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ORIGINAL

Retention of pharmacological knowledge about analgesics and pain management

Retención de conocimientos farmacológicos sobre analgésicos y manejo del dolor

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ABSTRACT

Introduction: pain is the main reason for consultation in usual clinical practice, which brings whit a series of comorbidities that ultimately affect the quality of life of those who suffer from it. Dedicating the necessary time to this topic and systematizing its appropriate management from the formative stage is essential to facilitate learning and long-term memorization.
Objective: to determine the degree of retention of pharmacological knowledge about analgesics and to identify the main deficiencies in this regard.
Methods: a descriptive pedagogical study that consisted of administering a 10 - question exam, containing the most relevant elements of the topic, to 52 medical students in their 5th year at Salvador Allende Faculty.
Results: 82,7 % of the students passed. However, there were no grades of 5; only 11,5 % scored 4 points, and over 70 % scored 3. The main deficiencies were related to the safety of NSAIDs. There were also errors in topics related to pure analgesics and opioids.
Conclusions: although promotion was good, the quality of knowledge retention about pain was low. The deficiencies found suggest the need to establish more effective teaching strategies to improve the teaching and learning of the topic.

Keywords: Knowledge Retention; Pain; Analgesic Pharmacology.

RESUMEN

Introducción: el dolor es el principal motivo de consulta en la práctica clínica habitual, lo que trae consigo una serie de comorbilidades que terminan por afectar la calidad de vida de quien lo padece. Dedicarle el tiempo necesario a este tema y sistematizar en su manejo adecuado desde la etapa formativa, es primordial para facilitar el aprendizaje y su memorización a largo plazo.
Objetivo: determinar el grado de retención de conocimientos farmacológicos sobre analgésicos e identificar las principales deficiencias en este sentido.
Métodos: estudio descriptivo de corte pedagógico que consistió en aplicar un examen de 10 preguntas, contentivo de los elementos más relevantes del tema, a 52 estudiantes de medicina que cursaban el 5to año de la carrera en la facultad Salvador Allende.
Resultados: el 82,7 % de los estudiantes aprobó. Sin embargo, no hubo calificaciones de 5, el porciento de 4 puntos fue de solo un 11,5 % y el de 3 superó el 70 %. Las principales deficiencias estuvieron relacionadas con la seguridad de los AINE. También hubo errores en tópicos relacionados con los analgésicos puros y los opioides.
Conclusiones: aunque la promoción estuvo bien, la calidad de la retención de conocimientos sobre dolor resultó baja. Las deficiencias encontradas sugieren la necesidad de establecer estrategias docentes más efectivas para mejorar la enseñanza y el aprendizaje del tema.

Palabras clave: Retención de Conocimientos; Dolor; Farmacología Analgésica.

INTRODUCTION

Pain, that unpleasant sensory and emotional experience associated with actual or potential tissue damage,[1,2,3] remains the leading cause of healthcare consultations today.[4] Its impact often transcends the physical, affecting patients emotionally, professionally, socially, and within their families, particularly in patients with long-term pain.[5]

To facilitate long-term retention, it is essential to dedicate the necessary time to this topic and systematise its pharmacological management from the training stage onwards.

It is well known that learning is the process by which knowledge is acquired, while retention, closely related to memory, allows that knowledge to be stored, consolidated, and subsequently retrieved.[6] If learning is practical, good retention is likely to occur. Otherwise, it is most likely to be forgotten.

German psychologist Hermann Ebbinghaus conducted a series of experiments to study the mechanisms involved in information retention. The results allowed him to outline the so-called forgetting curve, a graphical representation of the loss of cognitive and procedural skills over time if no conscious effort is made to maintain them.[7]

One of the main problems facing education today is forgetting the content provided during the years of study. In the medical field, a third and a quarter of basic knowledge is lost after a year if not reinforced. This demonstrates the need to recapitulate what has been learned, based on a curriculum design that supports this.[8]

In the context of pain and its comprehensive approach, it is worrying that content retention is weaker than expected, especially given the few hours that undergraduate courses devote to such a priority topic. Two-thirds of future doctors study and become familiar with pain management in settings other than undergraduate courses.[9]

The current Medical Study Plan in Cuba includes a lecture on drugs that act on the osteoarticular system.[10] In this two-hour lecture, given to third-year students in their Clinical Pharmacology course, general aspects of the pathophysiology of pain are addressed, along with the pharmacological characteristics of the main drugs used in its treatment and WHO recommendations for use.

Outside our country, the situation is not very different. In Europe, for example, students receive only an average of twelve hours of training in pain, according to the study Advancing the Provision of Pain Education and Learning (APPEAL), which reports that pain is not included in the curriculum of 17 European medical schools.[11]

However, learning and retaining content do not depend solely on curriculum design. Intellectual maturity, academic background, study strategy, personal talent, concentration, and motivation also play a role. Likewise, the quality of teaching (preparation, style, and/or teaching method) is essential to the process.[7,12]

Despite the importance of knowledge retention for the training of more competent professionals, there is little research focused on this topic in the national and international literature,[7] very limited in the case of pharmacology, and practically absent when it comes to pain.

A retrospective longitudinal study of five generations (2007-2011) at the end of their first two years of basic training, conducted at the Faculty of Medicine of the Autonomous University of Mexico (UNAM), which evaluated subjects such as Anatomy, Developmental Biology, Cell and Tissue Biology, Biochemistry, Physiology, Pharmacology and Immunology, concluded that among the subjects with the lowest retention rates, Pharmacology ranked second.[13]

Martínez et al.[14] obtained very similar results in an observational study with second-year medical students at UNAM. Pharmacology had the lowest theoretical test scores, with a pass rate of 21,2 % and statistically significant differences compared to other subjects assessed.

Redwan[15] obtained completely opposite results. His doctoral thesis, related to knowledge retention in Ethiopian students at Adama Hospital Medical College (AHMC) and Adigrat University (AU), showed the highest score for pharmacology, with an average value of 61,3. Studies conducted at the James Cook University School of Medicine and Dentistry by Malau-Aduli et al.[16] in 2019 and by Alele et al.[17] in 2024 also reported high scores in pharmacology on the retention exam.

Motivated by the above and aware that proper pain management is of global interest in medicine, we conducted research to determine the degree of retention of analgesic pharmacology and identify the main deficiencies in this regard.

METHOD

A descriptive, cross-sectional, pedagogical study was conducted during the 2023-2024 academic year at the Salvador Allende Faculty of Medical Sciences. The study consisted of administering a surprise written exam with 10 questions covering the most relevant aspects of analgesic pharmacology.

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The one-hour exam was based on test questions previously reviewed by assistant professors with more than 20 years of professional experience, all specialists in pharmacology with scientific degrees and postgraduate courses in pain management, thus ensuring that the questions were aligned with the learning objectives. Each question was scored between 2 and 5, and these scores were then averaged to give a final result. To identify the primary deficiencies concerning the topics included in the questionnaire (analgesic ladder, pharmacological actions, undesirable effects, main indications, and possible combinations of pure analgesics, non-steroidal anti-inflammatory drugs, opioids), the highest percentages of errors were determined.

The test was administered to 52 fifth-year medical students who had studied the subject in their Clinical Pharmacology course during their third year and were willing to participate. After evaluating the test results, Cronbach's alpha consistency coefficient validated it as an acceptable measurement tool.

Main variables:

- Promotion of the retention test
  - Good promotion: if the pass rate is above 80 %
  - Fair: if the pass rate is between 60 % and 80 %
  - Poor promotion: if the pass rate is low, below 60 %

- Quality of knowledge retention
  - Very high: most grades are between 4 and 5
  - High: there is a balanced distribution of 3, 4, and 5 points
  - Low: most grades are 3 points
  - Very low: most grades are 2 points

The information was stored and processed in a database created in Microsoft Excel 2016. Absolute and relative frequency measures were used for descriptive analysis. The results were presented in tables and figures for better understanding.

The study, based on medical ethics principles, was approved by the Salvador Allende Faculty's Scientific Council.

RESULTS

As shown in figure 1, 82,7 % of students passed. However, the quality of retention was low. There were no grades of 5, the percentage of 4 points was only 11,5 %, and that of 3 exceeded 70 %.

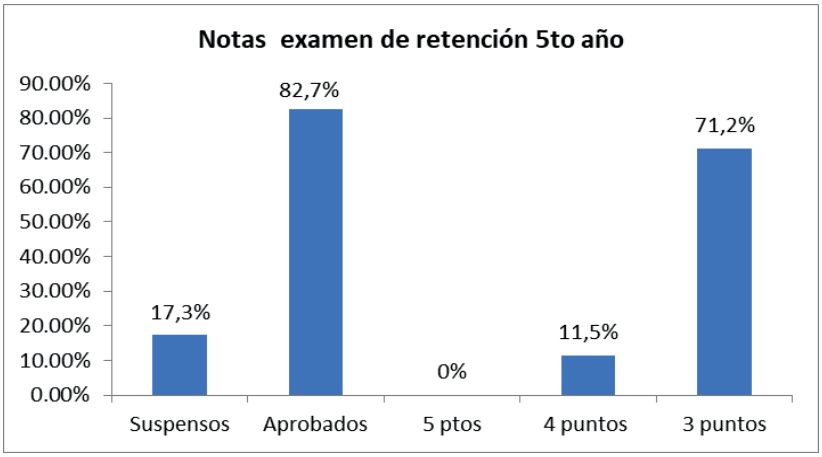

Figure 1. Distribution of retention test results

As shown in figure 2, 58 % of students were familiar with the analgesic ladder.

Figure 3, meanwhile, shows deficiencies in the retention of pharmacological knowledge about pure analgesics. For example, 71,2 % of students did not know that, unlike NSAIDs, dipyrone and paracetamol have low gastrointestinal toxicity. Similarly, 63,5 % attributed anti-inflammatory properties to them, even though lectures and reference texts emphasise the contrary.

Figure 4 shows good retention of some elements that must be taken into account when prescribing NSAIDs. Combining them with gastroprotective agents in patients at risk and using them in low doses for as short a time as possible were the recommendations with the highest number of correct responses.

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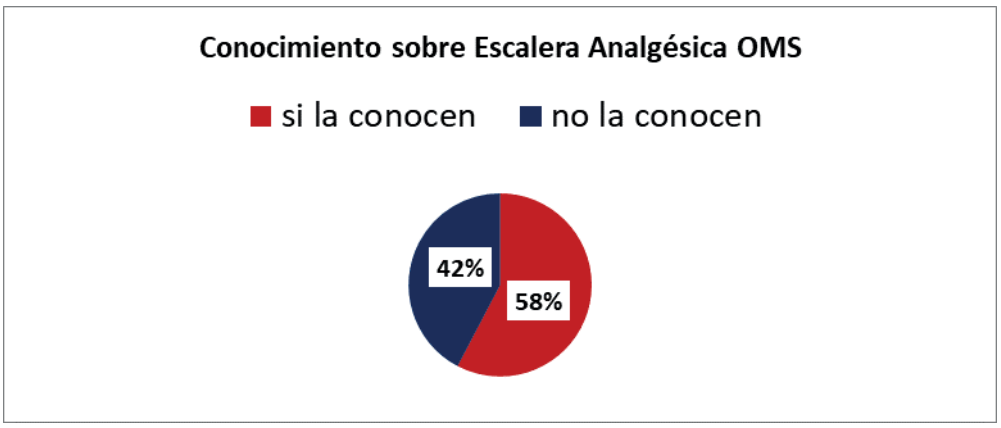

Figure 2. Knowledge of the analgesic ladder proposed by the WHO

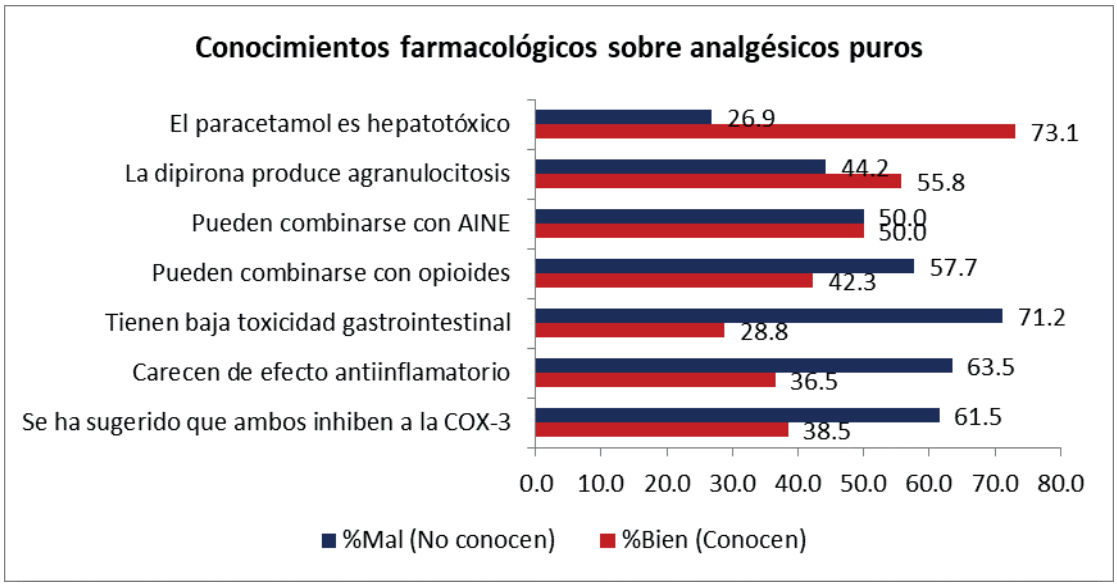

Figure 3. Pharmacological knowledge about pure analgesics

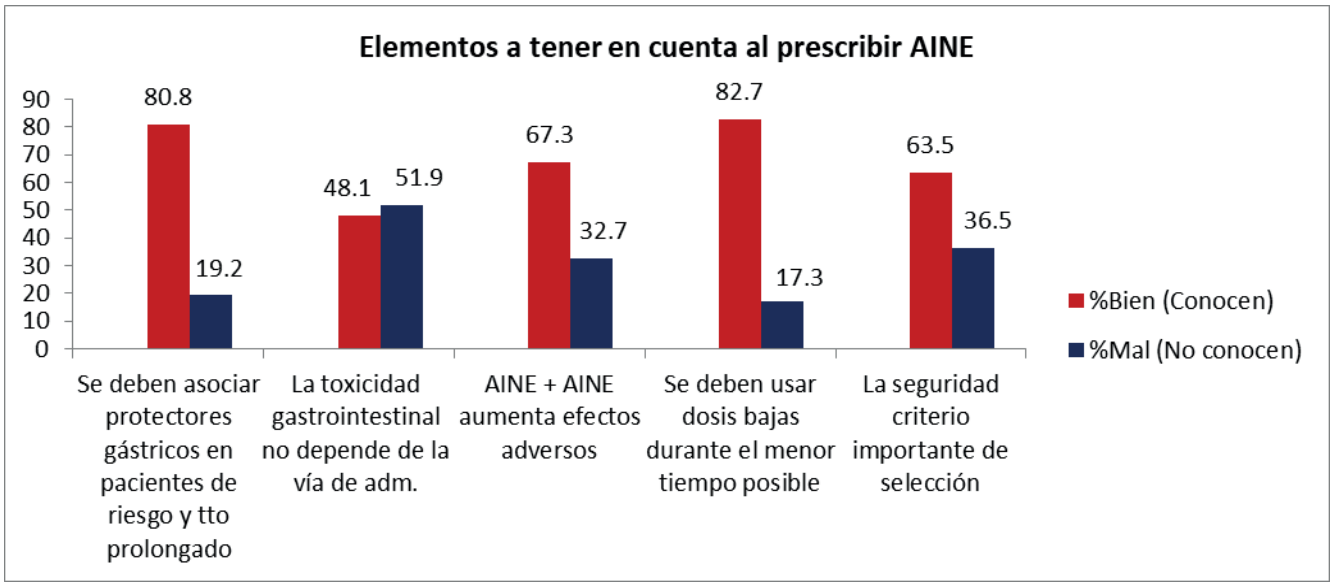

Figure 4. Knowledge about the elements to be taken into account when prescribing NSAIDs

When moving from the general to the specifics of NSAID safety, the percentages of correct answers were very low (figure 5).

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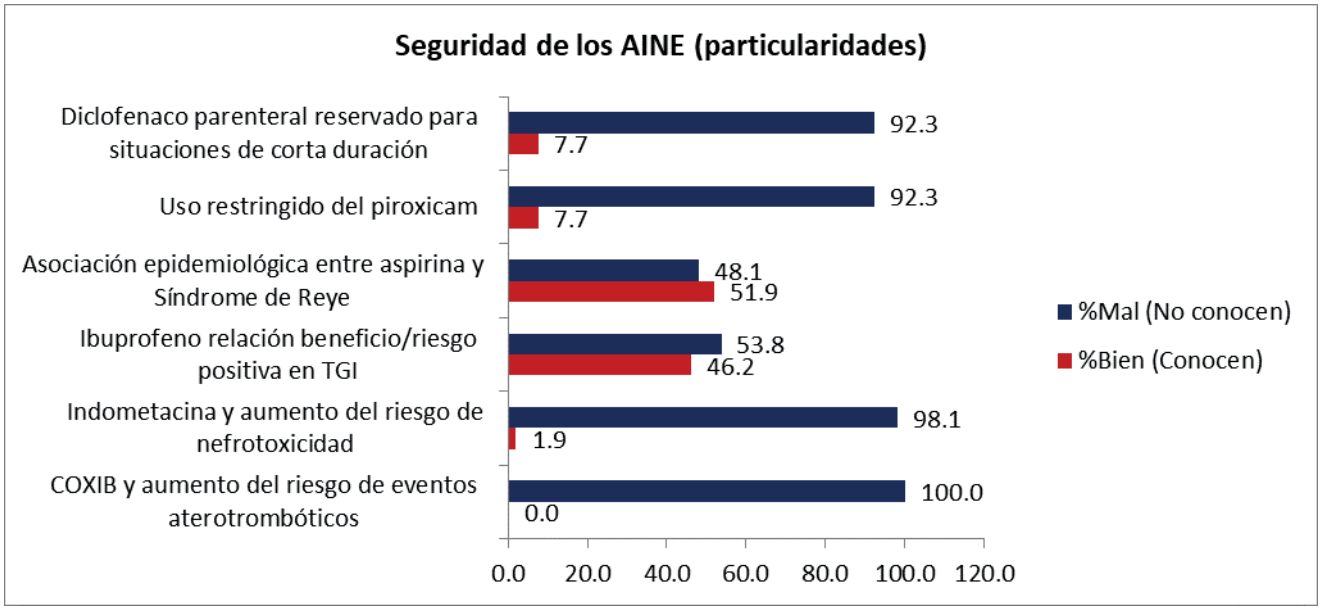

Figure 5. Safety of NSAIDs in particular

In relation to opioids, more than 70 % of students (figure 6) adequately marked dependence and respiratory depression as part of their adverse effects. Taking these into account can prevent their occurrence, especially if the authorised conditions of use are respected

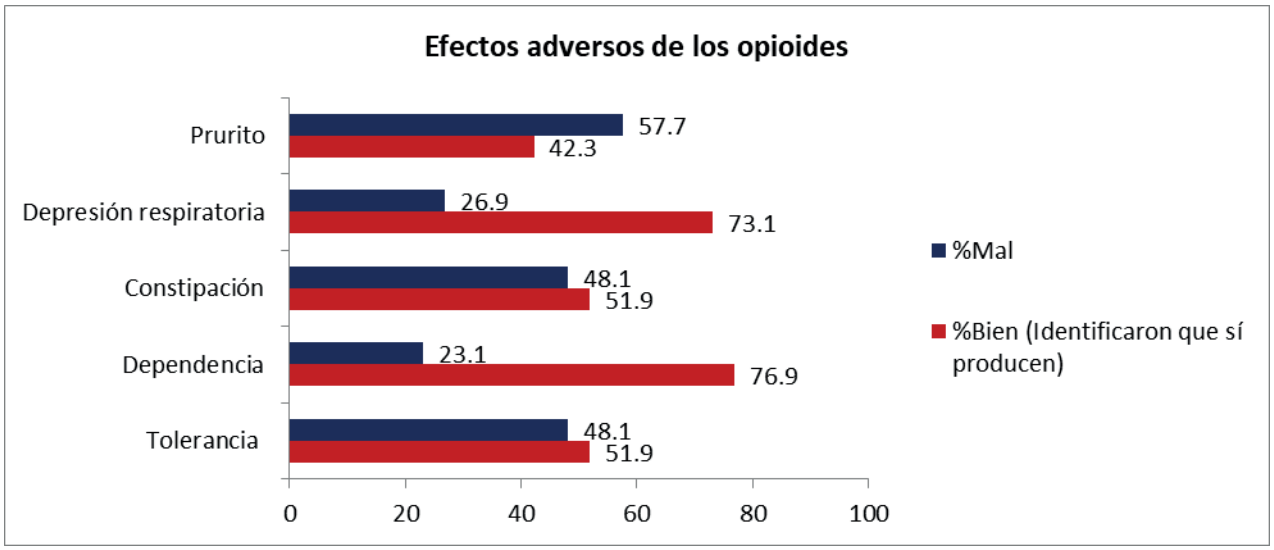

Figure 6. Awareness of the adverse effects of opioids

The most frequent error (84,6 %) related to knowledge about opioids (figure 7) was not knowing that psychological dependence develops less in pain patients, as it is rather due to pre-existing addictive behaviour. It is also noted that only 21,2 % of the students knew that opioids lack antipyretic and anti-inflammatory effects.

In the same study [18] less than half of the students (41,3 %) were familiar with the analgesic ladder, a point in our favour if we take into account that 58 % of those examined at the Salvador Allende faculty were familiar with it (figure 2). And it is good that this is the case. This tool, proposed by the WHO in 1982 for the coordinated management of oncological pain, has been extended to relieve different ailments; it has been re-evaluated and modified, and beyond its limitations, its diffusion has substantially improved pain treatment.[19]

It was encouraging that a high percentage of students associated paracetamol and dipyrone with hepatotoxicity and agranulocytosis, respectively, perhaps because these are the most feared adverse effects that could occur with their administration. However, there were sections related to pure analgesics that showed significant percentages of errors (figure 3). Both drugs have a very similar pharmacological and toxicological profile to NSAIDs. Still, their inhibitory effect on cyclooxygenase (COX) at the peripheral level is weak, resulting in lower gastric toxicity and a lack of anti-inflammatory activity.[19] The low retention on these aspects should be considered to avoid irrational prescribing in the future.

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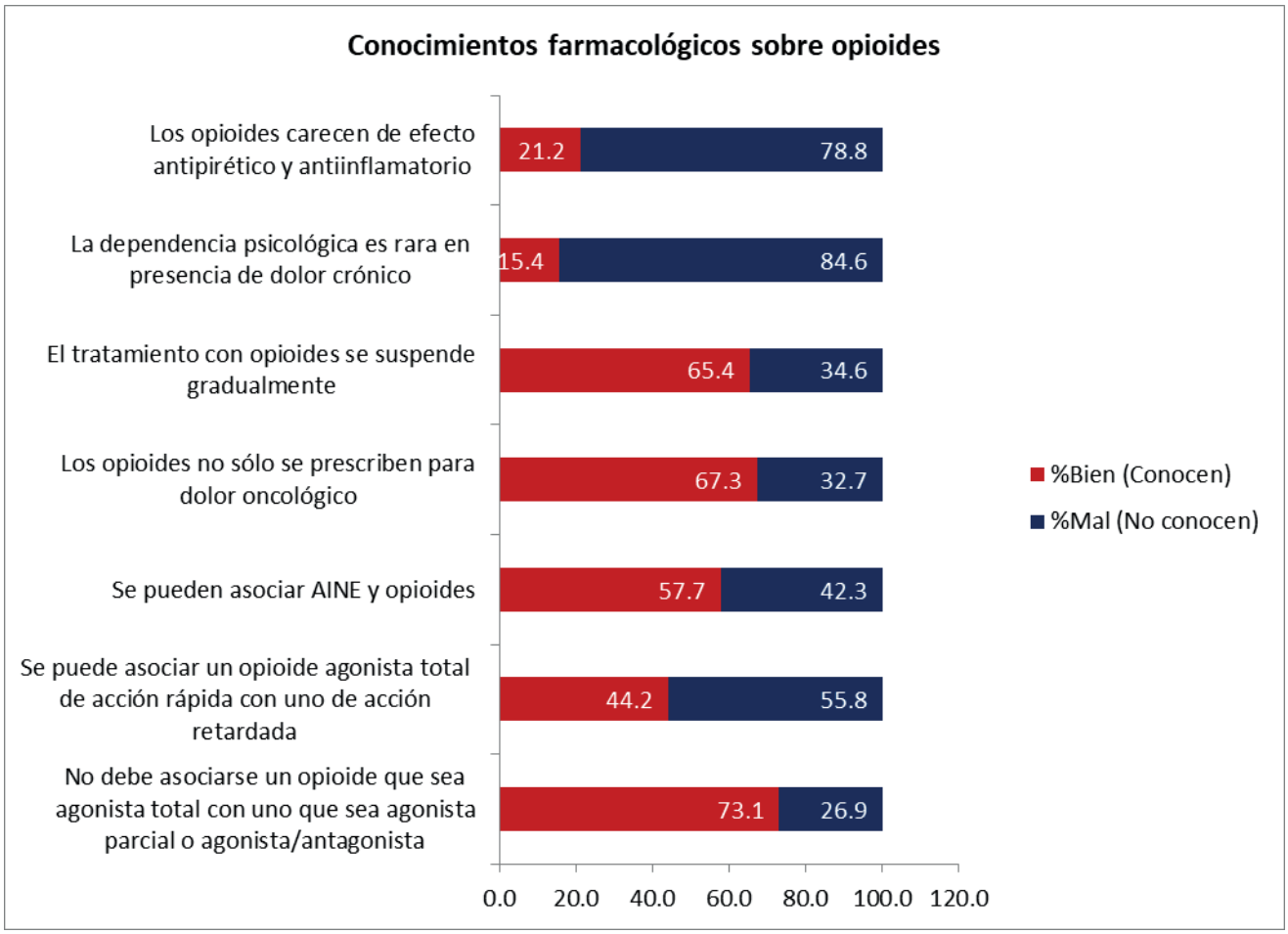

Figure 7. Pharmacological knowledge of opioids

DISCUSSION

While results vary, the literature generally describes a decline in knowledge retention over time.[7] After two years of teaching the subject, the test promotion was good, but unfortunately, the retention quality was low (figure 1). A similar study, carried out on 58 fifth-year medical students at the '10 de Octubre' Faculty in November 2013,[18] agreed with ours that the knowledge acquired in the course of study on pain management is insufficient.

Figure 4 shows that the need to associate NSAIDs with gastroprotectants in patients who require them and to prescribe them at low doses for the shortest possible time, valid recommendations to minimise the risk of gastropathy, which is the most reported toxicity,[4] is correct. In addition, most of the students agreed that combinations of NSAIDs should be avoided in order not to potentiate undesirable effects. This last result adds another point in our favour, if we compare it with the fact that 84,5 % of the students examined at the Faculty of Medicine '10 de Octubre' considered the association between non-opioid analgesics a correct practice.[18] However, not everything shown in figure 4 is correct. Almost half of the students did not know, or did not remember, that this gastrolesivity does not depend on the route of administration but on the inhibition of the synthesis of cytoprotective prostaglandins at the level of the gastric mucosa, with all the consequences that derive from this: reduction in the production of epithelial mucus, bicarbonate release, blood flow and mucosal resistance to erosion.[19] The result is of logical concern because it could condition the future prescription of rectal formulations to patients with gastropathies, believing that this minimizes the risks.

When analysing the particular adverse effects of NSAIDs, the correct answers did not prevail (figure 5) so much so that 100 % of the students did not associate COXIBs with increased risk of atherothrombotic events, which is why many of the representatives of the group have already been withdrawn from the market.[4] As selective COX-2 inhibitors, they compromise the synthesis of prostacyclin, a platelet antiaggregant generated in the vascular endothelium, and not the synthesis of thromboxaneA2, the main product of COX-1 at the platelet level with proaggregant and vasoconstrictor properties, which explains their contraindication in patients with ischaemic heart and/or cerebrovascular disease.[4] However, there are other adverse effects of NSAIDs that should be mentioned in conferences. Renal alterations, for example, can go from acute interstitial nephritis to chronic renal failure if consumption is prolonged and constant. Although this is usually a group effect,

the literature highlights indomethacin as one of the most nephrotoxic,[20] an aspect retained in a very low percentage. Knowledge of whether diclofenac and piroxicam have restrictions on their use was also poor,[21,22] and this will have to be worked on to avoid indiscriminate use of these drugs.

About figure 6, a high percentage of students recognised dependence and respiratory depression as part of the adverse effects produced by opioids. These are certainly not among the most frequent effects of opioid use,[23] but they do significantly limit their administration. They are among the barriers to opioid access cited by the WHO.[24] The inordinate fear of these effects, predictors of risk, and recommendations to minimise them are emphatically addressed at conferences. So the result is not surprising.

Despite the above result, 84,6 % of the students did not retain that psychological dependence on opioids develops less in pain patients (figure 7). It is the case that endogenous opioids, and thus exogenous opioids, not only act on **μ**-, **κ**-, and **δ**-receptors, but also have actions on other receptor systems, such as monoaminergic receptors, which are associated with reward and dependence processes. Since pain produces aversive psychological effects, it is possible that the sensory stimulus 'deactivates' the neural circuitry that leads to gratification, reinforcement, motivation, and dependence.[25]

The advantages of combining NSAIDs and opioids in some patients are more than proven, not only because the doses are reduced and thus the risks of side effects, but also because better pain control can be achieved by addressing pain through different mechanisms of action.[26] However, opioids, unlike NSAIDs, lack antipyretic and anti-inflammatory properties, which is pointed out in lectures and is also confirmed in pre-professional practice, which is why it is striking that only 21,2 % of the students got this aspect right.[27,28,29,30,31,32,33]

Beyond the strengths and weaknesses found, the study reopens a path to quantifying knowledge on analgesic pharmacology, which will allow for the consolidation of what has been learned and, especially, the remedy of the deficiencies.

CONCLUSIONS

Although the promotion was good, the retention of analgesic pharmacology knowledge was low. These inadequacies suggest the need for more effective educational strategies to improve learning and retention.

REFERENCES

1. Dávila E, Morejón JM, Acosta E. Dolor y analgésicos. Algunas consideraciones oportunas. Medisur . 2020; 18(4). http://scielo.sld.cu/scielo.php?scrip-sci_arttext&pid-S1727-897X2020000400694

2. Raja SN, Carr DB, Cohen M, Finnerup NB, Flor H, Gibson S. The revised International Association for the Study of Pain definition of pain. Pain. 2020; 161(9). https://www.capdouleur.fr/app/uploads/2020/07/The_revised_International_Association_for_the.98346.pdf

3. Pérez J. Versión actualizada de la definición de dolor de la IASP: un paso adelante o un paso atrás. Rev Soc Esp Dolor. 2020;27(4):232-233. https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1134-80462020000400003

4. Baldoceda DWP. Clinical simulation in the Argentine context: student perception and educational challenges. South Health and Policy 2023;2:56-56. https://doi.org/10.56294/shp202356.

5. Chumpitaz-Saravia VL, Villaverde-Saravia B, Vivanco-Hilario SD, Morales-García WC. Nursing care in post-surgical patient of adnexal cystectomy in the Obstetrics and Gynecology Service of a national hospital of Chincha, 2023. Multidisciplinar (Montevideo) 2023;1:42-42. https://doi.org/10.62486/agmu202342.

6. García-Andreu J. Manejo básico del dolor agudo y crónico. Anest. Méx. 2017 ; 29(1). https://www.scielo.org.mx/scielo.php?pid=S2448-87712017000400077

7. Ribera H. Dolor Crónico: Conceptos generales de tipos de dolor y los datos asociados según el último barómetro. Madrid: SANED. 2023. http://www.dolor.com/formacion/biblioteca/monografico-actualizacion-dolor-cronico

8. Díaz A. Retención de conocimientos sobre Sistema Nervioso en alumnos de cuarto año de Medicina. Publicación en evento. VI Jornada Científica de la Sociedad Cubana de Educadores en Ciencias de la Salud de Holguín. 2017. http://socecsholguin2017.sld.cu/index.php/socecsholguin/2017/paper/view/59

9. Graz AM, Coso D. Autonomy and the End of Life: Reflections from Medicine and the Law. South Health and Policy 2023;2:55-55. https://doi.org/10.56294/shp202355.

10. Lima KDDS, Pardal LR. Medical training and clinical response in the management of STEMI from the first

level of care. South Health and Policy 2024;3:148-148. https://doi.org/10.56294/shp2024148.

11. Chi A, Rodríguez LY. Monzón RM, Martínez T. La retención de conocimientos de las ciencias básicas en la carrera de medicina. Publicación en evento. X Jornada Científica de la Sociedad Cubana de Educadores en Ciencias de la Salud de Holguín. EdumedHolguín. 2021. http://edumedholguin2021.sld.cu/index/php/edumedholguin/2021/paper/view/218/120

12. Zaeemzadeh N, Taherpour S, Behzadian N, Mard SA. Evaluation of physiology knowledge loss in medical students of Ahvaz Jundishapur University of Medical Sciences. Adv Med Edu Prac. 2019; 10: 157-162. http://doi.org/10.2147/MP.S189029

13. Ojeda JJ. Concepción metodológica sobre la formación para el tratamiento integral al dolor en el pregrado de Medicina. Medisur. 2018; 16(4): 599-602. http://www.medigraphic.com/cgi-bin/new/resumen.cgi?IDARTICULO-83554

14. Ministerio de Salud Pública de Cuba. Plan de Estudio E para la carrera de Medicina. 2019 . https://www.instituciones.sld.cu/ucmc/sintesis-del-plan-de-estudio-de-la-carrera-de-medicina/

15. Briggs EV, Battelli D, Gordon D, Kopf A, Ribeiro S, Puig M. Current pain education within undergraduate medical studies across Europe: Avancing the Provision of Pain Education and Learning (APPEAL) study. BMJ Open . 2015 ; 5(8): http://bmjopen.bmj.com/content/5/8/e006984

16. Murre JMJ, Dros J. Replication and Analysis of Ebbinghaus' Forgetting curve. PLos ONE . 2015 ; 10(7): e0120644. https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0120644&type=printable

17. Fortoul TI, Morales S, Muñoz A, Jacobo A, Varela M, Rodríguez V. Retención de los conocimientos básicos en cinco generaciones de alumnos que terminaron los dos primeros años del plan único de la carrera de médico cirujano en la Facultad de Medicina, UNAM (2007-2011). Investigación en educación médica. 2012; 1(4): 170-175. http://www.elsevier.es/es-revista-investigacion-educacion-medica-343-articulo-retencion-cnocimientos-basicos-cinco-generaciones-X2007505712427294

18. Martínez A, Trejo JA, Fortoul TI, et al. Evaluación diagnóstica de conocimientos y competencias en estudiantes de medicina al término del segundo año de la carrera: el reto de construir el avión mientras vuela. Gac Med Mex . 2014 ; 150(1):35-48. http://medigraphic.com/cgi-bin/new/resumem.cgi?IDARTICULO-47949

19. Redwan E. Discipline Based Versus Integrated Curricula: A Comparative Study between Clinical II Medical Students of Adama Hospital Medical College and Adigrat University, Ethiopia With Regards to Retaining Knowledge of Basic Sciences and Ability to Use Their Concept and Principles to Solve Clinical Problems (Doctoral dissertation, Addis Ababa University Addis Ababa, Ethiopia); 2016. http://nadreetherned.edu.et/record/12722/files/EkramRedwan.pdf

20. Malau–Aduli BS, Alele FO, Heggarty P, Teague PA, et al Perceived clinical relevance and retention of basic Sciences across the medical education continuum. Advances in physiology education. 2019; 43(3): 293-299. http://journals.physiology.org/doi/pdfplus/10.1152/advan.00012.2019

21. Alele FO, Albert FA, Anderson E, et al. The perceived relevance, utility and retention of basic sciences in general practice. BMC Medical Education . 2024 ; 24: 1-12. https://doi.org/10.1186/s12909-024-05750-2

22. Peña C, Yodú N, Acosta R, Valdés S. Valoración de conocimientos sobre el dolor y medicina paliativa en el pregrado de medicina. Publicación en evento. Educación Médica para el siglo XXI. 2014. http://conferenciassiglo21.sld.cu/index.php/conferenciassiglo21/2014/paper/download/169/129

23. Orraca AS, Castillo MO, Véliz DH. Diagnostic and therapeutic differences in ST-segment elevation acute myocardial infarction according to sex. Multidisciplinar (Montevideo) 2024;2:64-64. https://doi.org/10.62486/agmu202464.

24. Ramírez JL, Chica AMG, Intriago NSS, Arizala JFC. Chronic renal failure: Clinical and therapeutic aspects for the approach. Multidisciplinar (Montevideo) 2025;3:60-60. https://doi.org/10.62486/agmu202560.

25. Yáñez M, Reyes F. Dolor y analgésicos. Act Farma Terap. 2020; 18(4):1-13. https://www.socesfar.es/wp-content/uploads/2021/09/Dolor-y-analgesicos.pdf

26. Brunton L, Knollmann B. Goodman & Gilman: Las Bases Farmacológicas de la Terapéutica. 14a ed. Mc Graw Hill; 2023.

27. Agencia Española de Medicamentos y Productos Sanitarios. Diclofenaco y riesgo cardiovascular: Restricciones de uso. Madrid: AEMPS; 2013 . https://www.aemps.gob.es/informa/notasinformativas/medicamentosusohumano-3/seguridad-1/2013/ni-muh_fv_16-2013-diclofenaco/#:~:text=Diclofenaco%20no%20se%20debe%20utilizar,arterial%20perif%C3%A9rica%20o%20enfermedad%20cerebrovascular.

28. Agencia Española de Medicamentos y Productos Sanitarios. Piroxicam: Finalización del arbitraje europeo con nuevas restricciones de uso y paso a diagnóstico hospitalario. Madrid: AEMPS; 2007 . https://www.aemps.gob.es/informa/notasinformativas/medicamentosusohumano-3/seguridad-1/2007/ni_2007-12_piroxicam/

29. Ministerio de Salud Pública de Cuba. Formulario Nacional de Medicamentos. 2019. http://fnmedicamentos.sld.cu

30. Mertnoff R. Acceso al tratamiento del dolor severo. MEDPAL, Interdisciplina y domicilio .2011 ; 3(4): 1-14. http://163.10.34.134/bitstream/handle/10915/8496/Documento_completo.pdf?sequence=1

31. Valle GPC do, Arcieri S. Prevalence of multidrug-resistant microorganisms in patients admitted to the intensive care unit. South Health and Policy 2024;3:118-118. https://doi.org/10.56294/shp2024118.

32. Dawidowicz N, Tedeschi V, De Muria M, Bujembaum P. El dolor alarma y el dolor como carga. Actualización en la Práctica Ambulatoria. 2006; 9(5). https://www.fundacionmf.org.ar/files/edit%20o

33. Abad A, Bergese SD. Zuleta-Alarcón A, Fiorda J, Martínez A, et al. Ibuprofeno intravenoso combinaciones farmacológicas. Rev Soc Esp Dolor. 2016; 23(Supl.I): 31-34. https://www.resed.es/Documentos/ArticulosNew/07_Articulo_Abad.pdf

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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