factors may disrupt the body's innate reaction to cancer therapies, leading to resistance. This resistance can be classified into three categories—primary, adaptive, and acquired—depending on when it emerges in the treatment process. Over the last ten years, there have been notable developments in immunotherapy for the treatment of B-ALL. Both treatment options utilizing antibodies or cells have demonstrated potential, enabling patients diagnosed with relapsed and refractory B-ALL to achieve a state of remission. Still, only a small number of patients attain a permanent cure. This chapter analyses the obstacles to long-term success in immunotherapy and explores methods to improve the longevity of remissions. Immunotherapy might not be effective because leukaemia cells have inherent characteristics that make them resistant to treatment, or because the immune system has difficulty maintaining the disease in remission [27].

The relationship between cancer and immunotherapy:

Immunotherapy is currently a widely used treatment for various cancers and has revolutionized our approach to combating the disease. ICIs have demonstrated effectiveness in treating different types of solid tumours such as melanoma, RCC, NSCLC, and colorectal cancer with mismatch-repair deficiency. These immune checkpoint inhibitors function by disrupting the communication between inhibitory receptors on T-cells and their corresponding ligands on cancerous or myeloid cells, initiating the immune system's response to tumour-specific antigens [28].

Future Perspectives:

Despite the significant stride made by different treatment modalities, the brutal reality still remains that the "war on cancer" is still an ongoing affair. Serious challenges still persist with FDA-approved drugs available nowadays including constraints related to the inherent resistance and acquired resistance mechanism of monoclonal antibodies, which are contributory in mediating tumour heterogeneity and patient relapse [29].

Such different types of immunotherapy-based strategies have, within the past few years, successfully transformed the way treatment is administered for a number of other forms of cancers. The immune response now enhances anticancer activity through immune checkpoint inhibitors, CAR-modified T cells, dendritic cell-based therapies, NK-CAR T cells, and CRISPR-Cas9 technology. These developments have shown the wide utility and adequacy of different helpful methodologies in immunotherapy to battle disease [30].

With the approach of immunotherapy for malignant growth, the future heading of cancer therapy is supposed to be a time in which need is given to treatments pointed toward relieving malignant growth, as opposed to choosing treatments that are supposed to delay patients' lives as previously. Disease immunotherapy up to now has zeroed in on the most proficient method to productively actuate and improve the safe reaction to malignant growth.

Since the mechanisms of action in cancer immunotherapy differ fundamentally from those of traditional cancer drugs, treatment strategies must be devised with a thorough understanding of these unique characteristics. In particular, combination therapies involving immune checkpoint inhibitors hold significant promise for future advancements. Employing these inhibitors with a comprehensive understanding of each drug's properties can result in not only additive but also synergistic effects.

Currently, more than 2,500 clinical trials for combining cancer immunotherapy with immune checkpoint inhibitors are actively ongoing, with the hope of increasing therapeutic efficacy. Another new cancer immunotherapy, CAR gene transfer T-cell therapy, has been approved for the treatment of B-cell hematopoietic malignancies. [31].

Conclusion:

Moreover, most recent data also indicate that many other novel targeted therapies are likely to have immunomodulatory effects. Therefore, even though the future may be bright with further improvements in clinical outcomes and potential cure of most cancers with combination immunotherapy strategies, with or without targeted therapies, similar to how combination chemotherapy has proved to be better than single-agent therapies for most of these diseases, much is yet to be worked on to ensure the full benefits of its application are indeed reaped. However, development of good robust predictive biomarkers that are able to accurately assess determinants of tumour immune responsiveness will be pivotal in guiding the development and

personalize combination of strategic immunotherapy. Personalized cancer immunotherapy is going to result in improved efficacy, reduced toxicity, and reduced cost of treatment [32].

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THERAPEUTIC APPLICATIONS OF BIOMARKERS IN HEART DISEASES

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This review article suggests the recent application of various novel biomarkers for determining various heart treatments and informs a few vital research expansions in this field, for the reason that proper identification and ministrations of persons with severe cardiovascular disease, these biomarkers show a significant role, observed with the help of combination of gist specific troponins with modern worldwide applicable rules for persons suffering from severe heart disorders, but also treatment of myocardial infarction. Apart from this, there is an urgent requirement to develop early biochemical markers that can detect myocardial ischemia. Based on the biochemical analysis, there are two types of indicators: biomarkers for lack of blood supply to any parts of body and biochemical molecules for inflammation. With the help of genomics and proteomics, the utilization of biochemical markers for the treatment is increasing rapidly. This paper reviews the application of BNP, GDF-15, serum uric acid, troponins, and many more.

Keywords: Biomarkers, Peptides, Acute coronary syndrome, and myocardial infarction.

Introduction:

Over the past 1.2 years, the importance of clinical cardiology in combination with Laboratory Medicine has increased, as compared to 20 years ago when cardiologists used to detect cardiac tissue necrosis by using addition of phosphate group in creatine and dehydrogenation properties of lactose [1]. Based on modern science and technology, myocardial damage can be easily detected by using cardiac troponins, along with various biochemical markers, and cardiac natriuretic peptides, which are based on current guidelines related to myocardial infarction.

Biomarkers of MI:

According to WHO, clinical presentation, alteration in the ECG, and enhanced the parameters of "cardiac" biocatalyst, CK-MB properties are the primary 3 parameters in detecting myocardial necrosis[2].

According to the USA College of Cardiology and the Joint European Society of Cardiology created a novel definition for this disorder, which is associated with increased levels of biochemical identifiers of heart diseases combined the formation of Q waves[3]. Furthermore, a novel biomarker used in the treatment of myocardial necrosis is cardiac troponins, it is effective due to its sensitive properties towards myocardial injury and is highly specific towards the damage of the heart. Which can be used for quantitative analysis small amount, which require 4–10 h after symptom present in the plasma serum. For the treatment of long term conditions, serial troponin measurements can be used for the diagnosis which depends on the concentration of the biochemical markers[4]. MI can be defined as the presence of cardiac troponin which is not including its biochemical mechanism. The impact of Various concentrations of troponin on non-ischaemic pathophysiological conditions is shown in table no 1[5].

Sl.no	**Various factors affecting the formation troponins in Cardiac disorders**
1	Cardiac trauma
2	Congestive heart failure
3	Discreasing Level of Glycogen
4	End-stage renal failure
5	Haemoglobinopathy with transfusion haemosiderosis
6	Cardiotoxicity from cancer therapy
7	Pulmonary embolism

[Various concentrations of troponin in Heart Disease] [Table no 1][5]

Based on the current publication has discovered the treatment of detecting various heart disease in the existence of unrectifiable destruction[6]. By using biomarkers we could also be able to differentiate nonischaemia and acute MI, which is involved in increasing the level of various biocatalyst presence in heart. The obtained enhanced in lipids bound to Protein (FFAu) in the blood with acute myocardial ischemia has recently been observed for the fast identification of cardiac injury. Another biochemical marker utilized for the therapy of coronary artery disorder

inflammation is C-reactive protein[7]. Various biomarkers used in the treatments of heart diseases are explained in the table below [8].

Biomarker	Guideline	COR	Setting
Natriuretic peptides	ACC/AHA	I	Support diagnosis or exclusion of HF
		I	Prognosis: ambulatory and acute settings
		I	Prognosis: admission levels for ADHF
		IIa	Ambulatory HF: achieve GDMT
		IIa	Prevention: incident of LVD or new-onset HF
		IIb	Acute HF: guide for ADHF medical therapy
	ESC		Diagnosis: rule out HF
		IIa	Initial assessment in newly diagnosed HF
	HFSA	REC	Diagnosis: in case of suspected HF
		N/REC	Routine screening in asymptomatic patients
Myocardial injury	ACC/AHA	I	Additive risk stratification: ambulatory, acute
	ESC	Ic	Diagnosis: suspected acute HF
Myocardial fibrosis	ACC/AHA	IIb	Additive risk stratification: ambulatory, acute

[Guidelines for Biomarkers] [Table no 02] [8]

Established and emerging biomarkers in heart failure

Heart failure properties can be identified by using protein identifier along with their pathological studies, various biochemical properties, infections.Table 3 gives the classification of the main group and subgroup of myocardial insult[9,10,11].

Main group	Subgroup	Biomarker
Myocardial insult	Myocyte stretch	ANP, BNP,[a] NT-proBNP,[a] MR-proANP, GDF-15, neuregulin
	Myocardial injury	Troponin T,[a] Troponin I,[a] hsTN, heart type fatty acid protein, myosin light-chain kinase 1, creatinine kinase MB fraction
	Oxidative stress	Myeloperoxidase, MR-proADM, oxidized low-density lipoprotein, urinary biopyrrins, plasma malondialdehyde
Neurohormonal-Activation	Renin-angiotensin system	Renin, angiotensin II, aldosterone
	Sympathetic nervous system	Norepinephrine, chromogranin A
	Arginine vasopressin system	Arginine vasopressin, Copeptin
	Endothelin	Endothelin-1, big proET-1
	——	Chromogranin A and B
Myocardial-Remodeling	Inflammation	C-reactive protein, TNF-α, Fas (APO-1), interleukins 1, 6, and 18, cytokines, procalcitonin, adipokines, adiponectin
	Hypertrophy/fibrosis	Soluble ST2,[a] Galectin-3,[a] matrix metalloproteinases, collagen peptide

[Biomarkers for heart failure] [Table no – 3][9,10,11]

GDF-15 is one of the major biomarkers, which is belongs to cytokine super family and used as an essential enzyme for heart failure.[12,13,14]. Various biomarkers used in the treatment of many heart diseases are shown below[15,16,17].

Sl.no	Biomarker Name	Category	Utilization	Ref
1	Troponin	Myocyte injury	Diagnosis of enhanced levels of brain natriuretic peptide, to study the rate of blood flow in blood vessels.	18
2	Brain Natriuretic peptide molecules	Myocyte stretch	Early detection of acute dyspnea.	19
3	Growth differentiation Factor-15	Myocyte stretch	Used to detect early heart failure	20
4	Serum uric acid	Oxidative stress	Hyperuricemia is combined with GDF-15 to identify heart failure.	21
5	Heart-type fatty acid protein	Myocyte injury	Enhanced in this level used to detect cardiomyocyte injuries.	22

[Application of Biomarkers for the treatment of heart diseases] [Table no 3]

Conclusion and Future prospectives:

Developments on molecular biology and genome studies , the focus on regarding analysis of various biomarkers increased now a days, which deals with multifunctional activities and early detection .

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