

# CON EVIDENCIA

Revista de la Universidad Profesional Dr. Carlos J. Borrero Ríos

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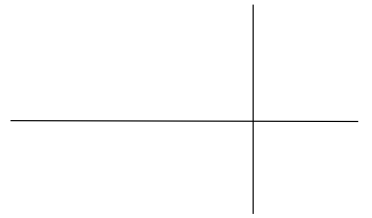
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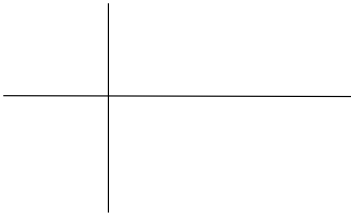




Es un placer dar la bienvenida a todos los lectores al primer volumen de nuestra revista académica, titulada "Con Evidencia". En este primer volumen, nos enorgullecemos de presentar una selección de artículos y contribuciones que reflejan el compromiso y la dedicación de profesionales, académicos y estudiantes. Nuestra revista tiene como objetivo fomentar el intercambio de conocimientos y perspectivas, así como promover la colaboración y el crecimiento en el ámbito de la investigación. En estas páginas, encontrarán trabajos originales que abarcan áreas como la salud y la educación.

Deseamos que esta publicación sea una fuente de inspiración para aquellos que buscan la excelencia en la academia y el progreso en el conocimiento humano. Sin más preámbulos, los invitamos a embarcarse en este enriquecedor viaje de descubrimiento intelectual.

Noraida Domínguez, Flores, PhD



*Con Evidencia* es la revista académica de acceso abierto publicada anualmente por la Universidad Profesional Dr. Carlos J. Borrero Ríos. Esta revista multidisciplinaria que inicia este año 2023, busca ser un espacio de divulgación para los profesionales del campo de la salud, educación y artes en general.

Los artículos publicados en *Con Evidencia* pasan por un proceso de evaluación y arbitraje cuidadoso y pueden incluir investigaciones originales, ensayos, revisiones de literatura, mejores prácticas, experiencias educativas, estudios de casos y reseñas de libros.

Nuestro objetivo principal es fomentar que estudiantes y profesionales difundan nuevo conocimiento y aporten a las diversas disciplinas. Reconocemos la necesidad de proveer espacios para la difusión de nuevo conocimiento y experiencias que ayuden a enriquecer el quehacer académico y profesional.

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## Importancia de la diversidad de estrategias didácticas para contribuir con una retención efectiva en los diversos niveles educativos

**Joseline López Lebrón, EdD, MSN, RN**

Universidad Profesional Dr. Carlos J. Borrero Ríos

### Palabras clave

facultad,  
estudiante,  
retención,  
institución educativa,  
estrategias didácticas,  
retención estudiantil

### Resumen

**Antecedentes:** La selección o implementación de estrategias didácticas se consideran uno de los desafíos más complejo e importante del proceso de educar al ser humano. Uno de los desafíos más complejos en la enseñanza de la historia es transitar desde un paradigma tradicional a uno constructivista e innovador, que apueste por el desarrollo del pensamiento histórico en el alumnado (Álvarez, 2020). El propósito del estudio fue explorar las diversas estrategias de retención y didácticas que utilizan los educadores para retener estudiantes en sus cursos. **Metodología:** Cualitativo, con un enfoque de investigación fenomenológica-hermenéutica. Se recogieron datos demográficos, se aplicaron instrumentos como recopilación de datos sociodemográficos y guía de preguntas para las entrevistas realizadas. Se entrevistaron 15 facultativos. **Hallazgos:** Las estrategias didácticas más utilizadas por la facultad participante del estudio investigativo para retener e impartir sus cursos a sus estudiantes sin afectar la calidad de la enseñanza fueron conocer a sus estudiantes, refuerzos positivos y vivencias de situaciones clínicas ya que en su mayoría los estudiantes de estos participantes estaban estudiando profesiones relacionadas a la salud. **Conclusión:** Los educadores para cumplir con las exigencias laborales utilizaron diversas estrategias didácticas para lograr un alcance efectivo con sus estudiantes de diversas edades, situaciones personales y otras. En cuanto a estrategias didácticas para retener a sus estudiantes coincidieron en su mayoría con el conocer a sus estudiantes, ofrecer refuerzos positivos y vivencias clínicas de diversas situaciones clínicas.



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## Introducción

El Manual de Seguimiento y Evaluación de los Recursos Humanos para la Salud (Dal Poz, 2009) establece que se calcula que en el mundo faltan sobre 2.3 millones de médicos, enfermeros, parteros y más de cuatro millones de trabajadores sanitarios en general. Por otro lado, los 10 trabajos de mayor demanda en América Latina según diversas encuestas y estudios de la red social LinkedIn en el 2021, se resume a que se necesitan trabajadores tecnológicos, ingeniero de datos, enfermeros, personal de apoyo sanitario, marketing digital, coordinadores de comercio electrónico, generador de contenidos electrónicos, personal de servicio al cliente y agentes inmobiliarios, luego de haber pasado en el 2020 por la pandemia del covid-19 la cual evidenció la necesidad urgente a los negocios de manera digital. La salud y la tecnología se convirtieron en los sectores de mayor demanda en estos últimos años. Se esperó que las tasas de graduación de dichos programas relacionados a la salud en especial los de enfermería aumenten significativamente en respuesta a solucionar el problema de la escasez de profesionales de enfermería en el mundo (OMS, 2020).

Los educadores juegan un papel importante en sus instituciones en la retención de los estudiantes e implementación de estrategias didácticas con sus diversos estudiantes. El mantener buenas tasas de retención de estudiantes, dinámicas, estrategias, calidad de enseñanza es un reto para la facultad educativa del país y del mundo

entero. Todo educador debe reconocer que la retención no puede afectar la calidad de enseñanza ni el desarrollo de las competencias profesionales en los estudiantes de cualquier profesión educativa ya que estos serán la fuerza laboral del país o se desarrollarán en otras partes del mundo. Todo profesional desarrollado en una institución educativa contribuirá de acuerdo con su especialidad de estudio con el fin de trabajar todos a alcanzar diversos servicios a la sociedad como lo podrían ser diversos servicios relacionados a la salud, bienestar, economía y el futuro del país. Ante esta realidad se les exige a los educadores contribuyan a manejar, remediar y resolver los problemas que puedan afectar la retención estudiantil que se presentan a diario en el ambiente educativo. Las diversas agencias acreditadoras profesionales miden y monitorean los datos de efectividad de la enseñanza estudiantil. Entre algunas de las acreditaciones a nivel graduado conocidas se encuentran: *Accreditation Commission for Education in Nursing (ACEN)*, *Commission on Collegiate Nursing Education (CCNE)* and *The National League for Nursing Commission for Nursing Education Accreditation (NLN CNEA)*, *Middle States Commission on Higher Education (MSCHE)*, *Commission on Accreditation in Physical Therapy Education (CAPTE)* y otras existentes. Gran parte de estas agencias acreditadoras consideran el pase de reválida como un elemento esencial para medir la efectividad de los programas, la efectividad de servicio al estudiante, cantidad de recurso entre



otros criterios como elementos esenciales para brindar un servicio educativo de excelencia. Por ejemplo, en el caso de Accreditation Commission for Education in Nursing (ACEN) entre sus exigencias está mantener un pase de reválida de más del 80% en el primer intento. Igualmente, las tasas de retención y graduación de los programas en esta misma agencia se exigen que alcancen un 70%.

En medio de la pandemia gran parte de las instituciones educativas en sus programas educativos tuvieron que modificar la manera de ofrecer sus cursos presenciales a una modalidad virtual, lo que resultó en agravar el problema de retención en varios programas educativos del país. Por tal razón, es importante comprender y analizar las estrategias didácticas que son empleadas por la facultad universitaria para retener sus estudiantes y con ello cumplir con las tasas de retención estudiantil requeridas en sus cursos, el programa y por las agencias acreditadoras que cada institución ostenta.

### **Justificación de la Investigación**

En el transcurso de los años, algunos investigadores han comprobado que cuando los facultativos desarrollan sus clases de una manera tradicional es decir clases centradas netamente en el docente y la repetición continua de ejercicios y problemas de aplicación los estudiantes no interiorizan los conceptos expuestos, sino que solo memorizan procesos sin permitirle a los estudiantes a contextualizar ese conocimiento en situaciones diferentes a las que han

memorizado (Becerra, 2014). Las instituciones educativas tanto públicas y privadas con ofrecimientos profesionales en Puerto Rico y en el mundo están enfrentando desafíos para cumplir con la demanda de mantener sus estudiantes matriculados hasta finalizar sus estudios profesionales. Según describe Munizaga et al. (2018) el fenómeno de la deserción escolar y las necesidades de retención de sus alumnos por parte de las facultades profesionales dentro de la región de América Latina y el Caribe conlleva importantes repercusiones sociales y económicas, tanto para los estudiantes, como para la sociedad en su conjunto. La deserción es una problemática que la viven las universidades a nivel mundial, y no solo acontece a Latinoamérica (Núñez, 2020).

En los últimos años el tema de retención de alumnos matriculados se ha vuelto de vital importancia en los sistemas educativos universitarios a nivel mundial, principalmente en Estados Unidos. La retención hace referencia a las estrategias didácticas que son empleadas por las universidades para poder convencer al estudiante de mantenerse en la institución. De hecho, la falta de retención estudiantil o deserción se ha convertido en uno de los retos mayores de las universidades, que se han visto afectadas por la disminución de matrícula ante la llegada del SARS-Cov-2 (Velázquez y González, 2017). En Puerto Rico, se han realizado muy pocas investigaciones sobre las estrategias que utilizan las facultades para retener sus estudiantes durante todo el

trayecto profesional en que se matriculan. La evidencia indica que la permanencia estudiantil se ve afectada de manera negativa por factores que se consideran muy complejos como lo es el rezago; la reprobación y el ausentismo (Velázquez y González, 2017). Los estudiantes son los clientes de las instituciones, por lo que se debe hacer todo lo posible para retenerlos, trabajo que debe realizarse de manera integrada en la que se incluya la capacitación de la facultad y otros miembros claves de la institución con inherencia en la vida estudiantil (Haverila y McLaughlin, 2020). Para comprender el problema que existe en Puerto Rico sobre la retención estudiantil en los diversos programas educativos y levantar datos sobre este tema se realizó esta investigación cualitativa sobre las estrategias didácticas de retención utilizadas por la facultad universitaria para cumplir con las tasas de retención de los estudiantes en sus cursos.

### **Preguntas de Investigación**

1. ¿Cuáles son las estrategias didácticas que utiliza la facultad para retener y motivar a sus estudiantes en sus cursos?
2. ¿Qué estrategias ayudan actualmente a los facultativos a retener sus estudiantes hasta finalizar sus cursos sin afectar la calidad de la enseñanza?
3. ¿Cuáles estrategias didácticas son las de mayor uso y consideran que les ha funcionado para retener sus estudiantes en sus cursos aumentando el aprendizaje de sus cursos?

### **Metodología**

#### **Diseño**

Este estudio es uno cualitativo, con un enfoque de investigación fenomenológica-hermenéutica por lo que se busca explorar y describir la experiencia vivida de la facultad universitaria en varias instituciones educativas en Puerto Rico en cuanto a las mejores estrategias didácticas para retener sus estudiantes hasta finalizar sus cursos. La fenomenología hermenéutica tiene un gran aporte para la comprensión de los seres humanos y sus experiencias subjetivas.

#### **Escenario y Muestra**

La muestra consistió en 15 facultativos que laboraban en diversos sistemas universitarios de Puerto Rico. Los participantes seleccionados cumplieron con los siguientes criterios de inclusión: tres años de experiencia o más en el área educativa, tener un grado académico de Maestría o Doctorado, estar activo ofreciendo cursos en las universidades de Puerto Rico y aceptar ser entrevistados, y que esta fuese grabada en audio.

#### **Técnica para la recolección de datos**

La técnica para recopilar los datos fue una guía de entrevista semiestructurada diseñada por la investigadora a base de la revisión literaria. Estas preguntas fueron validadas en contenido por un panel de cinco expertos en el tema de retención, educación, pertenencia, matrícula, estudiantes y facultad. Estos expertos trabajan en una institución educativa como educadores y ostentan puestos administrativos de liderazgo. Los mismos evaluaron las preguntas para verificar si estas

cumplían con la claridad del problema a investigar, su importancia y su redacción. También, ofrecieron recomendaciones para mejorar el contenido de la guía del estudio. Además, realizó una segunda validación de la guía de entrevista con otros dos facultativos profesionales del área de educación de enfermería con más de tres años de experiencia.

La guía de entrevista estaba constituida de dos partes. La primera parte se titulaba: Entrevista sobre el perfil sociodemográfico de los participantes del estudio donde se media por medio de siete preguntas aspectos como el género, edad, nacionalidad, experiencia, ubicación de la zona laboral, preparación académica y empleo. La segunda parte se titulaba: Guía de Preguntas, esta se componía de 15 preguntas donde se exploraba entre otros aspectos el significado de retención, estrategias para retener estudiantes, importancia de la retención, factores que ayudan o inhiben la retención.

### **Procedimiento**

Este estudio fue aprobado por la Comisión Ética. Luego de anunciar el estudio de investigación en diversas plataformas sociales e instituciones educativas autorizadas, varios facultativos se comunicaron con la investigadora para participar del estudio.

Participantes que cumplieran con los criterios de inclusión se les explicaban los detalles y consistencia del estudio. Una vez estos aceptaban y tenían interés se les brindaba el consentimiento informado para su firma. Se les asignó cita para entrevista en un lugar

privado provistas por las instituciones educativas como fue el caso de bibliotecas, salones y áreas al aire libre tranquilas y relajadas que contribuyeran a una experiencia tranquila. Se les explicó que se utilizaría un seudónimo de estos desear para proteger su identidad y privacidad. Los participantes no recibieron ningún incentivo por su participación en este estudio.

Para el proceso de análisis de este estudio se utilizó el método *Carrying Out Qualitative*.

Primero, para mantener el rigor del enfoque las entrevistas fueron escuchadas y transcritas palabra por palabra. Segundo, se identificaron los temas que reflejaban la cantidad de datos en común de los participantes. Este paso facilitó la codificación de los datos. Todas las grabaciones de los participantes fueron borradas de manera permanente al finalizar el estudio.

### **Resultados**

Los hallazgos del estudio que se presentan a continuación se dividieron de acuerdo con las secciones de la guía de entrevista, en la primera sección se muestran algunos de los datos sociodemográficos más relevantes y en la segunda sección la aplicación de la entrevista, donde se demuestra cómo se contestaron los objetivos de la investigación.

#### **Características Sociodemográficas**

Participaron 15 miembros de facultad incluyendo doce mujeres y tres hombres de varias instituciones educativas de la isla. En los cuales el rango de edad de la muestra fue de 21-60 años y constituida mayormente por facultad entre las edades de 41 a 50 años. La



preparación académica de los participantes en su mayoría era con grados doctorales y cuatro participantes con grado de maestría, realizando estudios doctorales.

### **Hallazgos de los resultados a base de las preguntas del estudio**

La facultad en su totalidad afirma que sus estudiantes poseen inteligencias múltiples y situaciones sociales o emocionales que a su vez afectan la interacción en el día a día al ofrecer su variedad de estrategias didácticas para retener a sus estudiantes. Las estrategias didácticas más utilizadas estaba el aprendizaje basado en problemas o situación de casos, ya que indirectamente esta estrategia lleva a los estudiantes a investigar y reflexionar para solucionar o enfrentar una situación que podrán enfrentar en sus escenarios laborales. Otra estrategia didáctica de uso de la mayoría de los participante excepto dos de estos fue el aprendizaje colaborativo es decir actividades en conjunto o grupales esto hacia a los estudiantes de los participantes integrarse a un equipo, interactuar con una meta en común para obtener un resultado, inspirados en la responsabilidad, cumplimiento de objetivos, metas, trabajar un tema, fomentar el liderazgo y muchas veces fomentar la autoestima y desarrollo de competencias requeridas por el currículo académico matriculado. Algunos ejemplos de aprendizaje colaborativo estaban los grupos de estudio, los foros de discusión y debates. Como estrategia didáctica en tercera posición por los participantes de este estudio se encontraba el aprendizaje por proyectos ya que en su mayoría los estudiantes se enfocan

de manera activa y son protagonistas de su propio aprendizaje, de igual forma deben estructurarlo para resolver o presentar lo asignado de manera que integren investigación, análisis, elaboración del producto solicitado hasta llegar a una evaluación favorable por el profesor. Ejemplos de proyectos mencionados por los participantes se enfocaban en la integración de diversos cursos de acuerdo con la necesidad de sus currículos, dentro de los proyectos además de un trabajado escrito los facultativos buscaban que los estudiantes expusieran este de manera oral, diseñaran maquetas u otras. Otras estrategias didácticas mencionadas fue los estudios independientes que los llevan a un autoaprendizaje fueron mayor cantidad de clases virtuales, fomentar el uso de recursos de biblioteca virtual y el uso de laboratorio o simuladores. Gran parte de los facultativos participantes menciona que las estrategias didácticas estarán evolucionando con el pasar de los años situaciones inesperadas, evolución de la educación y avances tecnológicos.

### **Discusión**

Dado a la magnitud del fenómeno de la retención estudiantil y el uso de diversidad de estrategias didácticas para una educación de excelencia sin afectar la calidad de enseñanza y criterios justos de evaluación diversa en P.R., muchas instituciones educativas se han visto afectadas y más con los cambios que desencadenó el SARS-Cov-19 en la isla, que llevó a las instituciones a experimentar una baja en matrícula y retención de sus

estudiantes hasta finalizar sus cursos o carrera profesional con la entrada de la educación virtual en la mayoría de las instituciones educativas de forma emergente. Igualmente, las instituciones modificaron las estrategias enseñanza e integraron nuevas modalidades y plataformas. Además, de causar despidos, limitaciones en la jornada laboral y cierres departamentales, entre otras situaciones.

En términos de los resultados obtenidos en este estudio la mayoría de la facultad participante pudo articular claramente lo que para ellos/as lo que significa la retención de estudiantes, como menciono su mayoría finalizar su carrera matriculada con las competencias requeridas con colaboración de diversificación de estrategias didácticas por medio de la facultad para que fomenten el aprendizaje permanente y permanencia de estos hasta obtener su título profesional. Esta definición concuerda con lo que se describe la literatura sobre este concepto y envuelve a las estrategias que son empleadas por la institución para poder convencer al estudiante de mantenerse en ella y lograr la culminación de sus metas profesionales. La facultad participante del estudio compartió diversas estrategias didácticas utilizadas para retener a los estudiantes en sus cursos en los cuales la gran mayoría de estos coincidió con el aprendizaje basado en problemas ya que podían compartir sus vivencias, experiencias y situaciones sobre la solución a una situación que eventualmente podrían obtener en sus trabajos. Como facultativos siempre debemos estudiar y analizar la misión, la visión, los

estándares de la agencia acreditadora las competencias del programa a ofrecer para poder cumplir con una educación de calidad cumpliendo con los objetivos y competencias establecidos por el programa a académico a ofrecer. Ya que la preparación de los candidatos es importante para la contribución de la fuerza laboral del país.

Debemos estar conscientes que no siempre contaremos con estudiantes que puedan culminar su curso con notas favorables, pero si como facultativos debemos tener el interés y herramientas como diversas estrategias didácticas para impartir una educación de excelencia, activa e interactiva para nuestros alumnos. La facultad debe ser consciente y tener una buena planificación de las lecciones a ofrecerle a los estudiantes según los participantes del estudio como diversas estrategias didácticas o métodos para evaluar como son diversidad en los exámenes como partes diversas por ejemplo, pareo, escoge, menciona, casos clínicos o hipotéticos, diversidad de preguntas para mantener una variación de presentación u obtención de resultados dado a la diversidad de inteligencias múltiples que tendrán en su salón de clases. Este estudio evidencia que el facultativo no debe ser muy repetitivo ya que tenemos diversidad en el aprendizaje de los estudiantes y la monotonía los lleva a no resistir por sus metas profesionales. Debemos ser estratégicos y utilizar estas diversas estrategias didácticas para poder retener de manera efectiva a los estudiantes sin afectar la calidad de la enseñanza.

Durante el estudio se pudo identificar a través de algunos facultativos participantes del estudio las exigencias institucionales según estos expresaron a través de este estudio para estos poder cumplir con la retención de sus estudiantes las cuales muchos de ellos entendían que no eran justas y afectaban la calidad de la enseñanza o el compromiso de los estudiantes con la decisión de estudiar y obtener las competencias requeridas por el currículo de estudio. Por otra parte, se estudió la carencia o necesidad que enfrentan los facultativos participantes del estudio estos mencionan que necesitan mayor desarrollo profesional para comprender la diversidad estudiantil, cambios en la tecnología, avances y cambios en la educación a distancia y aplicación de la diversidad de las estrategias didácticas a los diversos contenidos a ofrecer. Dado a los datos obtenidos es importante que el facultativo a pesar de tener el interés obtenga mayor apoyo de parte de la institución para estos poder poner en práctica las diversas estrategias didácticas que se han podido identificar como efectivas para retener los alumnos hasta finalizar su carrera de estudio profesional sin afectar la calidad de enseñanza y poder realizar las clases más interactivas.

### **Limitaciones**

Como en la mayoría de los trabajos de investigación existe una gran variedad, situaciones y diversidades que hacen las limitaciones del estudio que se investigó. Para este trabajo no fue la excepción. Una de las limitaciones ha sido la profundidad y el

enfoque del estudio el cual solo aborda las estrategias didácticas que utiliza la facultad para retener los estudiantes en sus cursos y no las posibles soluciones específicas para minimizar el problema. La facultad juega un papel importante en la retención del estudiante y en el montaje de diversas estrategias didácticas en sus cursos, pero no son el único elemento importante al momento de la determinación de que un estudiante permanezca en el programa seleccionado o hasta finalizar su carrera sin tener algún tipo de dificultad.

### **Conclusiones**

Los hallazgos recopilados en este estudio reflejan que la facultad participante del estudio está en disposición de retener a sus estudiantes, utilizan diversas estrategias didácticas para lograr identificar fortalezas y limitaciones que sus estudiantes puedan enfrentar en sus cursos académicos. Se determinó en este estudio que las tres estrategias didácticas de mayor uso para retener los estudiantes en la sala de clases obteniendo un aprendizaje efectivo lo son el aprendizaje basado en problemas, el aprendizaje colaborativo y la realización de diversos proyectos. Estas tres estrategias didácticas no limitan a que existan otras situaciones con la que la facultad tienen que trabajar y atemperar a la hora de ofrecer sus cursos. El facultativo tiene un rol que debe tener presente en todo momento, el estudiante tiene que cumplir con las destrezas de curso, competencias, conocimiento a nivel teórico y práctico de ser requerido por el currículo para



poder ejecutar su profesión con un alto nivel en su escenario laboral. La calidad de enseñanza, dominio de destrezas, cumplimiento de competencias no debe verse afectada por ninguna situación de retener a sus estudiantes o implementar estrategias didácticas nuevas. El fin de un facultativo debe ser que su estudiante aprenda, evolucione y domine las competencias requeridas para poner en práctica y lograr una contribución a la fuerza laboral de forma favorable en todo momento. Llevando un buen desarrollo crítico, manejo de situaciones e inteligencia emocional para manejar cualquier problema o situación a nivel laboral o hasta familiar.

En conclusión, es importante que la facultad de enfermería utilice diversidad de estrategias didácticas de manera efectiva o proactiva de acuerdo con el comportamiento e interés de su grupo para que así lograr una retención efectiva, sin afectar la calidad de enseñanza de sus estudiantes. El estudiante de hoy en día es uno diverso que requiere mayor atención e interacción ya que está expuesto a mayor tecnología, situaciones, eventos y aprendizaje rápido. Esto ayudará a que los estudiantes puedan ejercer con seguridad y el nivel competitivo según exigido en el mercado laboral. De acuerdo con estos resultados validamos que el facultativo conoce el término de retención, pero necesita mayor apoyo de la universidad para aplicar diversidad de estrategias didácticas, evaluar las necesidades que enfrenta con los estudiantes, dominar más el área de la tecnología, uso de simuladores. Se recomienda a las universidades y facultativos

invertir en certificaciones, talleres, educaciones continuadas que le brindan diversidad de estrategias didácticas y de retención para retener a los estudiantes hasta finalizar su carrera profesional.

### **Recomendaciones**

Los hallazgos de esta investigación ayudarán a los facultativos, administradores y otros profesionales que trabajan arduamente para mejorar la retención, el montaje de cursos en las diversas universidades. Luego del análisis de los resultados se recomienda la facultad a continuar educándose sobre el tema de la retención y estrategias didácticas para poder enfrentar los constantes cambios en el área educativa, como son las características de los estudiantes, la tecnología, las diversas modalidades de enseñanza y las exigencias de las agencias reguladoras las cuales en el desempeño estudiantil. El hacer buen uso de la tecnología, el mantenerse empático, el trabajar en sintonía con la misión y visión del programa educativo es vital para que facultad. De esta forma contribuirán con la retención de los estudiantes, uso de diversidad de estrategias didácticas para continuar con la contribución de la preparación de profesionales competentes para la necesidad laboral existente. Igualmente, se recomienda que la facultad reciba apoyo de la administración y servicios de apoyo estudiantil, ya que el problema de retención es una situación que debe ser trabajada de forma integrada.

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## Is the use of gas for emergence from TIVA effective?

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### Keywords

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TIVA, propofol,  
remifentanyl,  
emergence, awakening,  
Sevoflurane

### Abstract

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Total Intravenous Anesthesia (TIVA) is a standard procedure used in multiple surgical procedures; however, one of the main concerns in the use of this technique by the anesthesia provider is awakening/emergence. The awakening and recovery time after prolonged use of infusions posts a challenge due to accumulation of medications in the patient tissue. A typical TIVA case includes a mixture of two or three medications in combination that affect different systems keeping the patient asleep and immobile without using volatile agents or neuromuscular blockers. This anesthesia technique and the usual long surgical time make it prone to a more significant amount of medication administered. At the time of emergence, one of the techniques used by some anesthesia providers is to start using gas and end the IV infusions. The objectives of this research was to describe in terms of technique that this is simply a matter of preference of each provider and demonstrate that there is no scientific evidence that the patient awakes better or significantly faster when gas administered inhalation agent for the emergence from TIVA. The study included twenty-five patients; the mean age was 66.72 years for the whole group, and the extubations time was measured and compared in both groups. In the group treated with inhalation agent, the extubating time was 17.14 minutes, and in the TIVA group it was 21.33 minutes. There were no statistical significant differences between the groups.



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## Introduction

Total intravenous anesthesia (TIVA) has been widely used as an anesthesia technique for several decades. However, there is significant variation in practice, and volatile agents are still commonly used. TIVA may positively affect patient physiology, such as more stable hemodynamic conditions due to high-dose opiate analgesia, less reliance on the respiratory system to achieve hypnosis, and a lower incidence of post-operative nausea and vomiting. 1

Inhalational agents have traditionally been used to maintain surgical anesthesia. End-tidal concentrations must be adjusted to balance the risks of accidental awareness under anesthesia. Total intravenous anesthesia based on propofol infusion provides faster recovery and reduces postoperative nausea and vomiting. Using TIVA in conjunction with a target-controlled infusion (TCI), plasma concentrations can be calculated using an algorithm based on the patient's age, gender, weight, and height. 2

Although inhalational anesthesia is the most common method of anesthesia worldwide, anesthetic gases have been identified as potent contributors to greenhouse gases pollution. When excreted unmetabolized, they contaminate the air and increase the greenhouse effect contributing to global warming. 3 The average waste gas composition is estimated as follows: oxygen 25%-30%, nitrogen 60%-65%, nitrous oxide 5%-10%, and volatile halogenated anesthetic gases 0.1%-0.5%. Scavenging, low-flow and minimal-flow anesthesia, and blue-zone

technologies are the most current methods for reducing the amount of gas released into the environment. 3

Total intravenous anesthesia is the only known method to completely avoid the use of anesthetic gases and, thus, air pollution. TIVA is a general anesthesia technique that uses a combination of agents administered intravenously only. In recent years, TIVA has become popular and practical, possibly by the pharmacokinetic and pharmacodynamic properties of drugs such as propofol and short-acting opioids such as remifentanyl.

In addition, compared to conventional inhalation anesthesia, TIVA offers good postoperative recovery and stable hemodynamics, a reduced incidence of postoperative nausea and vomiting, and a lower breast cancer recurrence rate. 1, 3, 4

### Material

The study was conducted in Hialeah Hospital, Miami, Florida. The total number of patients that were considered for the study was 25, in two groups: with gas (12) or without gas (13).

### Methods

TIVA: After establishing an intravenous line, anesthesia was induced with 1.0 mcg/kg of Remifentanyl, 2.5 mg/kg of Propofol, a bolus of 1.2 mg/kg of Lidocaine MPF 2% and 1.0 mg/kg of Succinylcholine, followed by endotracheal intubation with a cuffed tube. Anesthesia was maintained with Propofol at 120-165 mcg/kg/min and Remifentanyl 0.5-1 mcg/kg/min and titrated according to the

patient's response. During this procedure, anesthetic depth was evaluated with IOM.

From each patient, the following variables were recorded: TCI (Target Controlled Infusion), total minutes of Propofol and Remifentanyl; the Minimal Alveolar Concentration (MAC) with the total minutes of gas; the Extubations time with or without gas; PACU first response to verbal command time; PACU first response to touch stimuli time, and PACU Full response time. An Excel database was filled out with all this detail, including case number, age, and weight. All data were processed with SPSS ver. 26.1.

## Results

The information regarding the results of the patients was analyzed: as a whole group and according to the use of gas or not. Table 1 summarizes the patient demographics: Age, Weight (kg), Propofol and Remifentanyl, Total minutes of gas (Sevoflurane MAC 2.0%), Gender, and Time until full response according to the group.

With a total sample size of 25 individuals, 12 (48.0%) were female, and 13 (52.0%) were male. The valid percent represents the proportion of respondents who provided reasonable responses to the gender question. The cumulative percent represents the cumulative proportion of respondents up to each category. Overall, the gender distribution in the sample is relatively evenly split between males and females, with a slight majority of males.

The results presented are group statistics for four different variables in two groups, "No gas" and "Gas". For the variable "TCI Propofol", the mean dose was 149.23 mcg/kg/min in the "No gas" group, and 155.42 mcg/kg/min in the

"Gas" group. The standard deviation for the "No gas" group was 12.221, and for the "Gas" group was 16.984. The standard error of the mean was 3.390 for the "No gas" group and 4.903 for the "Gas" group.

For the variable "TCI Total minutes of Propofol", the mean total minutes of the infusion was 271.69 in the "No gas" group, and 248.25 in the "Gas" group. The standard deviation for the "No gas" group was 87.298, and for the "Gas" group was 111.436. The standard error of the mean was 24.212 for the "No gas" group, and 32.169 for the "Gas" group.

For the variable "TCI Remifentanyl infusion" the mean dose was .17 mcg/kg/min in the "No gas" group and .20 mcg/kg/min in the "Gas" group. The standard deviation for the "No gas" group was .192, and for the "Gas" group was .195. The standard error of the mean was .053 for the "No gas" group and .056 for the "Gas" group.

For the variable "TCI Total minutes of Remifentanyl infusion", the mean total minutes of the infusion was 271.69 in the "No gas" group, and 248.25 in the "Gas" group. The standard deviation for the "No gas" group was 87.298, and for the "Gas" group was 111.436. The standard error of the mean was 24.212 for the "No gas" group and 32.169 for the "Gas" group.

Overall, these results provide important information about the dose and duration of different medications in the two groups, with and without gas; the differences between the two groups did not show statistical significance for  $p=0.05$ .

**Table 1:**  
*Descriptive Statistics Results of Studied Variables*

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	25	42	87	66.72	10.286
Weight__ kg	25	28	122	75.04	19.415
TCI Propofol Drip__mc/kg/im	25	120	180	152.20	14.725
TCI Total minutes of Propofol Drip_____ at _____ mcg/kg/min	25	136	424	267.56	83.959

Gender					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	F	12	48.0	48.0	48.0
	M	13	52.0	52.0	100.0
	Total	25	100.0	100.0	

Table 2 shows the specific variable in each of the analysis group: with gas or without gas, any of the results significant difference ( $p < 0.05$ ). The specific significance analysis is shown in Table 3.

**Table 2:**  
*Statistic Results According to Use of No Gas / Gas*

Group Statistics					
	Comments	N	Mean	Std. Deviation	Std. Error Mean
TCI Propofol Drip__mc/kg/min	No gas	13	149.23	12.221	3.390
	Gas	12	155.42	16.984	4.903
TCI Total minutes of propofol Drip_____ at _____ mcg/kg/min	No gas	13	271.69	87.298	24.212
	Gas	12	263.08	83.810	24.194
TCI Remifentanil Drip__mcg/kg/min	No gas	13	.17	.192	.053
	Gas	12	.20	.195	.056
TCI Total minutes of Remifentanil Drip_____ at mcg/kg/min	No gas	13	271.69	87.298	24.212
	Gas	12	263.08	83.810	24.194

\* The p value was  $\geq 0.05$ , no statistics difference between means in No gas/Gas

**Table 3:**  
*Comparison in the time until full response between groups with and without gas*

Group Statistics					
	Comments	N	Mean*	Std. Deviation	Std. Error Mean
TOTALTIME	No gas	13	21.69	12.473	3.459
	Gas	12	19.08	8.660	2.500

\*The p value was  $\geq 0.05$ , no statistics difference between Total time means in No gas/Gas

**Discussion**

The techniques used in modern anesthesia are safe and backed by extensive evidence based practice. However, anesthesiologists still need to find those combinations that improve the results for certain groups of patients. Therefore, ensuring a smooth awakening without agitation can be difficult. For example, a perennial challenge is head and neck surgery (eyes, nose, skull), where an agitated awakening can ruin surgical objectives or cause serious complications such as bleeding. Another current field of research is related to the impact of the chosen anesthetic technique on the spread of cancer. Therefore, achieving greater integrity of the immune system could help prevent the spread of cancer. It is no secret that managing to balance the administration of anesthetic drugs corresponds to the World Federation of Anesthesiology Societies (WFSA) motto: anesthesia is the art of the gods (DE ORUM ARS).

The modern anesthetic act differs significantly from the origins of this specialty. 5 The current rates of morbidity and mortality are minimal; however, advances do not stop in the search for better techniques for each patient/scenario. 6 Age groups, pathologies, surgical regions, or hospital/outpatient stays present different challenges. For example, in surgeries involving the head/neck region, the patient must have a smooth awakening without agitation and fast enough to allow early discharge. On the other hand, the anesthetic techniques used in cancer surgery should protect innate immunity to prevent the dispersion of neoplastic cells.

Inhalation anesthesia is the most widely used anesthetic method worldwide. Halogenated anesthetic gases have been extensively studied, and their adverse effects are essential knowledge for anesthesiologists. This is the reason why less toxic agents have gradually been adopted to specific cases. 7 Anesthesiologists always seek a smooth, rapid, and uncomplicated awakening. In three randomized groups (343 patients), the airway was guaranteed with a laryngeal mask, analgesia with continuous remifentanyl infusion, and awakening was randomized with *Sevoflurane*, *Desflurane*, or *Propofol*. *Desflurane* was associated with faster awakening and was not inferior to cough or laryngospasms compared to sevoflurane or *Propofol*. 8 In a similar study that switched *Desflurane* versus *Sevoflurane* for arousal in Fentanyl-based anesthesia, seeking a less irritating agent than *Desflurane*. This noninferiority study demonstrated that *Desflurane* had shorter recovery times without causing more significant airway irritation. 9

Oncological surgery currently occupies a high proportion of major surgery. There are various proposals to minimize the adverse effects of the anesthetic act and prevent damage to the immune system. A retrospective study of 120 patients undergoing radical mastectomy for breast cancer found that *Propofol* combined with *Sufentanil* reduced the incidence of dizziness, pruritus, headache, and emergence agitation. The authors recommend this combination to relieve perioperative stress and reduce pain perception. 10

An anesthetic method that slows the spread of cancer is highly recommended in

some preclinical studies where opioids are immunosuppressive and stimulate cancer growth through the  $\mu$ -opioid receptor. Also, it potentially facilitates metastasis/cancer recurrence. However, there is not enough information to confirm these findings in humans. Available retrospective studies tend to favor TIVA over inhalation anesthesia. The lack of more recent evidence to contradict these studies makes TIVA the currently recommended type of anesthesia if there are no individual contraindications. 11 Cellular immunity is only partially affected when added the transversus thoracic muscle plane-pectoral nerves (TTP-PECS) block in patients undergoing radical mastectomy. This combination benefits patients by modifying sensitivity to perioperative pain, shortening recovery time, providing hemodynamic stability, less response to stress, and greater safety with only slight suppression of cellular immune function. 12

It has been remarked that surgical aggression, inhalation anesthesia, and opioids can enhance the dissemination of neoplastic cells. This anesthesia technique is linked to immunosuppression, cell proliferation, and angiogenesis, providing an ideal microenvironment for tumor progression in the perioperative period. According to these authors, "immunoprotective" or "antitumor" techniques such as epidural anesthesia or *Propofol* are indicated to preserve immune activity, reduce catecholamines/inflammatory response, and prevent tumor dissemination. 4

Total intravenous anesthesia (TIVA) has been shown to be superior to inhalation anesthesia, providing better hemodynamic stability, rapid and smooth awakening, and being eco-friendly.

However, its ability to provide adequate anesthetic depth (potential intraoperative recall) is questioned. When comparing Propofol-Dexmedetomidine-based TIVA with Sevoflurane-based inhalational anesthesia in modified radical mastectomy hemodynamic stability, anesthetic depth, intraoperative recall, and recovery time were analyzed. In two randomized groups that totaled 100 patients, TIVA proved capable of providing adequate anesthetic depth with good hemodynamic stability and recovery profiles and lower cost (40 percent less) in an eco-friendly environment. 3

Authors such as Zhu et al. 13 use a Protocol focused on the last 30 minutes of the anesthetic act. In balanced anesthesia, it is common to combine *Propofol* and *Sevoflurane*. In this novel approach, the authors used *Sevoflurane* in these 30 minutes, given the greater predictability of this agent (98% excreted unchanged). 100 female patients (undergoing modified radical mastectomy) were studied. Anesthesia was based on *Propofol* for induction and *Propofol/Sevoflurane* for maintenance. The difference between both groups was established at about 30 minutes before the end of surgery when Sevoflurane without *Propofol* was continued in one group (Sev). At the same time, the other only received *Propofol* (Pro). The primary outcome was the time of emergency/extubation. Other secondary parameters were respiratory recovery, time in the post-anesthetic recovery unit (PACU), nausea, vomiting, dizziness, and agitation on awakening. The authors found shorter emergency/extubation times in the Sev group (most were extubated fully awake).

Respiratory recovery times and PACU stay were also shorter in the Sev group. There were no significant differences in the other secondary variables studied. The authors conclude that this novel balanced method of anesthesia can shorten emergency/extubation times and improve awakening without increasing adverse effects. 13

Head, eye, ear, and throat surgeries provide additional challenges to the anesthetic act because they require a gentle awakening to avoid troubling complications such as tears or bleeding. Kim et al. 14, conducted a comparative study of 82 patients for transsphenoidal pituitary surgery randomized into two groups: Sevoflurane inhalation with manual infusion of Remifentanil (Sevoflurane group) or effect-site target-controlled infusion of Propofol and Remifentanil (TIVA group). The emergence was faster with Sevoflurane and smoother in the TIVA group. The authors consider that both techniques are appropriate in this type of surgery after analyzing the quality of recovery on the second postoperative day. 14

Dangerous awakening can also occur in nasal surgery. According to Jo et al. 15, agitated awakening in nasal surgery is common and potentially dangerous because it increases the risk of injury/bleeding, pain, or accidental extubations. 15 These authors compared intravenous anesthesia with Propofol and remifentanil (TIVA) with volatile induction and maintenance of anesthesia (VIMA) with sevoflurane. In 80 patients randomized to two groups, the occurrence of emergence agitation was significantly lower in the TIVA group. This is another study where TIVA is recommended



over VIMA with the particularity that these nasal surgery patients can significantly benefit from a gentle awakening that avoids serious complications. 15

In ophthalmic surgery, avoiding/mitigating the elevation of intraocular pressure (IOP) is essential to prevent devastating complications in surgery. Chang et al. 16 consider that IOP is affected by different factors such as pneumoperitoneum, patient positions, and the anesthetic method used. 16 This study aimed to investigate the effects of Propofol-based total intravenous anesthesia (TIVA) and inhalation anesthesia on IOP. 980 patients from 20 selected studies were included. The TIVA group had significantly lower IOPs on anesthetic induction, position changes (including Trendelenburg), and pneumoperitoneum. Also, mean arterial pressure and peak inspiratory pressures were lower in the TIVA group. The authors conclude that Propofol-based TIVA is more effective in attenuating IOP elevations and should be considered particularly for patients at risk. 16

Vitrectomy under general anesthesia is considered an outpatient surgery, so the anesthetic method must guarantee high-quality post-anesthetic recovery. Na et al. 17, included 84 patients (20-80 years of age) in two groups randomized to receive total intravenous anesthesia with Propofol or inhalation anesthesia with Desflurane (both groups included Remifentanil effect-side TCI) for this type of outpatient ophthalmic surgery. The results of the Propofol group were significantly superior to those of Desflurane, particularly those related to patient comfort and independence. Emergence time was longer in

the Propofol group, and more Remifentanil was used with no other differences to note. The quality of anesthetic recovery with Propofol on the first day of surgery was significantly higher than with desflurane anesthesia. 17 Dental anesthesia in children contemplates a risk of delirium in the awakening period (ED). This term includes various behavioral disorders common in children undergoing general anesthesia Kocaturk & Keles 18 collected data from 116 patients (ASA I-II aged  $\geq 3$  and  $\leq 6$  years) for dental rehabilitation from two randomized groups: inhalational anesthesia with sevoflurane (SEVO) or Propofol-based total intravenous (TIVA). The incidence of ED was higher in the SEVO group that also coursed with greater pain. Parents in the TIVA group reported greater satisfaction. TIVA provided a more comfortable postoperative period (less pain), while extubation or recovery times were not increased. 18

In this study, Kim et al. 19 pointed out that Desflurane is known to irritate the upper airways, causing cough and laryngeal spasms. They hypothesize that Remifentanil might attenuate the cough due to its unique pharmacodynamic properties. Therefore, they investigated what would be the optimal dose of Remifentanil to suppress this response in Desflurane- or Sevoflurane-based anesthesia in elderly female patients. 43 patients (60-75 years old) were randomized to laparoscopic cholecystectomy with Sevoflurane or Desflurane. No differences were found in Remifentanil calculated doses to prevent cough in any group. They consider that it is not necessary to adjust the dose of Remifentanil when sevoflurane or Desflurane are the agents

of choice. 19

Emergence agitation (EA) in children is an unwanted problem after Sevoflurane anesthesia. There have been inconclusive reports on the use of Propofol in the wake-up period. According to Abbas et al. 20, a field where it has shown promise is in magnetic resonance imaging procedures. There are no reports on the use of this technique in general surgery. The authors randomized two groups to receive (or not) Propofol prior to awakening (64 patients 1-12 years old for inguinal herniorrhaphy). The Pediatric Emergency Anesthesia Delirium (PAED) and the Watcha scale were used. Time to awakening and length of stay in the post-anesthesia care unit (PACU) were also recorded. Using Propofol as a transition significantly reduced the incidence of AEs, although with non-significant longer recovery times. the PACU stay was no different. 20

Ensuring an optimal postoperative period is essential to stimulate living kidney donors to undergo this complex process. Han et al. 21 conducted a single-center study. 80 living kidney donors were recruited and divided into two groups where they received anesthesia with Propofol (IV-Propofol) or Sevoflurane (IH-Sevoflurane). They evaluated the data using the global QoR-40K score. Scores on all subscales (physical comfort, emotional state, physical independence, psychological support, and pain) were better in the IV-Propofol group than in the IH-Sevoflurane group. in addition, the incidence of nausea/vomiting was lower in the IV-Propofol group. The authors conclude that Propofol allows a better and early postoperative recovery; this would be an element to be

considered to convince undecided donors. 21

The surgical population over 60 years of age has been progressively increasing. According to Miller et al. 2 consider postoperative delirium an acute condition characterized by reduced alertness and attention disorders that can occur within the first 24-72 hours postoperatively. 2 However, postoperative cognitive dysfunction (POCD) may persist for weeks or months after surgery. The authors debate whether traditional inhalation anesthesia, with its risks of excessive doses in the elderly, could be advantageously replaced by propofol-based intravenous anesthesia with controlled target infusion (TCI). Advantages are attributed to TCI such as faster recovery, with less nausea/vomiting and, in theory, more precise when calculating the doses to be used. This Cochrane review article did not find the optimal technique regarding postoperative cognitive outcomes (very low evidence). They await another 11 articles in progress to give a more accurate opinion. 2

Landoni et al. 22 conducted a pragmatic, multicenter, single-blind controlled trial in 36 centers / 13 countries. The included patients underwent coronary-artery bypass grafting (CABG). The main hypothesis was to test the cardioprotective effect of inhaled anesthesia (Desflurane, Isoflurane or Sevoflurane) over total intravenous anesthesia (TIVA). The first results found in 5400 included patients interrupted the study due to futility. There was no significant difference in the proposed primary outcome (deaths at one year: 2.8% in the volatile anesthetics group and 3.0% in the total intravenous anesthesia group) or any other secondary outcome (including myocardial

infarction). 22

Kampmeier et al. 23 used a simulation model for hospital and outpatient scenarios comparing Propofol - TIVA (P-TIVA) vs. Inhalational Anesthesia (IA) from an economic point of view. They found lower rates of postoperative nausea and vomiting (PONV), shorter stay in post-anesthetic care units (PACU), and less use of antiemetics that match the costs of anesthetics, analgesics, and muscle relaxants when using P-TIVA. They conclude that maintenance of general anesthesia with Propofol was less costly compared to AI in both inpatients and outpatients, to reduce PONV and improve postoperative recovery 23

Anesthesia and cognitive function are a constant field of research. Robert et al. 24 applied the Aldrete's score to evaluate the cognitive functions of the patient before being discharged from the post-anesthetic recovery unit (PACU). The patient with Aldrete's score  $\geq 9$  would be ready to be discharged. The objective of this study was to determine the cognitive status of patients undergoing anesthesia with desflurane or Propofol. 60 patients for hip or knee arthroplasty under general anesthesia were randomized into two groups: desflurane or Propofol. The differences between both techniques were insignificant, although 10% of the patients at the time of evaluation still had some cognitive dysfunction. 24

Schraag et al. 25 performed a meta-analysis of 229 RCTs (20,991 patients) to determine if Propofol-based anesthesia is beneficial/advantageous over inhalation anesthesia. Post-operative nausea and vomiting (PONV) was the primary outcome and considered postoperative pain, emergence

agitation, hospital stay, post-anesthetic tremor, and hemodynamic stability as secondary outcomes. There was a lower incidence of PONV with Propofol. Propofol also reduced pain after extubation and time in the post-anesthetic recovery room. Times to respiratory recovery and extubation were longer with propofol, while patient satisfaction was higher. According to this meta-analysis, Propofol-based anesthesia has some advantages over inhalation anesthesia, but the clinical and economic importance of these findings remain to be elucidated. 25

Sepúlveda et al. 26 studied the phenomenon of "neuronal inertia" to explain the variations in doses observed at the beginning and on awakening from general anesthesia. The effect of hysteresis is also involved and is independent of drug pharmacokinetics. This theory would provide a new approach for the best calculation of the doses to be labeled. 26

In summary, anesthesia providers research daily which technique would be the most beneficial for their patients. Achieving a smooth awakening (no cough or agitation), but at the same time fast (no delay in awakening), minimizing post-operative delirium states/impacting patient's immunity, as well as achieving better economic objectives is an almost "handmade" task as already was mentioned.

The anesthetic act is made up of a delicate balance between the physiology of the patient (and their comorbidities) and the experience of the professional. Modern anesthesia is aided by specific monitors (anesthetic depth, muscle relaxation, mechanical ventilatory function, among others), adjuvant drugs (non-opioid

analgesics,  $\alpha$ 2-adrenergic receptor agonist), or by combining different anesthesia techniques (inhalation anesthesia, TIVA, peripheral blocks or regional anesthesia). 27 Again, selecting a particular method among all this available arsenal depends on the professional in charge.

Our study aimed to determine if combining intravenous and inhalational agents could provide better results in reducing agitation on awakening without unnecessarily prolonging the anesthetic act. We did not find significant advantages when combining inhalational anesthesia with TIVA; however, given the results obtained, it would be relevant to evaluate other aspects such as economics or those related to environmental contamination to select the most appropriate option.

Meanwhile, the anesthetic act must have a balance between the expertise of the professional, the techniques to be used and the clinical considerations inherent to each individual patient.

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## Female Leadership in Higher Education Institutions in Puerto Rico: Voices of Today's Women Leaders

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### **Keywords**

leadership, female leadership, gender equality, postsecondary institutions, higher education, Puerto Rico, Leadership in Puerto Rico

### **Abstract**

This research article explores the voices of current women leaders in higher education in Puerto Rico to learn how they grew as professionals, how they prepared for their leadership role, the challenges they faced and face today, and what other women can learn from their experience. It provides a historical background of education institutions in Puerto Rico from its inception and its formation in higher education. **Methodology:** Semi-structured interview was used as a data collection strategy for this research were conducted with 10 participant's women leaders in higher education institution, both in the private and public sectors of the country. The research was developed with a qualitative method and applied instruments such as his research based on their experience and professional data collection through interview questions guide. **Result:** Our analysis shows a strong correlation between the 10 interviewers that express several keys facts based on the collection data; Educational preparation plays a vital role in the face of professional growth; a sense of the responsibility for the own decision without justify for personal circumstances for being women leaders on professional areas; self-esteem and confidence based on the knowledge and professional performance. **Conclusions (discussion):** The participants have a broad and significant academic background, who have continued their studies and training even with full-time jobs and families to care for. They were interested in being lifelong learners, to face the adversities that come their way. In the same way, they recommend that future women leaders and institutions provide the necessary tools to create cultural equality in the educational institutions of the pair for the future.

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## Introduction

The development of higher education institutions in Puerto Rico started in 1903, when the law to establish the University of Puerto Rico (UPR) was approved. This law ordered the UPR to offer education in literature, science, arts, agriculture, mechanical trades, and develop new professionals in medicine, law, engineering, pharmacy, and education ( Mellado Parsons, 1977). As explained by López Yustos (2016), the University of Puerto Rico was the result of a project that considered the best educational models in the United States. Before being established as a university, in 1901, UPR started as a normal school that only required sixth grade or equivalent to start studies. At that time, it offered two programs, one for two years, and another for four years (López Yustos, 2016). But, in 1910, the UPR started to develop new departments and academic offerings, the first one was the Department of Liberal Arts and after that, other departments started. The UPR continued to growth and today it is considered the first teaching center of the island, with 11 campuses, with regional accreditation and hundreds of academic programs with professional accreditations.

The second higher education institution to be developed in Puerto Rico was the Interamerican University of Puerto Rico, which was founded in 1912 as the Polytechnic Institute. The growth of this institution was slow, but after World War II and the Korean War, the number of students grew (López Yustos, 2016). In 1921, the institution started to offer its first university department.

Today, the Interamerican University is a recognized institution with campuses in San Juan, San Germán, Ponce, Guayama, Fajardo, Bayamón, Barranquitas, Arecibo, and Aguadilla.

Through the history of the education in Puerto Rico, women have played an important role, which includes the foundation of higher education institutions. After founding elementary and secondary school for girls back in 1880, Mother Micaela Ferrer received governmental approval to open the College of Sacred Heart. This college admitted only women until 1978 (López Yustos, 2016). Today, this university offers associate degrees, baccalaureate degrees, combined degrees, masters, and post-baccalaureate certificates in the areas of Natural Sciences, Business Administration, Communication, General Education, Arts, Design, and Creative Industries. In addition, it offers unique baccalaureate degrees in Puerto Rico, such as Multidisciplinary Studies and Dance.

Another institution founded with a female leader was the Puerto Rico Junior College. This institution was founded in 1949, after World War II, when benefits for veterans were approved, resulting in a high demand for higher education degrees. By the 1970s, this institution evidenced great development due to a re-organization under the Ana G. Méndez Foundation (López Yustos, 2016). In 2017, while celebrating their 70th anniversary, the institutions of the Ana G. Méndez University

System change their name to Ana G. Méndez University.

Today it is still evident what Mellado Parsons (1977) stated, when affirming that the education that is offered in private and public institutions in Puerto Rico has experienced great developments. As evidenced in the directory of higher education institutions, published by the Puerto Rico Board of Postsecondary Institutions (PRBPI), there are currently 53 higher education institutions (Departamento de Estado, 2022). When examining this directory, 43% of the institutions are led by women. The fact that there is only a 7% of difference between male and female leadership, evidences the important role that women have in higher education institutions. Considering this, it is important to hear the voices of current women leaders, to be able to learn how they grew as professionals, how they prepared themselves for their role as leaders, the challenges they faced and currently face and what other women may learn from their experience.

### **Review of Literature**

De Jesús Cancel (2002) conducted a qualitative study based on the experiences of five school principals in the Puerto Rico public education system. Through her study, she described their experiences in the school environment, analyzed them to determine the way in which they exercise constructivist leadership. De Jesús Cancel explained that the theory of constructivist leadership can be seen reflected in the dynamics of decision-making, communication with staff, support obtained, handling of problems with the school community and actions to reduce stereotypes in the workplace. In addition, social and gender

aspects that have facilitated or hindered the administrative practice of these education professionals were investigated. According to the interviews carried out, the directors tend to exercise a constructivist leadership style to the extent that they try to be democratic in decision-making, seek to encourage dialogue, participation, and expression of others, recognize academic and teaching achievements of the members of their faculties and give special importance to the human aspect when intervening with behavior problems or those related to the school community. However, they have faced opposition from male colleagues as they question their leadership and decision-making power. In addition, they point to partisan politics and the traditional roles assigned to women as obstacles to exercising their leadership.

Since the primary purpose of the research by De Jesús Cancel (2002) was to describe the experiences of five school principals, methods of a qualitative nature were used. Information was collected through interviews and analyzed as case studies. To establish generalizations based on the findings, the collective case design was implemented. Verbatim quotes from the participants were included to illustrate the realities of each one, the differences between the respective processes and the meaning that each one assigns to her experiences. To complement the collection of information, non-participatory observation was carried out during meetings of the directors with the School Faculty.

Based on the information collected, De Jesús Cancel (2002) was able to identify factors that answered her research questions and identify

others that emerged during the process. The administrative experience among the participants varies in its extension, fluctuating between 2.5 and 21 years working as school principals. However, all the interviewees had previous experience as classroom teachers. Previous experience as teachers marked how the principals eventually projected themselves as principals. Upon moving to a leadership position as school directors, several of the interviewees pointed out that their experiences as teachers made them understand the need for leadership that would allow the participation of the rest of the Faculty (teachers) and the school community. This influenced the exercise of their leadership, prompting them to exercise democratic leadership, open to dialogue and negotiation.

Interestingly, as explained by De Jesús Cancel (2002), two of the interviewees considered that their gender gave them certain advantages to exercise effective leadership. They point out among these, greater courage, more commitment and responsibility. Also, their social roles as women and mothers allows them to develop greater empathy when facing difficulties with students and their mothers and/or fathers. On the other hand, it was found that the interviewees had female figures who served as support in the exercise of their work as directors. All indicated that these mentors (who were identified as more experienced directors or officials with high administrative positions) served as a guide and inspiration to carry out their work. In general, De Jesús Cancel (2002) identified that mentoring is an important factor in the development and retention of new leaders in the educational

work environment.

However, among the factors that harm the exercise of effective leadership, the limitations and processes established by the collective agreements that regulate the functions of school personnel were pointed out (De Jesús Cancel, 2002). The traditional and stereotyped perception of women's roles in society is also identified as a problematic element for the exercise of effective leadership. Regarding this matter, only one of the interviewees had developed a specific initiative to educate the school community on gender equity.

Having investigated the leadership of women in school administration, De Jesús Cancel (2002) concluded that constructivist leadership presents a model that encourages the participation of women in leadership positions. She proposes the revision of the administration and supervision programs offered by university institutions, to integrate into the same concepts such as constructivist and inclusive language, teamwork and the identification and elimination of sexist practices. In the work scenario, she concludes that it is necessary to implement administrative practices that improve the organizational climate, encourage the participation of all components, and recognize and reduce traditional leadership styles. In addition, she recommends the use of inclusive language and the identification and eradication of sexist behaviors that perpetuate gender stereotypes. Considering another study, Morales -Román (2012) reveals that "women have achieved a transformation through doctoral level studies in Adulthood. They have managed to obtain and stand out in leadership positions in various



fields,” but there has been an increase in the field of educational administration and supervision. According to the case study, the author shares various data that support the increase in adult female enrollment, compared to the increase in adult males. There is evidence of an increase in the enrollment of middle-aged adult women, both in Puerto Rico and in the United States. From the data exposed in the study, Morales-Román (2012) details that, in Puerto Rico, according to the UPR Student Profile in 2006, the percentage of women admitted to master's programs was 68.3% and at the doctoral level it was of 61.6%. In the United States, approximately 70% of adult students are female.

Morales-Román (2012) carried out a qualitative case study in which the purpose was to explore and analyze the life experiences of three adult women aged 45 years or older. Her interest was based on knowing the motivations that women had in entering the Graduate Program in Educational Administration and Supervision and the experiences they face as graduate students during the development of the necessary skills to become leaders. To collect data, the author used an interview model, which consisted of a series of three separate interviews with each of the women who participated in this research. In the first interview, the participant had to narrate her life experiences that motivated her to enter her doctoral program, after the age of 45. In the second interview, the participant had to expose the experiences that she faces as an adult woman when she becomes a graduate student, after 45 years of age. In the third part of the

interview, the participants had to reflect on the meaning of these lived experiences narrated in the first two interviews. According to the author, the in-depth interview technique (individual) was used because it is possible to know what the participant thinks, believes, how she interprets her world and what meaning she uses and handles. To analyze the qualitative data, the author used the analysis stages of Wolcott (1994), which consists of the description stage, the analysis and finally the interpretation.

According to Morales-Román (2012), among the findings of his research, it is detailed that the participants have felt motivated to obtain a higher academic degree to achieve a rising position, feel personal satisfaction, desire to improve and acquire greater knowledge that enables them to help others and contribute to society. Regarding life experiences, the participants expressed that they are grateful to their family, that they received support, confidence, and motivation from them, which, in the same way, motivated them to continue focused on achieving their goals. The participants expressed that making the decision to study in adulthood entails great challenges, but that the most important thing is to face each challenge with effort and dedication to achieving the goals of their life project. They agree that it is possible to study at an adult age, they are achieving it and want to be an example for their family and society. The members of the study affirmed that they value the work experiences they have had because they have allowed them to acquire experiences and knowledge that have made it easier for them to understand the role played by a leader

and have developed new skills. They agree that having a support network is essential for achieving the established goal and they had it from their peers, family members and teachers.

In the study, the participants offer a series of suggestions and/or advice to other students who decide to study in adulthood, these are: develop a topic of interest for the dissertation from the beginning, learn to be flexible with oneself to cope with the challenges in the study process, strengthen self-confidence, identify strengths and weaknesses, be organized and create a work plan to be able to fulfill all the functions that a woman has. They emphasize making a balance per semester between the courses of greater complexity. They recognize the importance of having a support network with whom they can share their academic and personal concerns. One of the participants indicated the importance of reading and keeping up to date with professional literature.

After the statement made by the author (Morales-Román, 2012) that "women have achieved a transformation through doctoral level studies in adulthood" and based on the information collected, she reaffirms that there has been a transformation from woman to leader. She explains that the participants start doctoral studies with professional experience and skills. During the study process they develop new knowledge, new skills and competencies as well as demonstrate intellectual capacity and continue to evolve to be part of a transformation. In this process of transformation and in the face of the responsibility of being mothers, wives, daughters, housewives, students, professionals,

etc. they assume the commitments and the new goals in their academic life.

In summary, Morales-Román (2012) perceives that the participants were influenced by stereotypes and social expectations. They chose to fulfill the traditional roles established by society of being mothers, wives, caregivers, etc. before continuing with university studies, but the values instilled by their family towards education and self-improvement were fundamental and motivated for them to make the decision to continue university studies. The participants expressed that they felt satisfied with themselves and their abilities, but that achieving a higher university degree was a way of being recognized, appreciated, and rewarded.

Considering another study, Rivera Rivera (2014) investigated the role of the educational leader during the implementation of a school transformation model implanted in a school of the public education system of Puerto Rico. In her study, the author describes various educational leadership practices used during the project for the development of effective teachers and leaders. The research focused on the experiences of the school director and ten other participants among teachers and support staff (including seven females and three males).

The study of Rivera Rivera (2014) was based on a mixed methodology of convergent design. It consisted of a case study through which the elements to be investigated were established. Having established the factors, the strategies of direct observation, interviews and document analysis were combined. Since convergent research combines elements of qualitative and

quantitative research, both approaches were combined, thus it was intended to collect both types of data simultaneously to better understand the research problem. In the quantitative aspect, the organizational culture was explored. The qualitative aspect was dedicated to collecting data and experiences through focus groups, non-participatory observations, and an interview with the school principal. The focus groups were dedicated to evaluating the implementation of the transformation model and the role of the leader in this process.

Regarding the aspects of the exercise of leadership by the school principal and teachers, Rivera Rivera (2014) reflected that the practices of participation and collaborative decision-making, effective supervision, two-way communication, and openness to change, are factors that favor effective leadership on the part of the school director and provokes an attitude of greater openness and commitment on the part of the faculty. Other attributes related to effective leadership were the capacity for motivation, creativity and initiative, integration, and delegating responsibilities. The transformational leader is described as one who develops a vision, sets goals and can lead and direct others towards them. During the interviews several participants recognized these qualities in the school director.

Rivera Rivera (2014) concludes that, in the educational field, effective leadership must be based on the propulsion of change through the participation of all the people involved. The effort must be directed to goals and results established in common agreement.

It recognizes that it is necessary to train staff in educational institutions in transformational leadership skills, valuing human resources, and increase the participation of people, delegate tasks, recognize and reward effort and compliance with the established goals.

Salcedo Oquendo (2017) also conducted a study related to female leadership in the context of higher education. The main objective of Salcedo Oquendo was to explore how women who held the position of Chancellors in three different institutions of higher education exercise their leadership. The principles of transformational leadership were identified in the ideas and practices of the participants and the information was handled from a feminist perspective (and the influence of the feminist paradigm in education). In this regard, the author asserts that the didactic environment contributes to establishing equity between the genders and projecting women as capable leaders when they incorporate the feminist paradigm in the exercise of leadership. However, the reality in higher education settings is that, even though the student population is made up of more females than males, leadership positions in the educational context are mainly occupied by men (Díaz, 2013; Puig Díaz, 2000, cited by Salcedo Oquendo, 2017).

Using semi-structured interviews, observation techniques, document analysis, and multiple case studies, Salcedo Oquendo (2017) collected qualitative information to explore how women in leadership positions in educational settings perform their roles as leaders, and to identify the principles or characteristics of their

leadership style. All the participants in this research were interviewed in their work environments as recommended by Creswell (2009, cited by Salcedo Oquendo, 2017), having carried out interviews and observations in the university institutions where they work.

The observations performed by Salcedo Oquendo (2017), facilitated the understanding of the context and organizational culture where the participants operate. Detailed information was collected on the behavior of the participants during the performance of their duties and interactions with the work team. The language used, observations on facilities and dynamics in staff meetings. On the other hand, the evaluated documentation consisted of official public documents, letters and emails without a private record, and minutes of meetings with the work team.

For the analysis of results, Salcedo Oquendo (2017) identified categories, subcategories, and descriptors (For example: Category Leadership contains the subcategories "planning", "collaboration" and "motivation"). It was possible to identify characteristics of the transformational leadership style, both in the ideas and in the execution of all the interviewees. In addition, they demonstrated the ability to incorporate gender perspectives in the execution and evaluation of programs and in the implementation of public policy that transforms power relations and the stereotypes that persist among some sectors.

Regarding female leadership, and as explained by Salcedo Oquendo (2017), the participants agreed that reaching a leadership position was based on extensive previous

experiences in positions as professors and/or deputy directors in institutions.

In addition, they shared characteristics such as confident but not authoritative projection, a firm tone of voice, good diction, and inclusive vocabulary. Other common elements were the search for consensus between the parties, the establishment of common goals and the delegation of tasks. The document reviewed evidence of detailed planning aligned with the vision, mission, and goals of their respective institutions. The use of an inclusive vocabulary aimed at concrete actions and the public acknowledgment of the achievements obtained by the work team was another common element for the exercise of effective leadership. However, the perception of the concept of feminism in educational practice in very different ways. Although they agreed that being a woman does not imply being inferior, they mentioned that women need more self-confidence. That the female gender can compete, exercise leadership, and achieve goals. In fact, one of the participants expressed that there are many more women with so much capacity for learning, for innovation, for strategies, for being able to adapt to changes, so important, that I think it is a type of leadership of the future.

On the other hand, Salcedo Oquendo (2017) also identified factors that impede women's access to leadership positions. Among these, the lack of self-confidence, maleness in work environments, gender discrimination, and the generalized notion that women do not have the capacity to be an effective leader. Among the conclusions reached by Salcedo Oquendo's

research, it emerges that a transformational female leadership, integrated into the gender perspective, contributes to the elimination of gender-based stereotypes, and proves that the leadership exercised by women is not a weak one. or unable to bring change. However, the obstacles to face are several and difficult. According to the data obtained, women in leadership positions are constantly forced to test their ability. This implies long working hours and facing stereotypes, discrimination, and a lack of equal opportunities.

Salcedo Oquendo (2017) concluded that the female gender has skills and approaches to the exercise of leadership. These include participatory and transformative leadership, and the ability to recognize the value of the work of others. The exercise of these leadership qualities contributes to eliminating stereotypes and is a platform for women to demonstrate their abilities, promote and transmit gender equality in the educational environment and in any other.

Tábora Tirado (2016) conducted a study to examine how women leadership in universities influences the construction of their perceptions about their exercise of leadership. Tábora Tirado also explored the strategies women leaders used to interact with the academic community based on their identity and their exercise of leadership. To guide her study, Tábora Tirado formulated the research question: How the positioning of women who occupy leadership positions in the high university management is linked to the construction of their perceptions about the performance of your leadership? to be able to

answer this question, other subquestions were formulated: How do women who hold leadership positions in senior management university perceive their identities in the exercise of their leadership?; What strategies do women who occupy leadership positions in senior management use to build their interactions with other members of the university community from their identities?; How do women who occupy leadership positions in senior management university perceive the exercise of their leadership in their relationships with others members of the University?

On the other hand, there are also challenges. Challenges that go through the process of leading. Such as the cultural challenges that Cruz Meléndez (2002) mentions in her thesis,

The main results show that the leaders begin their development from adolescence and that they develop in stages, the challenges faced by these leaders are professional, personal and cultural challenges. The cultural challenges are the most difficult to overcome, stereotypes being the most difficult to overcome. (p. iv)

The writer also mentions in her study the struggle and sacrifice to break with social paradigms and the inequality that exists even in the 21st century. That is why she promotes the work and study of women's leadership and brings it as part of its limitation in the study, "the main limitation of this research was that the number of women in leadership positions is limited of women in leadership positions is limited (Cruz Meléndez, 2002, p. 3).

Moreover, Puig Díaz (2000) also took into



consideration those factors that may benefit women in regards of acquiring a leadership position in an institution of higher education. Nevertheless, the women that participated in the study also made the remark that there are factors that may limit women's ascent to important leadership positions, which include but are not limited to: discrimination, institutional context, and personal responsibilities with their families. It is curious to note that, when offering recommendations on how to address these limitations for women that aspire to acquire leadership roles, one of these establishes that women should be educated and made aware of their social responsibilities. This recommendation can arise from the fact that women can also face personal challenges, specifically in their household. The writer emphasizes on the social expectancies of women to take charge of their household tasks on an imbalanced manner when compared to the expectancies placed on their male partners. It is why the author also remarks on how sometimes marriage and childbearing frequently interfere with women's careers, their goals, and their ability to ascend to higher ranks within their leadership positions (Puig Díaz, 2000, p. 41).

### **Methodology**

This research was developed with a qualitative method that had the purpose of describing the experience of 10 female leaders in higher education institutions in Puerto Rico. This type of research focuses on describing the reality of participants, how all events occurred, and the meaning participants give to their experience (Creswell, 2018). Specifically, this research used a case study approach, which

requires the design of a method that allows the deep examination of a particular experience. As explained by Yin (2018), with a case study, the researcher seeks to explore a problem or phenomenon in a real context. Yin indicates that a case study can be used on different occasions and allows us to acquire new or more knowledge about individuals, organizations, or groups. Considering this, we understood that this methodology was the most appropriate to reflect about female leadership in higher education.

The following were the research questions that were formulated:

1. What is the profile of women who hold leadership positions in higher education institutions in PR?
2. How do women currently in leadership positions in higher education institutions describe their professional and educational development?
3. How do women leaders in higher education institutions describe their current experience?
4. What are the challenges faced by women leaders throughout their professional development?
5. What recommendations do women leaders offer to other women who aspire to occupy leadership positions?
6. What recommendations do women leaders offer to post-secondary institutions to encourage and support future women leaders?

The research was conducted in higher education institutions in Puerto Rico. The researchers examined the current directory of higher education institutions published by the Puerto Rico Board of Post-Secondary Institutions. A total of 53 institutions are

included in this directory, from which 24 are led by women, representing the 45% of the institutions. Ten (41%) of these institutions currently led by women were identified. In terms of the participants, as explained by Creswell (2018), in a qualitative study, the participants are intentionally identified and selected, to be able to understand and study the phenomenon. As part of this process, the researchers contacted the women that led the institutions to identify their availability to participate and to determine if they meet all criteria, including at least five years in the current position.

The semi-structured interview was used as a data collection strategy for this research.

According to Lucca and Berríos (2003), the semi-structured interview is an approach that allows deepening the knowledge about a certain process, group, situation, or experience that involves the participants. The semi-structured interview is an indirect way of obtaining information, but unlike group sessions, interviews are conducted with one person at a time (Lucca & Berríos, 2003). This type of research technique can last from 30 minutes to more than an hour, depending on the topic and the dynamics of the interview (Lucca & Berríos, 2003). On the other hand, the interview is the most reliable means of in-depth research as opposed to the survey method (Lucca & Berríos, 2003). For this reason, a semi-structured interview was chosen for this study. The guiding questions were prepared in accordance with the purposes of the research.

According to Creswell (2018), after the questions are built around the research

questions, it is not necessary to formulate many questions. The role of the researcher is to get involved in the conversation, to understand the experiences of the participants (Lucca & Berríos, 2003).

In this context, Creswell (2018), points out that, to avoid generalizations, participants are asked to offer concrete examples. Also, the semi-structured interview is developed using various techniques, for example, the direct question can be used, or the question can be framed in a preamble that alludes to the subject under investigation (Creswell, 2018). A total of 16 questions were formulated to collect data about the participants experience as female leaders and the perception of what leadership is.

## Results

The results were obtained through the 10 interviews that were conducted with female leaders of higher education institutions. The collected data are going to be presented by each formulated research question. The first set of questions were formulated to describe their profile by identifying their leadership position in the institution, the number of years they have been in that position and how they obtained the position. The following table presents the results.

**Table 1.**  
*Profile of participants*

Participant	Position	Years in Position	How was obtained
# 1	Dean of Nursing	2.5	Responded to a job call
# 2	President	25	By succession
# 3	Associate Vice-President of Libraries and Technologies	23	The current position is result of changes in administration
# 4	Chancellor	3	Named by the President
# 5	Chancellor	1	Responded to a job call
# 6	Associate Dean	1	Named by the Dean
# 7	Chancellor	4	Responded to a job call
# 8	Dean	6	Responded to a job call
# 9	Associate Dean	5	Named by the Dean
# 10	Chief Executive Officer and Dean	7 as Dean, 7 months as CEO	Named by the President

To be able answer the second research question, the participants were asked to describe their professional and educational development. Participant 1 indicated that in the past she worked with other institutions, and she held other leadership positions, such as director and coordinator. This type of position prepared her for her new role. The same type of professional development was described by Participants 3, 5, 6, 9 and 10. These participants held different leadership positions throughout the years, including director, dean, vice-chancellor, and vice-president. On the other hand, the experience of Participant 2 was different, since she was an engineer for a private corporation. She was named President of the institution after the death of her father, who founded the institution. She became leader of the institution when she was still a young adult (27 years), and for her this was the most important challenge. Like this participant, Participant 4 did not hold a leadership position in a higher education before this one. In the past she worked in sales, she developed her own business and was also a teacher. Participants 7 and 8 described a similar development, since they worked as professors for several years before their current position.

After describing their professional development, it was considered necessary to identify their educational background and if they have received any formal education or training related to leadership. The results evidenced that four participants have received formal training in leadership. Two of them completed graduate courses related to leadership and the other two indicated to

receive training related to leadership. The other six participants indicated that they do not possess any specific training or formal education related to leadership.

Through the third research question we wanted to identify how the participants described their current experience as leaders in a higher education institution. Two participants described their experience as a great learning experience, since they have been able to learn about the institution, the different processes and how keep growing. Another participant said that her experience has been satisfactory. She has developed support networks. She expressed that her previous experiences have helped her the most in her leadership process. She specified that in her workplace there is a homogeneous number of men and women and described that in her work area there is a very healthy environment that, although there are conflicts, the exercise of decision-making has always tried to be as participatory as possible within of the circumstance. She has developed both personal and professional support networks. In personal terms, she explains that with her husband the exercise of respecting spaces, distributing tasks in managing the family and raising children was never a difficult issue to manage. At times, tensions could be generated by the expectations of how time management was going to be distributed, but that happens in all families because it is a family dynamic. On the other hand, in the work area she explains that in the spaces she has been, they are very flexible, open, and welcoming spaces.

When answering the previous question,

another participant said that her role as leader represents a daily challenge, but she feels like she has a very good support group. She feels that when there is a project, that project is carried out thanks to her team, but with her as the head of the team. She believes that we must redesign ourselves, it's a matter of day to day working with the situation and being able to handle it to see what you achieve. Many times, it is achieved, other times it is not, and it is necessary to redesign itself, the participant verbalized. Another participant also described her experience as a challenge because she is now the boss of the people who were her teachers, so it has been a transition in terms of how they see her. The first step for her was to win over these people little by little; so, they believed in her. She explains that when people see that little by little what is established is being achieved, they gain their trust.

When describing her experience as a leader, one of the participants acknowledges the fact that she feels that she has earned that position with a lot of work. She describes herself as a workaholic because she spends a lot of her time working. One aspect that was mentioned by all the participants is the fact that they must work hard to earn the respect of employees, they work a lot, and they have been learning in the process.

After learning about how the participants describe their current experience, it was considered necessary to identify the challenges they have faced throughout their professional development. Participant 2 described the great challenge she faced when

accepting the Presidency of the institution after the death of her father. In her case, the challenge was in her personal and professional life. But she acknowledged that the greater challenge was internally (from the family) and more sexism because she noticed that people were asking two things, first, why she was the president and if she had brothers or not. Because of her experience, she understands that a woman must prove herself twice, for example: being a leader, being a female leader, having a family and having multiple roles. Participant 3 described similarly the challenges, since she indicated that "When you are a young woman and have a group of men under your responsibility, you have to psychologically, identify the characteristics that each of these employees have in order to use them to the maximum, that is one of the challenges that one has in these positions". On the other hand, Participant 4 acknowledges how women leaders are seen by society, she expressed that "The stamp that they (society) put on us when we are mothers because they understand that due to our commitment as mothers, we cannot dedicate the time to the position." She added that she had that experience when "They told me, the institution is interested in you occupying X position, but I am concerned that you have a little girl." She verbalized that the person who made the comment was a macho woman because she "said to me: and you're married, and we don't want the spouses to visit or come looking for you". Participant 7 also expressed that her great challenge has been working with a big group of men, it is difficult to earn their

respect and be sure that her opinions are considered. Lastly, Participant 10 expressed that her greatest challenge was to earn leadership positions in the institution. She always feels that she needs to work harder, she needs to speak "loud" to make others hear her voice and demonstrate great character.

After hearing about the past and current experiences of the participants, we considered necessary to hear their recommendations to other women who aspire to occupy leadership positions. Participant 2 started her answer by acknowledging that, currently, women are studying and preparing themselves for leadership positions, and as time passes by, there are going to be more women leaders.

Her recommendation was to be sure to be prepared when accepting this type of position, this same recommendation was offered by participants 5, 6, 7, 8, and 10. Participant 3 expressed that women need to be "extremely responsible, and never use their family and children as an excuse, for example, say I can't get there because my son is sick". She explained that "there has to be some way to negotiate with someone else, be the father or some other family member who can collaborate." The participant explained that "there are extreme situations where both the father and the mother have to make a decision and give priority to that aspect." Participant 4 also offered specific recommendations, she expressed that: "First, you must believe in yourself; you need to learn from all the opportunities offered to you along the way; show others that you are sure of yourself, do not hesitate. Do not present yourself with

doubts, this is very important to achieve a leadership position; be prepared to take risks; and, finally, you must be a mother, wife, daughter, etc. You have a family that at the same time you must educate, because if you don't educate your family, it will be more difficult for you to reach leadership positions". This participant acknowledged that a woman needs to prepare her family and do not feel bad when her position requires more time because, at the end, the family learns and appreciates her role.

The recommendations offered by Participant 7 were interesting, since she indicated that the recommendation varies considering the age of the women. "For example: if you can prepare, study, educate yourself before having children, it will help you. If you already have children, things get complicated because the employer can give you all the necessary support, but for those of you who have children, everything changes. Time must be divided between studying or preparing yourself with your baby and going to work". She verbalizes that the lives of some women with children are paralyzed because they don't have the time to study, but she also explains that there are other women who can do it. "I would tell them to educate themselves as much as possible, education is paramount. If they can have their own business, even better, because you don't have anyone that prohibits you from making your future the way you want to do it. The key is to study."

The last question during the interview had the purpose of identifying recommendations women leaders can offer to higher education



institutions to promote and support women leaders. Participant 3 acknowledged the institutions should look for "some salary equity" she explained that "in terms of salary, a man always ends up earning a salary higher than that of women". "Unquestionably, women sometimes do two or three functions that men do not, without underestimating the work that men do." Other recommendations offered by the other participants include: Respect for the female gender; Woman should be given the space to speak; for her to show what she knows, what she thinks and to contribute ideas in the process; If you see another woman with potential and tells you that she wants to continue studying, let her do it. Make agreements, consider flexi time, offer development training; Offer spaces for communication, spaces where opportunities for critical thinking and decision-making arise; Universities change their mentality and see women with potential; Educate the presidents of institutions about the role of women and how they can contribute to education.

### **Conclusions**

In general, the participants, current women leaders in higher education institutions in Puerto Rico, are middle-aged adult women. They all have extensive, significant academic preparation. They are fighting women who have continued their studies and training even with full-time jobs and families to care for.

This speaks of their capacities as administrators and strategists (in the professional and domestic areas). There is a tendency to grow within the same institution, instead of moving from one work center to

another. In general terms, they show loyalty, interest, and initiative to implement changes and strategies for the benefit of their workplace and those who work with them. Another feature that was identified is that they tend to encourage delegating tasks and open spaces and opportunities for growth to their subordinates.

In terms of their professional development, they shared a series of experiences and opportunities (sometimes they tried to find the opportunity, other times the opportunity found them). The desire to face the opportunity and interest in being lifelong learners is repeated. Most admitted that experience was the main factor in their formation as leaders. Few mentioned having had formal education in leadership styles or strategies. This shows that the effective exercise of leadership is a skill that is gained more through practice than through theory.

When they described their experience as women leaders in higher education institutions, the description depended a lot on the professional environment in which they operate. A factor that was repeated in several interviews was participatory leadership, where tasks are delegated and opportunities for learning and growth are given to the work team. In addition, they consider emotional and affective aspects within the professional relationship and, at times of disagreement or conflict, ensure that they know the subject in depth and defend their points of view with well-documented and updated information. The importance of having a deep understanding of the nature of work and modeling a leadership

style based on example and knowledge are highlighted. Inevitably, the impact of Hurricane Maria and the difficulties it imposed was a scenario that several of the interviewees identified as particularly challenging for their leadership. However, they managed to exercise effective and inspiring leadership to gradually resume the functions of their workplaces.

In terms of the challenges faced by women leaders throughout their professional development, some challenges that were repeated in the interviews were the fact of having to test their abilities with a frequency and intensity that is generally not required to men. Another factor was questioning their decisions, from colleagues, friends, and family. The lack of support at the family level, adverse opinions adverse to their aspirations, and the macho institutional culture also represented significant obstacles to their professional development. As self-imposed barriers, they mentioned questioning their own decisions, and a sense of guilt for "occupying family time" with professional matters.

Finally, the first thing that most of the interviewees mentioned when offering recommendations to other women aspiring to occupy leadership positions was to overcome fears of the unknown and the opinion of others. Taking the initiative to identify and take advantage of opportunities, obtaining the best and most up-to-date knowledge in their field were other recommended measures. Being available to occupy positions in committees and organizations, even if this requires dedicating more hours of work. An important recommendation

is to achieve the support of the family and to educate the family and support system about the importance and benefits they can obtain by supporting their professional development.

In terms of the recommendations they offered to higher education institutions to foster and support future women leaders, it is necessary to acknowledge the need to provoke changes in cultural paradigms and customs that are repeated (such as assuming that women cannot be leaders because they need to dedicate more time to their families than men, or that women cannot be effective leaders because they are women), give opportunities for growth to the staff who already work with them. Open senior management spaces to be occupied by women. Offer continuous education to staff so that they can identify and eradicate gender bias or discrimination. Lastly, one relevant recommendation is that "institutions should generate campaigns and educate to achieve changes in their institutional culture (from students to faculty, administrative and managerial staff)." Definitely there is still a long road where we need to work on and women are aware of their role, the challenges they face and what they need to do to be successful.

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## Factores que influyen en la calidad del sueño de los estudiantes de enfermería con especialidad en anestesia de una universidad privada del área metropolitana de Puerto Rico

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### **Palabras clave**

### **Resumen**

calidad del sueño, estudiantes de enfermería, especialidad en anestesia, Puerto Rico, índice de calidad del sueño de Pittsburgh.

El sueño es crucial para el funcionamiento humano y su mala calidad puede afectar negativamente a los estudiantes de enfermería. En particular, los estudiantes de enfermería con especialidad en anestesia enfrentan desafíos adicionales debido al estrés y la ansiedad asociados con el programa. Este estudio tuvo como objetivo determinar el índice de calidad del sueño y los factores que influyen en él en estudiantes de enfermería con especialidad en anestesia de una universidad privada en Puerto Rico. Se utilizó un diseño cuantitativo, descriptivo y transversal para recopilar datos a través de cuestionarios basados en el Índice de Calidad del Sueño de Pittsburgh. Los resultados revelaron que todos los estudiantes tenían una mala calidad del sueño, con alta prevalencia de disfunción diurna, latencia prolongada para conciliar el sueño, sueño poco reparador y déficit significativo de sueño. Además, los estudiantes experimentaban somnolencia moderada, lo que afectaba sus actividades diarias y el rendimiento académico.



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El sueño es una actividad esencial y vital para el buen funcionamiento humano, y su mala calidad puede tener repercusiones negativas en diversos aspectos, como el rendimiento cognitivo y el aprendizaje de los estudiantes de enfermería (Desouky et al., 2015). Los estudiantes de enfermería se encuentran entre los grupos con mayor privación del sueño en la educación superior en los Estados Unidos (Kaplan, 2017). En particular, los estudiantes de programas de especialidad en anestesia enfrentan desafíos adicionales debido al estrés y la ansiedad asociados con el programa, lo que puede resultar en una pérdida de sueño durante las prácticas clínicas (Silva et al., 2016).

El sueño es un proceso fisiológico normal y necesario para una salud integral, y su privación puede desencadenar alteraciones conductuales y fisiológicas (Carrillo et al., 2013). Según la teoría de Virginia Henderson, el descanso y el sueño son necesidades humanas básicas, y su falta puede afectar negativamente el funcionamiento del organismo, incluyendo la concentración, la toma de decisiones y el juicio (Snowden et al., 2010). Dado que el descanso y el sueño son fundamentales para el desempeño académico y clínico de los estudiantes de enfermería con especialidad en anestesia, es importante investigar la calidad del sueño en este grupo de estudiantes.

El objetivo de este estudio es determinar el índice de calidad del sueño en estudiantes de enfermería con especialidad en anestesia de una universidad privada en el área metropolitana de Puerto Rico, así como identificar los factores que influyen en dicha calidad del sueño. Se ha observado que existen variaciones considerables en el patrón del sueño de estos estudiantes, y se ha asociado esta variación con factores como el

empleo durante la rotación clínica, las responsabilidades familiares y las demandas académicas del programa de estudio en anestesia. Estas variaciones en el patrón del sueño pueden tener un impacto en el desempeño clínico y en la prestación de cuidados y manejo anestésico.

La importancia de este estudio radica en las repercusiones que la falta de sueño y la fatiga tienen en la salud emocional y física de los estudiantes de enfermería con especialidad en anestesia, así como en la seguridad del paciente. La falta de sueño puede dar lugar a errores en el manejo de la anestesia, falta de concentración y toma de decisiones ineficaz, lo que potencialmente puede causar daño a los pacientes. Además, la calidad del sueño también puede afectar el interés y la deserción de los estudiantes en el programa de especialidad en anestesia.

Este estudio busca abordar la falta de investigaciones previas sobre el índice de calidad del sueño en estudiantes de enfermería con especialidad en anestesia en Puerto Rico. Al comprender mejor la calidad del sueño y los factores que influyen en ella, se podrán desarrollar estrategias y recomendaciones para mejorar la calidad del sueño de estos estudiantes, lo cual puede tener un impacto positivo en su desempeño académico y clínico, así como en la seguridad y atención de los pacientes.

#### **Preguntas de investigación:**

¿Cuál es el índice de calidad del sueño de los estudiantes de enfermería con especialidad en anestesia de una universidad privada en el área metropolitana de Puerto Rico?

¿Qué factores influyen en la calidad del sueño de los estudiantes de enfermería con especialidad

en anestesia de una universidad privada en el área metropolitana de Puerto Rico?

La revisión de literatura realizada se centró en examinar diversos estudios relacionados con la calidad del sueño en estudiantes de enfermería y profesionales de la salud. Estos estudios ofrecen una visión amplia sobre el tema y sus implicaciones. A continuación, se resumen los principales hallazgos y conclusiones de los estudios revisados.

Un estudio realizado por Varner (2011) resalta la importancia de adoptar estrategias de afrontamiento saludables para minimizar los efectos del estrés en la práctica de la anestesia y mejorar la seguridad del paciente. Este hallazgo destaca la relación entre el estrés y la calidad del sueño en los profesionales de la salud.

Brown et al. (2002) encontraron que los estudiantes universitarios tienen horarios de sueño variables, lo que puede resultar en síntomas del síndrome del retraso de la fase de sueño. Se recomienda enseñar higiene del sueño como estrategia para mejorar la calidad del sueño en los estudiantes. Esto subraya la importancia de promover hábitos de sueño saludables entre los estudiantes.

Johnson (2006) evaluó la falta de sueño en las enfermeras y su impacto en el rendimiento y la presencia de errores. Los resultados mostraron una relación significativa entre la falta de sueño, el rendimiento psicomotor y los errores en la atención al paciente. Este hallazgo destaca la importancia de abordar la calidad del sueño en el ámbito de la enfermería para garantizar una atención segura y de calidad.

Gaultney (2010) investigó la prevalencia de trastornos del sueño en estudiantes universitarios y su asociación con el rendimiento académico. El estudio reveló que muchos estudiantes universitarios corren el riesgo de sufrir trastornos del sueño, lo cual puede afectar su desempeño académico. Esto resalta la necesidad de abordar la calidad del sueño como

parte integral del bienestar estudiantil.

Domen (2012) examinó la fatiga experimentada por los enfermeros anestesistas durante las llamadas nocturnas y las estrategias utilizadas para evitarla. Los resultados mostraron una relación entre la duración de las llamadas, las estrategias de prevención de la fatiga y la calidad del sueño. Estos hallazgos resaltan la importancia de implementar medidas para mitigar la fatiga relacionada con el trabajo nocturno y garantizar un sueño de calidad en los profesionales de la salud.

En un estudio piloto realizado por Lamberti (2012) para mejorar el sueño en estudiantes universitarios, se encontraron resultados mixtos en cuanto a la efectividad de las intervenciones educativas en la calidad del sueño de los estudiantes. Este hallazgo sugiere la necesidad de desarrollar estrategias más efectivas para abordar la calidad del sueño en esta población.

Monterrosa et al. (2014) evaluaron la calidad del sueño y el insomnio en estudiantes de medicina. Los resultados revelaron que muchos estudiantes presentan insomnio, lo cual puede afectar su rendimiento académico. Este hallazgo destaca la importancia de abordar los problemas de sueño en estudiantes de medicina para optimizar su rendimiento académico y bienestar.

Santos et al. (2020) investigaron la relación entre el tabaquismo, el estrés y la calidad del sueño en estudiantes universitarios de enfermería. Los resultados indicaron que el tabaquismo, el estrés y los bajos ingresos están asociados con una mala calidad del sueño en los estudiantes. Este hallazgo resalta la necesidad de abordar los factores de estilo de vida y estrés como parte integral de las intervenciones para mejorar la calidad del sueño en los estudiantes.

Yildirim et al. (2020) examinaron la calidad del sueño y los factores que la afectan en estudiantes universitarios. Los resultados mostraron que muchos estudiantes tienen una mala calidad del sueño, y esto está relacionado

con variables sociodemográficas y condiciones relacionadas con el lugar de residencia. Estos hallazgos subrayan la importancia de considerar los factores contextuales al abordar la calidad del sueño en los estudiantes.

En otro estudio realizado por Yigitalp et al. (2021) sobre la calidad del sueño y la fatiga en estudiantes de enfermería, se encontró que muchos estudiantes tienen una mala calidad del sueño, lo cual puede afectar su nivel de fatiga. Esto destaca la importancia de abordar la calidad del sueño como parte de la gestión de la fatiga en los estudiantes de enfermería.

Cabrera et al. (2022) evaluaron el impacto de la pandemia de COVID-19 en la salud mental, el sueño y la actividad física de los estudiantes de medicina. Se encontró que muchos estudiantes experimentaron cambios en sus hábitos de sueño y salud mental durante el período de aislamiento. Estos hallazgos destacan la necesidad de brindar apoyo y recursos para mantener una buena calidad del sueño durante situaciones de crisis.

Cox et al. (2022) describieron la calidad del sueño y las dificultades del sueño en profesores de enfermería. Los resultados indicaron que los profesores experimentan dificultades para dormir, especialmente en la latencia del sueño y la calidad subjetiva del sueño. Este hallazgo resalta la importancia de abordar la calidad del sueño en los profesionales de la salud, incluso en el ámbito educativo.

González (2022) destacó la importancia de un buen descanso en estudiantes universitarios y su impacto en la salud física y cognitiva. Se encontró que muchos estudiantes tienen un déficit de sueño, lo cual puede afectar su rendimiento académico y su salud. Este hallazgo subraya la necesidad de promover la conciencia sobre la importancia del sueño y brindar estrategias para mejorarlo en el contexto universitario.

En un estudio realizado por Lee et al. (2022)

se encontró que la calidad de vida profesional de las enfermeras está relacionada con la calidad del sueño y la salud física y mental. La satisfacción por compasión se asoció con una mejor calidad del sueño y una mejor salud, mientras que el agotamiento y el estrés traumático secundario se asociaron con una peor calidad del sueño y una peor salud. Este hallazgo destaca la importancia de abordar el bienestar de los profesionales de la salud y su calidad del sueño.

Elçin et al. (2022) investigaron la relación entre los problemas de sueño y los síntomas de déficit de atención e hiperactividad en estudiantes universitarios. Se encontró que una mala calidad del sueño está asociada con mayores problemas de atención e hiperactividad. Este hallazgo subraya la importancia de abordar la calidad del sueño como parte de la gestión de los trastornos del neurodesarrollo en estudiantes universitarios.

En resumen, los estudios revisados resaltan la importancia de una buena calidad del sueño en estudiantes y profesionales de la salud. La falta de sueño puede tener efectos negativos en el rendimiento académico, la salud mental y física, y la seguridad del paciente. Se sugiere la implementación de intervenciones educativas y estrategias para mejorar la calidad del sueño en este grupo de población. Estos hallazgos proporcionan información valiosa para diseñar programas de intervención y promover un sueño saludable en el contexto académico y profesional de la enfermería y la salud.

### **Metodología**

La investigación se llevó a cabo utilizando un diseño cuantitativo, descriptivo y transversal. Se recopilaron datos a través de cuestionarios que fueron tabulados y analizados. El objetivo era determinar el índice de calidad del sueño en estudiantes de enfermería con especialidad en anestesia de una universidad privada en el área metropolitana de Puerto Rico.

La población de estudio incluyó a hombres y mujeres mayores de 21 hasta 64 años que estuvieran matriculados en cualquier curso de práctica clínica de acuerdo con el programa secuencial de la universidad. Se obtuvo el consentimiento informado de los participantes, quienes recibieron información detallada sobre los objetivos, procedimientos, riesgos, beneficios y su autonomía para participar o retirarse del estudio. Se excluyeron los menores de 21 años, los mayores de 65 años y aquellos cuyo estado de salud les impidiera completar el cuestionario, así como aquellos que decidieron no participar voluntariamente.

La muestra se seleccionó de manera no probabilística y por conveniencia, e incluyó a todos los estudiantes de enfermería con especialidad en anestesia que cumplieron con los criterios de inclusión.

Para evaluar la calidad del sueño, se utilizó la Escala Índice de Calidad de Sueño de Pittsburgh (PSQI) (Buysse et al., 1989). Este instrumento autoadministrable consta de 19 preguntas que se agrupan en siete componentes relacionados con diferentes aspectos del sueño. Las respuestas se califican en una escala de 0 a 3, y la suma de los componentes proporciona una puntuación global que indica la calidad del sueño. Las preguntas no relevantes para el estudio y las que deben ser contestadas por el compañero de habitación no se incluyeron en el puntaje global.

La PSQI ha demostrado ser un instrumento válido y confiable para medir la calidad del sueño. Proporciona una puntuación global que varía entre 0 y 21, donde una puntuación mayor a 5 indica dificultades en el sueño. La escala ha mostrado una consistencia interna alta y una sensibilidad y especificidad significativas (Buysse et al., 1989).

En resumen, esta investigación utilizó un diseño cuantitativo y descriptivo para evaluar el índice de calidad del sueño en estudiantes de enfermería con especialidad en anestesia.

Se recolectaron datos mediante cuestionarios basados en la PSQI. Los resultados obtenidos proporcionarán información relevante sobre la calidad del sueño en este grupo de estudiantes y su relación con el desempeño académico y clínico.

## Resultados

El estudio se llevó a cabo con una muestra de 37 estudiantes de los cursos de práctica clínica I, II y III de un programa graduado de anestesia en una universidad privada del área metropolitana de Puerto Rico. Se les administró un cuestionario anónimo y autoadministrable utilizando la PSQI.

### Características sociodemográficas:

- Edad: Del total de sujetos, el 76% se encuentra en el rango de 26 a 36 años, el 19% en el rango de 37 a 47 años y solo el 5% en el rango de 21 a 25 años.
- Género: El 73% de los participantes son mujeres, mientras que el 27% son hombres.
- Estado civil: El 54% de la muestra son solteros, el 41% son casados y el 5% restante son divorciados o separados.
- Aspectos académicos: La distribución de los estudiantes en función del curso muestra que el 57% pertenece al curso de práctica clínica II, mientras que el 22% corresponde a los cursos de práctica clínica I y III, respectivamente.

*Índice de Calidad del Sueño de Pittsburgh:* Este consiste en la suma de los siete componentes que evalúan la calidad del sueño. Estas preguntas se refieren al último mes y cada componente se califica en una escala del 0 al 3, donde 0 indica que no existe dificultad y 3 indica una grave dificultad. La puntuación global del PSQI varía de 0 (ninguna dificultad) a 21 (dificultades en todas las áreas). Una puntuación mayor a 5 distingue a las personas con problemas de sueño de aquellas que duermen bien.

- Puntuación global: De los 37 estudiantes

analizados, todos obtuvieron una puntuación global mayor o igual a 5, lo que indica una mala calidad del sueño.

- **Componente 1: Calidad subjetiva del sueño:** se refiere a cómo el individuo percibe la calidad de su propio sueño. El 60% de los sujetos manifestó algún grado de dificultad en este componente, con un 44% reportando mala calidad del sueño y un 16% reportando bastante mala calidad del sueño. Solo el 41% afirmó tener buena calidad del sueño.
- **Componente 2: Latencia del sueño:** mide el tiempo que el individuo cree que tarda en conciliar el sueño. El 28% de los estudiantes presentó una dificultad leve en la latencia del sueño (tiempo para conciliar el sueño), el 32% experimentó una dificultad moderada y el 38% tuvo una dificultad grave.
- **Componente 3: Duración del sueño:** mide la cantidad de tiempo que el individuo duerme. El 46% de los participantes duerme menos de 5 horas por noche, el 27% duerme entre 5 y 6 horas, y solo el 11% duerme más de 7 horas.
- **Componente 4: Eficiencia del sueño:** evalúa el tiempo que el individuo pasa en la cama y el tiempo que cree haber pasado durmiendo. Ningún estudiante alcanzó un nivel de eficiencia del sueño del 85% o más. El 3% mostró una eficiencia del 75-84%, otro 3% tuvo una eficiencia del 74-65%, y el 95% obtuvo porcentajes inferiores al 65%.
- **Componente 5: Alteración del sueño:** indaga sobre la frecuencia de alteraciones como ronquidos, tos, calor, frío o necesidad de levantarse durante la noche. El 95% de los estudiantes informó sufrir alteraciones en este componente, siendo los despertares nocturnos la alteración más frecuente (41%). Otras alteraciones incluyen sensación térmica por calor (24%), dolores (32%) y pesadillas o malos sueños (24%).
- **Componente 6: Uso de medicación hipnótica:** pregunta si el individuo necesita usar

medicamentos para dormir, ya sean recetados o no por un médico. El 57% de los estudiantes afirmó no haber necesitado medicación para dormir, mientras que el 43% restante sí consumió algún tipo de medicación hipnótica. De estos, el 14% la necesitó menos de una vez a la semana, el 19% la utilizó una o dos veces a la semana, y solo el 11% la necesitó más de 3 días a la semana.

- **Componente 7: Disfunción diurna:** se refiere a la excesiva somnolencia durante el día y el cansancio que afecta las actividades diarias. El 100% de los estudiantes presentó algún grado de disfunción diurna, con el 30% mostrando disfunción moderada y el 70% disfunción grave.

Los resultados revelaron que todos los estudiantes de enfermería con especialidad en anestesia presentaban una mala calidad del sueño según el PSQI. Se observaron dificultades en varios componentes, como la calidad subjetiva del sueño, la latencia del sueño, la duración del sueño, la eficiencia del sueño, las alteraciones del sueño, el uso de medicación hipnótica y la disfunción diurna.

### Discusión

El PSQI describe a los estudiantes de enfermería con especialidad en anestesia como malos dormidores y/o mala calidad del sueño, con una alta prevalencia de disfunción diurna, una latencia de sueño prolongada, superior a los 60 minutos, un sueño poco reparador y un importante déficit de sueño.

### Conclusiones

1. El estudio concluye que los estudiantes de enfermería con especialidad en anestesia tienen una mala calidad del sueño según el PSQI. Se observó una alta prevalencia de disfunción diurna, una latencia prolongada para conciliar el sueño, un sueño poco reparador y un déficit significativo de sueño.
2. Además, se determinó que los estudiantes sufren de somnolencia moderada, lo que afecta sus actividades diarias, ocasionando



fatiga y problemas académicos. La valoración subjetiva del sueño también refleja una calidad poco saludable, lo que podría tener un impacto negativo en su rendimiento académico y en la práctica clínica. Existe el riesgo de que los estudiantes recurran a la automedicación, lo que a largo plazo podría llevar a la dependencia de medicamentos.

### Recomendaciones

Para abordar y mejorar la calidad del sueño de los estudiantes de enfermería con especialidad en anestesia, se hacen las siguientes recomendaciones a la universidad privada del área metropolitana: Desarrollar un programa integral de bienestar e intervención institucional que se enfoque en la promoción de hábitos de vida saludable y mejore la eficiencia y la higiene del sueño. Este programa debe estar disponible no solo para el programa de Enfermería, sino también para otros programas académicos.

Fomentar la formación de equipos multidisciplinarios para abordar de manera adecuada esta problemática, que se ha vuelto común entre los estudiantes.

Además, se recomienda para futuras investigaciones:

- Realizar estudios similares con enfermeros anestesiólogos licenciados para evaluar la calidad del sueño en esta población.
- Investigar si existe alguna relación entre la calidad del sueño y el rendimiento académico de los estudiantes.
- Estudiar si hay alguna relación entre la calidad del sueño y los índices de retención de la universidad privada.

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## ¿Cuán frecuentes son las infecciones nosocomiales dentro de las salas de operaciones?

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**IANES 5452:** Investigación basada en la evidencia para Enfermeros Anestesiistas II  
Universidad Profesional Dr. Carlos J. Borrero Ríos

### Resumen

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La profilaxis de infecciones postquirúrgicas es importante, ya que las infecciones son una de las principales complicaciones después de una intervención quirúrgica y pueden aumentar significativamente la morbimortalidad de los pacientes.

La profilaxis de infecciones postquirúrgicas implica el uso de diferentes medidas para prevenir la infección, incluyendo la administración de antibióticos profilácticos, la optimización de la preparación del paciente antes de la cirugía y la implementación de técnicas asépticas y estériles durante el procedimiento quirúrgico.

La selección de los antibióticos profilácticos adecuados es un aspecto crítico de la profilaxis de infecciones postquirúrgicas. Se debe elegir un antibiótico que sea eficaz contra los microorganismos comunes que pueden causar infecciones después de la cirugía, pero que también tenga una baja tasa de resistencia bacteriana. La duración del tratamiento antibiótico debe ser la mínima necesaria para cubrir el período de riesgo de infección postquirúrgica, que suele ser de 24 a 48 horas.

Además de los antibióticos, es importante optimizar la preparación del paciente antes de la cirugía para reducir el riesgo de infección. Esto puede incluir la eliminación del vello de la zona quirúrgica, el baño o la ducha preoperatoria y la administración de antisépticos tópicos.

Durante la cirugía, es esencial seguir técnicas asépticas y estériles para minimizar la exposición del paciente a microorganismos. Esto incluye la utilización de campos quirúrgicos estériles, la manipulación cuidadosa de los tejidos y el uso de guantes y batas estériles.

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## El estrés preoperatorio y su importancia en el paciente quirúrgico

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**IANES 5452:** Investigación basada en la evidencia para Enfermeros Anestesiistas II  
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### Resumen

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Los estudios demuestran que el estado psicológico prequirúrgico, en especial la ansiedad, incide en la recuperación postquirúrgica. Debido a esto es necesario evaluar y prevenir la ansiedad en todo paciente que va a ser sometido a algún procedimiento anestésico-quirúrgico, para lo cual existen diversas escalas como el Escala APAIS la cual fue utilizada. Nuestra investigación se basa en qué factores son los que afectan y aumentan la ansiedad en pacientes intervenidos quirúrgicamente por primera vez durante el periodo preoperatorio, en los hospitales de Puerto Rico? Esto demostró que más de un 50% de los pacientes entrevistados que requieren mayor orientación sobre el proceso quirúrgico y anestesia. Lo cual indica que a mejor orientado este el paciente menor será su ansiedad antes de cirugía.

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## **El estrés y la ansiedad en estudiantes de anestesia en relación a la práctica clínica: Estudio de los factores que influyen en su aumento y disminución**

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**IANES 5452:** Investigación basada en la evidencia para Enfermeros Anestesiistas II  
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### **Resumen**

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Compartiendo todos los cursos académicos con estudiantes que están preparándose para la misma especialidad tuvimos la oportunidad de identificar tanto en nosotros, como en nuestros compañeros de otros cursos la ansiedad y estrés relacionado a la práctica clínica. De aquí surge la iniciativa por desarrollar la investigación: El estrés y la ansiedad en estudiantes de anestesia en relación con la práctica clínica, estudio de los factores que influyen en su aumento y disminución.

El propósito era evaluar los factores detonantes de estrés, de la misma manera, obtener información sobre los factores que la disminuyen. Luego, con los resultados obtenidos, hacer un análisis de las alternativas utilizadas para manejo de la ansiedad o estrés, o para evitar algunas situaciones causantes de éstos sentimientos negativos que podrían afectar el desarrollo académico del estudiante.

Para realizar la investigación se utilizó un cuestionario online, al que fueron invitados a participar de manera anónima los estudiantes de la Universidad Profesional Dr. Carlos J. Borrero Ríos, que estén estudiando la especialidad de enfermeros anestesiistas



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## Cambios Hemodinámicos Post-inducción con Propofol

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**IANES 5452:** Investigación basada en la evidencia para Enfermeros Anestesiistas II  
Universidad Profesional Dr. Carlos J. Borrero Ríos

### Resumen

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La investigación se realizó con el fin de obtener hallazgos que pudieran servir para brindar recomendaciones que permitan al personal de enfermería brindar un manejo adecuado del paciente sometido a cirugía. Se planteó la pregunta: ¿Cuáles son los cambios hemodinámicos existentes bajo la inducción con el propofol?

Se hizo una revisión de literatura y se implementó un cuestionario a anestesiólogos con el fin de obtener datos para nuestra investigación. La metodología utilizada fue cuantitativa. Al obtener los datos se realizó el análisis de estos, se tabularon, para poder llegar a las conclusiones. El cuestionario fue de 10 preguntas cerradas.

Entre los hechos más importantes se encuentran que el 100% de la muestra estuvo de acuerdo que el Propofol causa hipotensión. Se descubrió que no todos están de acuerdo en utilizar medicamentos para corregir la hipotensión que ocasiona el Propofol. El resultado significó que existen diferentes formas de corregir la hipotensión y que debemos saber escoger la que le brinde mayor beneficio a nuestros pacientes.

Nuestra investigación nos abre nuevos caminos para investigaciones futuras, donde se pueda obtener más información a través de más anestesiólogos e información de la literatura.

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## Percepción del Entorno Laboral Durante la Práctica Clínica de los Estudiantes con Especialidad en Anestesia en la UPDCJBR

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**IANES 5452:** Investigación basada en la evidencia para Enfermeros Anestesiistas II  
Universidad Profesional Dr. Carlos J. Borrero Ríos

### Resumen

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El presente estudio fue una colaboración investigativa para poder identificar cual es la percepción del entorno laboral durante la práctica clínica de los estudiantes con especialidad en anestesia en la Universidad Profesional Dr. Carlos J. Borrero Ríos, ya que esta influye en el desarrollo académico directamente. La revisión de literatura nos confirma que existe varias áreas de oportunidad en el entorno laboral y la percepción de los estudiantes de especialidad de anestesia.

Se elaboró un cuestionario probabilístico simple logrando la participación voluntaria de cuarenta y seis estudiantes universitarios pertenecientes a la Universidad Profesional Dr. Carlos J. Borrero Ríos. Luego de analizar los datos obtenidos por los encuestados, el hallazgo de mayor importancia que se obtuvo fue que el 60.8% (n=28) tienen una perspectiva positiva sobre su práctica clínica previo a su exposición.

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## Manejo Anestésico para Pacientes Consumidores de Drogas

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**IANES 5452:** Investigación basada en la evidencia para Enfermeros Anestésistas II  
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### Resumen

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El propósito de este proyecto es poder conocer los efectos del consumo de drogas tanto agudo como crónico; que involucra problemas durante el manejo anestésico debido a la tolerancia y la resistencia a las mismas. Debido a la poca evidencia médica disponible sobre los efectos clínicos, interacciones con otros fármacos y recomendaciones perioperatorias en este tipo de sustancias ilegales, resulta urgente la necesidad de indagar e investigar con mayor profundidad sobre este tema. El objetivo principal es minimizar los riesgos, maximizar la seguridad y la efectividad de la anestesia en estos pacientes. Para abordar este problema, los profesionales de la anestesia deben estar bien informados sobre el tipo de droga que consume el paciente, la frecuencia y cantidad de consumo, el tiempo transcurrido desde la última dosis, y cualquier otra enfermedad o condición que pueda influir en la respuesta del paciente a la anestesia. Además, tenemos como objetivo concientizar sobre el manejo del síndrome de abstinencia o la sobredosis, que son los mayores peligros potenciales para el paciente drogodependiente durante su estadía en la sala de operaciones. Existen consideraciones específicas que se deben tener en cuenta al administrar anestesia a pacientes que consumen drogas ilícitas o medicamentos controlados. Estas consideraciones pueden incluir la dosificación y la elección del tipo de anestésico, la monitorización cuidadosa durante y después del procedimiento, y la gestión adecuada del dolor postoperatorio. La hipótesis se basa en la premisa de que el conocimiento y la implementación adecuada de estas consideraciones pueden llevar a una mejor atención y resultados para estos pacientes.

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## Manejo anestésico en pacientes epilépticos

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**IANES 5452:** Investigación basada en la evidencia para Enfermeros Anestésistas II  
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### Resumen

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El fin de este proyecto investigativo era responder la siguiente pregunta ¿Cuál es el manejo anestésico en pacientes epilépticos? Podemos decir que la estrategia basada en cuestionarios se enfocó en el manejo de paciente epiléptico y a su vez el mismo se llevó a cabo con anestésistas y anestesiólogos que están actualmente ejerciendo la profesión.

Entre los resultados encontramos que el 90% de los participantes concluyeron que el inhalante de elección en estos pacientes es el sevoflurano.

Luego de realizar múltiples entrevistas para ver el manejo anestésico que se lleva a cabo con estos pacientes la gran mayoría menciona que en el momento de coordinar la cirugía estos pacientes tienen un tratamiento a seguir por lo que se premedica con anterioridad para evitar cualquier episodio de epilepsia durante la cirugía.

La población que el grupo seleccionó fueron adultos, pediátricos y mujeres embarazadas. Por último, es de suma importancia llevar un manejo anestésico adecuado con estos pacientes además de conocer los medicamentos adecuados para estos casos.