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# Professional education about pain in children and adolescents and current treatment practices among healthcare professionals working in Lebanon: a survey study

Jessica Finianos<sup>1\*</sup> , Huda Abu-Saad Huijjer<sup>1</sup>  and Jordi Miró<sup>2\*</sup> 

## Abstract

**Background** Professional education has been suggested to be a key barrier in the implementation and availability of treatment programs for children and adolescents with pain. The purpose of this study was to improve our understanding of the pain education of healthcare professionals working with children and adolescents with pain in Lebanon, and the current assessment and treatment practices that are used with them in Lebanon.

**Methods** A group of 120 experienced healthcare professionals participated. Participants had to respond to an online survey with 47 questions about pain education and organizational characteristics of their pain treatment programs.

**Results** The results of the study mainly showed that most participants (80%) reported having not received any type of related formal training. Treatment of children and adolescents with chronic pain was mostly based on medical procedures. A third of participants (34%) reported to be, at least, dissatisfied with the treatment provided in Lebanon to children and adolescents with pain.

**Conclusions** The findings can now be used to improve pain education to healthcare professionals and the care given to children and adolescents with pain in Lebanon.

**Clinical trial number** Not applicable.

**Keywords** Adolescents, Children, Chronic pain, Healthcare education, Pain management, Assessment, treatment

\*Correspondence:

Jessica Finianos  
jessica.finianos@balamand.edu.lb  
Jordi Miró  
jordi.miro@urv.cat

<sup>1</sup>Faculty of Health Sciences, University of Balamand, El-Koura, Lebanon

<sup>2</sup>Dept of Psychology, Centre de Recerca en Avaluació i Mesura de la Conducta, Institut d'Investigació Sanitària Pere Virgili, Universitat Rovira i Virgili, Tarragona, Spain



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## Background

Pain is a common experience in children and adolescents (i.e., individuals up to 18 years old) [1]. In fact, the prevalence of moderate to severe pain while they are at the hospital is high and reaches 13% [2, 3]. Similarly, the prevalence of adolescents with chronic pain is also high with studies showing that up to 46% in this group experience chronic pain problems [4, 5] and the incidence is increasing, including the most severe cases [6].

Pain can significantly interfere with the lives of children and adolescents [7, 8]. For instance, patients with chronic pain report that they are missing school, withdrawing from social activities, and feeling tired, down, and worried [9–12]. Furthermore, pain can also become a burden to family members [13–15], causing a significant social and economic impact [16, 17]. In fact, chronic pain is reported to be the leading cause of disability and disease burden worldwide [18].

Treatment of pain in children and adolescents is complex, particularly when it becomes chronic [19]. Moreover, although the treatment has improved in the last 30 years [20, 21], chronic pain in children and adolescents is still poorly managed [22] and they still suffer unrelieved pain unnecessarily [23]. Actually, multidisciplinary programs have proved to be the best option for treating children and adolescents with chronic pain [24]. However, there are still too few of these programs to address the needs of this population [25], particularly in low-income countries [26, 27] where research is limited [28–30] and children and adolescents might be at higher risk of developing chronic pain [31].

Research has identified a few potential barriers in the implementation and availability of chronic pain programs for this population, these include, but are not limited to, treatment accessibility, complexity of treatment and knowledge deficit [32]. As a matter of fact, less than 25% of the world's population has access to effective medication to alleviate moderate-to-severe pain [33]. Furthermore, psychosocial treatments that have proved to provide relief for children and adolescents with chronic pain [24] are not always available [21]. The access to treatment is a major challenge [34], and inadequate education and training in pain management among healthcare providers has been reported to be one of the most important barriers to improving pain relief and care worldwide [35–38]. Thus, by studying the education and training of professionals and the treatments that are being used, we would be able to understand current practices, identify areas that need changes and implement professional education programs to improve what is needed, and reinforce the good practices that exist.

Therefore, the objectives of this study were to improve our understanding of [1] the professional pain education of healthcare professionals working with children and

adolescents in Lebanon; and [2] the current practices in the assessment and treatment provided for them.

## Methods

### Participants

This study targeted all healthcare professionals working with children and adolescents with chronic pain in Lebanon. Interested individuals had to be working in hospitals in Lebanon, and able to read and understand English as the survey was offered in that language. Potential participants were recruited with the support of the associations and orders they belong to.

### Measures

We used a slightly modified version of the survey developed by Miró and colleagues to meet the study's objectives [23]. The initial survey had 41 questions about different issues (e.g., education received, years of training and practice, treatments used). The survey was reviewed for suitability by 5 native bilingual healthcare experts. The final version of the survey included 47 questions covering two key areas: pain education and training, and current practices in the assessment and treatment of children and adolescents with chronic pain. The survey was implemented using LimeSurvey program and it is available on demand from the corresponding author.

### Procedure

Potential participants were recruited with the support of The Lebanese Order of Physicians, Order of Nurses in Lebanon, Lebanese Psychological Association, and the Order of Physiotherapists in Lebanon. They were instrumental in sharing the information about the study and providing the links to the survey to their associated members. In order to widen the scope of potential participants, we also contacted Lebanese hospitals. In this case, we sent a message to the hospital's human resources managers explaining the objectives of the project and requesting their collaboration to inform their healthcare professionals about it. Finally, we also asked colleagues working in the field to respond to the survey and share the project and link to the survey with other colleagues that they knew that could provide key information. Three reminders (once per week) were sent encouraging those that did not respond to collaborate and help in disseminating the survey.

The message that interested professionals received included a link to the survey. Participants completed the survey online. The survey took approximately 15 min to be completed.

This study was approved by the Institutional Ethical Board at the American University of Beirut (AUB; SBS-2020-0398) and was conducted from June to December

2021. Due to the low rate of responses, the data collection period was extended three times.

### Data analysis

We first computed means and percentages to describe the sample of participants. We then used absolute (n) and relative (%) frequencies to describe participants' responses. The statistical analysis was performed using the Statistical Package for Social Sciences for Windows version 28.0 (SPSS, IBM, Armonk, NY, USA).

## Results

### Participants

A total of 120 healthcare professionals responded to the survey, in whole or in part. The mean age of the participants was 33 years old (SD = 10.08; range = 21–58). Most participants were females (89%), nurses (84%) and had either a master's or a doctoral degree (61%). Most of the participants worked full-time (89%) in either pediatric-neonatal units (28%) or Pediatric and Neonatal Intensive Care Units (22%). On average, participants in the study saw four new patients experiencing pain each week (4.2; SD = 4.9), and two new pediatric chronic pain patients were seen per week (2.35; SD = 3.79; 0–15). Most patients (42%) were school-aged children, and abdominal pain was the most common location of the cases seen (50%). As shown in Table 1, all adolescents are treated in adult settings. See Table 1 for additional detailed information of participants' demographic characteristics.

### Pain education and training

Most participants reported having not received any type of formal training (80%). This means the majority took informal training- through pain conferences, webinars, workshops and reading books or articles- of limited hours and/or learned from their experience in the hospital. The rest took some university coursework about pain during their bachelor's or master's degrees. Only 6% of the participants were very satisfied with the training received. Research activities were minimal. In fact, only one participant reported to be a member of a research group and published one pain-related article. See Table 2 for additional details of the participants' training.

### Current practices in the assessment and treatment of children and adolescents with chronic pain

Participants reported using numerous scales to assess pain in children especially the Faces Pain Scale-Revised (55%). Still, some professionals did not use any (28%).

Treatment of children with chronic pain was mostly based on medical procedures, including surgeries (17%) and medications. To treat children with chronic pain healthcare professionals sometimes used pain-related medical procedures like surgeries, implanted pumps, and

**Table 1** Descriptive information of the study's participants

Participants (n)	120
<b>Mean age (SD; age range)</b>	<b>33 (10.08; 21–58)</b>
<b>Gender (%)</b>	
Female	89
Male	11
<b>Highest degree achieved (%)</b>	
Bachelor's degree	39
Master's degree	39
Medical doctor degree	22
<b>Profession and Position (%)</b>	
Nursing	84
<i>Staff nurse</i>	53
<i>Clinical nurse</i>	12
<i>Attending nurse</i>	7
<i>Head nurse</i>	7
<i>Nursing supervisor</i>	7
<i>Case manager</i>	7
<i>Clinical educator</i>	7
Intern Physician	16*
<i>Pediatrician</i>	34
<i>Surgeon</i>	33
<i>General practitioner</i>	33
<b>Schedule (%)</b>	
Full-time	89
Part-time	11
<b>Workplace (%)</b>	
Private and Urban hospital	77
Governmental and Rural hospital	23
Units specialized in Pain	20
Teams specialized in Pain	15
Pain research and advocacy group	5
<b>Unit Specialty (%) **</b>	
Pediatric-Neonatal	28
Pediatric and Neonatal intensive care unit	22
Medical-surgical	17
Nursing administration	11
Ophthalmology	6
Endoscopy	6
Bone marrow transplantation	5
Not specified	5
<b>Children's Developmental stage (%)</b>	
Infants	17
Toddlers	8
Preschoolers	33
School-aged	42
Adolescents	0
<b>Most common pain (%)</b>	
Abdominal pain	50
Tension Headache	18
Cancer-related pain	11
Postoperative pain	11

**Table 1** (continued)

<b>Participants (n)</b>	<b>120</b>
<b>Mean age (SD; age range)</b>	<b>33 (10.08; 21–58)</b>
Migraine	5
Musculoskeletal pain	5

Notes:

n: sample size; SD: standard deviation

\* A discrepancy exists among physicians because not all of them specified their position

\*\* The percentage exceeds 100% because multiple responses were possible

blocks with local anesthetics. Non-opioid pain relievers, like paracetamol (95%), and opioid pain killers like morphine (61%) were widely used. Half of the units used corticosteroids whereas the rest did not use any pain-related adjuvant therapy. Tricyclic antidepressants—amitriptyline- and selective serotonin reuptake inhibitors -fluoxetine- were also common (95%). Carbamazepine and gabapentin were among the antiepileptics and anti-convulsive used (61%). As for the anesthetics, lidocaine was the only local anesthetic used (78%) and ketamine the only general anesthetic (95%). In addition, most units also used benzodiazepines (78%).

Not all units offered psychology- and/or physiotherapy-related interventions. In fact, half of the units did not offer any psychological intervention, as reported by the participants. The rest offered relaxation (33%), Acceptance and Commitment Therapy (28%) and Cognitive Behavioral Therapy (17%). On the other hand, physiotherapy interventions were more common than the psychological ones (in 83% of the units) and offered under the form of simple and minimal range of motion exercises (78%) and stimulation/gradual exposure (5%). Only one unit (5%) provided additional complementary and alternative interventions for its patients (i.e., massage).

Last, among all, only three participants worked in a unit specialized in managing pediatric pain; and these units had a team of professionals involved with children with chronic pain. Two teams included nurses and pediatricians only, and the other one included an anesthesiologist, neurologist, and psychologist. The latter was also involved in pain research and advocacy and offered training and education in pediatric pain (i.e., internship, residency, and webinars) for its members.

Overall, none of the participants was very satisfied with the treatment provided for pediatric pain in their institution, and only some were satisfied (16%). In the question asking about their satisfaction with the pain treatment provided in Lebanon, a third of participants responded that they were “dissatisfied” or “very dissatisfied” (34%). Table 3 provides additional details of the current management practices with chronic pain children and adolescents.

## Discussion

The objectives of this study were to explore the professional pain education and training of healthcare professionals working with children and adolescents in Lebanon, and the practices provided for them. Two main findings emerged. First, pain education and training seemed to be less than ideal. In this study, most participants (78%) reported having received “none” or “minimal” training. In those cases, where participants received some training, this was, for the most part (89%), an informal type of training mainly obtained at pain conferences (89%). These data are in line with previous studies in Lebanon and other world regions. For instance, a study conducted in Lebanon, showed that only 4% of the nurses meet the required knowledge for effective pain management [39]. Moreover, in a similar study conducted in Spain, half of the participants reported that they had not been given any specific education or training on chronic pain management in children and adolescents during their studies, whereas the majority acknowledged important gaps in their training [23]. Similarly, in a study with nurses in Turkey, Uysal reported that healthcare providers have imperfect knowledge about basic principles of pain management [40]. Taking these findings as a whole, they are indicative of the need for specialized, additional and better education and training programs for healthcare professionals working with children and adolescents with pain in Lebanon.

Second, and perhaps not surprisingly, treatment for chronic pain patients was generally limited to medical-related interventions, which mostly consisted of surgery and nerve blocks, and medicines. Thus, showing a departure from what current guidelines suggest about best treatment practices for this population. Especially that the recently revised World Health Organization guideline reports that the management of pain should be multimodal and entail all its dimensions (physical, psychological, and social), thus the need for a multidisciplinary approach that includes physical, psychosocial, and physiotherapy interventions [24, 41–44]. Interestingly, some practitioners considered themselves well trained and were highly satisfied with their training without even receiving any formal training. In relation to this, however, some participants (28%), reported that they were not using any specific pain intensity scales. This could mean that some of the practitioners are not aware of the importance of formal training in pain management and the implementation of findings of pain research into clinical work.

This study is not exempt from limitations that should be considered when interpreting the findings. First, the sample size could be seen as small ( $n = 120$ ). However, it is similar to participating samples of physicians in studies with similar objectives [23, 45]. In Lebanon, the roles

**Table 2** Participants' pain-related training

<b>Training (%)</b>	
None	33
Minimal	45
Moderate	17
Advanced	5
<b>Training source (%)</b>	
University	34
Hospital	28
None	38
<b>Formal Training (%)</b>	
University coursework	14
<i>Bachelor's degree</i>	80
<i>Master's degree</i>	20
Internship	6
None	80
<b>Informal Training (%)</b>	
Taken	89
<i>Pain Conferences</i>	63
<i>Readings</i>	19
<i>Workshops</i>	13
<i>Webinars</i>	5
None	11
<b>Training Satisfaction (%)</b>	
Very Satisfied	6
Satisfied	22
Neutral	44
Dissatisfied	28
Very Dissatisfied	0

of nurses and doctors are highly interdependent, particularly in pediatric settings. Both nurses and doctors play integral roles in pain management, and their collaboration is essential for effective patient care, emphasizing the importance of interprofessional pain education. Different issues might be responsible for the small sample size. One possible explanation is that data collection was conducted in the middle of the COVID-19 pandemic and the Lebanese crisis that left healthcare providers overwhelmed. Another explanation might be that research in Lebanon can be improved and that Lebanese healthcare providers might not be interested in research [46]. Therefore, additional studies are needed to validate the findings.

Second, all participants were either medical doctors or nurses, yet, mainly nurses. Maybe, there are very few other healthcare professionals (e.g., psychologists, physiotherapists) involved in the treatment of patients with chronic pain. If that was the case, this would be showing a specific need that healthcare and education authorities in Lebanon should try to address in order to improve the care that children and adolescents with chronic pain receive.

**Table 3** Current practices in the management of chronic pain in children and adolescents by Lebanese professionals

<b>Pain Scales used (%) **</b>	
Faces Pain Scale-Revised	55
Numerical Rating Scale-11	28
Verbal Scale	22
Visual Analogue Scale	17
<b>Pain-related Medical Procedures (%) ***</b>	
Surgeries	17
Blocks with local anesthetics	11
Implanted pumps	5
Radiofrequency blocks / cryotherapy / neurolytic agents	5
Spinal stimulation technique	5
<b>Non-opioid Pain Relievers (%) **</b>	
Paracetamol	95
Ibuprofen	61
Diclofenac	28
Naproxen	6
Acetylsalicylic acid	6
<b>Opioid Pain Killers (%) **</b>	
Morphine	61
Fentanyl	39
Tramadol	33
Codeine	17
<b>Psychological Interventions (%) **</b>	
Relaxation	33
Acceptance and Commitment Therapy	28
Cognitive Behavioral Therapy	17
Unspecified	22
<b>Physiotherapy Interventions (%) **</b>	
Range of motion exercises	78
Stimulation/gradual exposure	5
<b>Satisfaction with pain treatment as provided by the institution (%)</b>	
Very Satisfied	0
Satisfied	16
Neutral	34
Dissatisfied	39
Very Dissatisfied	11
<b>Satisfaction with pain treatment as provided in Lebanon (%)</b>	
Very Satisfied	0
Satisfied	10
Neutral	56
Dissatisfied	17
Very Dissatisfied	17

Note: \*\* The percentage exceeds 100% because multiple responses were possible

\*\*\* Multiple responses were possible and each pain-related medical procedure is to be read alone

## Conclusions

Regardless of these limitations, this study provides new and important information about the current pain-related practices in Lebanon and about the professional education and training of the healthcare providers working with children with chronic pain. The findings show

that healthcare education regarding pain management in children and adolescents is not up to the requirement in Lebanon and that treatment practices are limited to medical and pharmaceutical interventions. Accordingly, important avenues for improvement, that can be used by Lebanese authorities concerned with improving the education that healthcare professionals receive and the care provided to children and adolescents with chronic pain, are now underlined.

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#### Author contributions

Conceptualization: J.M.; methodology: J.F. and J.M.; software: J.F.; formal analysis, J.F.; investigation: J.F.; resources: J.F., J.M. and H.H.; data curation: J.F.; writing—original draft preparation: J.F. and J.M.; writing—review and editing: J.F., J.M. and H.H.; supervision: J.M.; project administration: J.F. and J.M.; funding acquisition: J.M. All authors have read and agreed to the published version of the manuscript.

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#### Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

#### Declarations

##### Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of the American University of Beirut (SBS-2020-0398; May 2021).

##### Informed consent

Informed consent was obtained from all subjects involved in the study.

##### Competing interests

The authors declare no competing interests.

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#### References

- Miró J. Dolor crónico ¿un problema de salud pública también entre los más jóvenes? *Rev Soc Esp Dolor*. 2010 [cited 2020 Mar 18];17(7):301–3. Available from: [http://scielo.isciii.es/scielo.php?script=sci\\_arttext&pid=S1134-8046201000700001&lng=es](http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1134-8046201000700001&lng=es).
- Groenewald CB, Rabbitts JA, Schroeder DR, Harrison TE. Prevalence of moderate–severe pain in hospitalized children. *Pediatric Anesthesia*. 2012 [cited 2022 Dec 27];22(7):661–8. Available from: <https://onlinelibrary.wiley.com/doi/full/https://doi.org/10.1111/j.1460-9592.2012.03807.x>
- Stevens BJ, Harrison D, Rashotte J, Yamada J, Abbott LK, Coburn G, et al. Pain assessment and intensity in hospitalized children in Canada. *J Pain*. 2012;13(9):857–65.
- Chambers CT, Dol J, Tutelman PR, Langley CL, Parker JA, Cormier BT, Macfarlane GJ, Jones GT, Chapman D, Proudfoot N, Grant A, Marianayagam J. The prevalence of chronic pain in children and adolescents: a systematic review update and meta-analysis. *Pain*. 2024;165(10):2215–34. <https://doi.org/10.1097/j.pain.0000000000003267>
- Huguet A, Miró J. The severity of chronic pediatric pain: an epidemiological study. *J Pain*. 2008;9(3):226–36.
- Miró J, Roman-Juan J, Sánchez-Rodríguez E, Solé E, Castarlenas E, Jensen MP. Chronic pain and high impact chronic pain in children and adolescents: A Cross-Sectional study. *J Pain*. 2023;24(5):812–23.
- Haraldstad K, Sørum R, Eide H, Natvig GK, Helseth S. Pain in children and adolescents: prevalence, impact on daily life, and parents' perception, a school survey. *Scand J Caring Sci*. 2011 [cited 2023 May 4];25(1):27–36. Available from: <https://onlinelibrary.wiley.com/doi/full/https://doi.org/10.1111/j.1471-6712.2010.00785.x>
- Miró J, Solé E, Gertz K, Jensen MP, Engel JM. Pain beliefs and quality of life in young people with disabilities and bothersome pain. *Clin J Pain*. 2017;33(11):998–1005.
- Walters CB, Kynes JM, Sobey J, Chimhundu-Sithole T, McQueen KAK. Chronic Pediatric Pain in Low- and Middle-Income Countries. *Children* 2018;5:113. 2018 [cited 2021 Jul 27];5(9):113. Available from: <https://www.mdpi.com/2227-9067/5/9/113/htm>
- Agoston A, Gray L, Logan D. Pain in School: Patterns of Pain-Related School Impairment among Adolescents with Primary Pain Conditions, Juvenile Idiopathic Arthritis Pain, and Pain-Free Peers. *Children*. 2016 [cited 2020 Feb 6];3(4):39. Available from: <http://www.mdpi.com/2227-9067/3/4/39>
- Forgeron PA, King S, Stinson JN, McGrath PJ, MacDonald AJ, Chambers CT. Social functioning and peer relationships in children and adolescents with chronic pain: A systematic review. *Pain Res Manag*. 2010;15(1):27–41.
- Craig A, Tran Y, Siddall P, Wijesuriya N, Lovas J, Bartrop R, et al. Developing a model of associations between chronic pain, depressive mood, chronic fatigue, and self-efficacy in people with spinal cord injury. *J Pain*. 2013;14(9):911–20.
- Lewandowski AS, Palermo TM, Stinson J, Handley S, Chambers CT. Systematic review of family functioning in families of children and adolescents with chronic pain. *J Pain*. 2010;11(11):1027–38.
- Ho IK, Goldschneider KR, Kashikar-Zuck S, Kotagal U, Tessman C, Jones B. Healthcare Utilization and Indirect Burden among Families of Pediatric Patients with Chronic Pain. <http://doi.org/10.1080/10582450802161853>. 2009 Jul 16 [cited 2021 Jul 27];16(3):155–64. Available from: <https://www.tandfonline.com/doi/abs/10.1080/10582450802161853>
- Herzer M, Godiwala N, Hommel KA, Driscoll K, Mitchell M, Crosby LE et al. Family Functioning in the Context of Pediatric Chronic Conditions. *J Dev Behav Pediatr*. 2010 [cited 2021 Jul 27];31(1):26. Available from: [pmc/articles/PMC2821736/](https://pubmed.ncbi.nlm.nih.gov/2821736/)
- Groenewald CB, Essner BS, Wright D, Fesinmeyer MD, Palermo TM. The Economic Costs of Chronic Pain Among a Cohort of Treatment-Seeking Adolescents in the United States. *J Pain*. 2014;15(9):925–33. Available from: <http://www.sciencedirect.com/science/article/pii/S1526590014007755>
- Fayaz A, Croft P, Langford RM, Donaldson LJ, Jones GT. Prevalence of chronic pain in the UK: a systematic review and meta-analysis of population studies. *BMJ Open*. 2016 [cited 2022 Dec 15];6(6):e010364. Available from: <https://bmjopen.bmj.com/content/6/6/e010364>
- Vos T, Abajobir AA, Abbafati C, Abbas KM, Abate KH, Abd-Allah F, et al. Global, regional, and National incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the global burden of disease study 2016. *Lancet*. 2017;390(10100):1211–59.
- Hechler T, Kanstrup M, Holley A, ... LS, 2015 undefined. Systematic review on intensive interdisciplinary pain treatment of children with chronic pain. *publications.aap.org*. [cited 2022 May 3]; Available from: <https://www.publications.aap.org/pediatrics/article-split/136/1/115/29041/Systematic-Review-on-Intensive-Interdisciplinary>.
- Miró J, McGrath PJ, Finley GA, Walco GA. Pediatric chronic pain programs: current and ideal practice. *Pain Rep*. 2017 [cited 2022 Jan 17];2(5). Available from: [pmc/articles/PMC577676/](https://pubmed.ncbi.nlm.nih.gov/3577676/)
- Unruh A, McGrath PJ. History of pain in Children. In: McGrath PJ, Stevens BJ, Walker SM ZW, editors. *Oxford Textbook of Paediatric Pain*. Oxford: Oxford university press. 2014 [cited 2022 May 27];3–11. Available from: <https://books.google.es/books?hl=en%26;lr=%26;id=xWyrAAAQBAJ%26;oi=fnd%26;pg=PA3%26;dq=History+of+pain+in+children%26;ots=klq1468LrY%26;sig=mz-oYB0TDUSpsEsA1MmJ83tamFy#v=onepage%26;q=Historyofpaininchildren%26;f=false>
- Eccleston C, Fisher E, Howard RF, Slater R, Forgeron P, Palermo TM et al. Time for change: A lancet commission on paediatric pain. 2020;20:23.

23. Miró J, Micó JA, Reinoso-Barbero F. The management of pediatric chronic pain in Spain: a web-based survey study. <https://doi.org/10.1080/0300799520201854208>. 2020 [cited 2022 Dec 14];37(2):303–10. Available from: <https://www.tandfonline.com/doi/abs/https://doi.org/10.1080/03007995.2020.1854208>
24. World Health Organization. Guidelines on the management of chronic pain in children. 2020 [cited 2022 Dec 15]. p. 40. Available from: <https://www.who.int/publications/item/9789240017870>
25. Miro J, Reinoso-Barbero F, Escribano J, Martí L. El Tratamiento Del Dolor En Población infantojuvenil En España: Datos de Una Encuesta sobre Los programas especializados existentes. *Rev Esp Salud Publica*. 2019;93:1–11.
26. Miró J, Huguet A, Jensen MP. Pain beliefs predict pain intensity and pain status in children: usefulness of the pediatric version of the survey of pain attitudes. *Pain Med*. 2014;15(6):887–97. <https://doi.org/10.1111/pme.12316>. Epub 2014 Jan 2. PMID: 24393548.
27. Tsang A, Von Korff M, Lee S, Alonso J, Karam E, Angermeyer MC et al. Common Chronic Pain Conditions in Developed and Developing Countries: Gender and Age Differences and Comorbidity With Depression-Anxiety Disorders. *J Pain*. 2008 [cited 2019 Jun 20];9(10):883–91. Available from: <https://www.sciencedirect.com/science/article/pii/S1526590008005750>
28. Steiner J, Atika Nyarige D, Jacobi M, Kuhnt J, Kaplan L. A systematic review on ethical challenges of field research in low-income and middle-income countries: respect, justice and beneficence for research staff? *BMJ Glob Health*. 2021 [cited 2022 Dec 15];6(7):e005380. Available from: <https://gh.bmj.com/content/6/7/e005380>
29. Solé E, Racine M, Castarlenas E, de la Vega R, Tomé-Pires C, Jensen M, Miró J. The psychometric properties of the cognitive fusion questionnaire in adolescents. *Eur J Psychol Assess*. 2016;32(3):181–6.
30. Hofman K, Ryce A, Prudhomme W, Kotzin S. Reporting of non-communicable disease research in low- and middle-income countries: a pilot bibliometric analysis. *J Med Libr Assoc*. 2006 [cited 2022 Dec 15];94(4):415. Available from: [pmc/articles/PMC1629422/](https://pmc/articles/PMC1629422/)
31. Finianos Jessica, Huijer H, Miró J. Chronic Pain in Young People: the Situation in Lebanon. *Lebanese Medical Journal*. 2021 [cited 2021 Apr 28];69(1):30–8. Available from: <http://www.lebanesemedicaljournal.org/Home/ArticleDetails/20737>
32. Shipton EE, Bate F, Garrick R, Steketeer C, Visser EJ. Pain medicine content, teaching and assessment in medical school curricula in Australia and New Zealand. *BMC Med Educ*. 2018 [cited 2020 Feb 6];18(1):110. Available from: <https://bmcmmeduc.biomedcentral.com/articles/https://doi.org/10.1186/s12909-018-1204-4>
33. Lohman D, Schleifer R, Amon JJ. Access to pain treatment as a human right. *BMC Medicine*. 2010 [cited 2022 May 2];8(1):1–9. Available from: <https://bmcmedicine.biomedcentral.com/articles/https://doi.org/10.1186/1741-7015-8-8>
34. Brennan F, Carr D, Cousins M. Access to Pain Management—Still Very Much a Human Right. *Pain Medicine*. 2016 [cited 2022 May 2];17(10):1785–9. Available from: <https://academic.oup.com/painmedicine/article/17/10/1785/2270355>
35. Hadjistavropoulos HD, Juckes K, Dirkse D, Cuddington C, Walker K, Bruno P et al. Student evaluations of an interprofessional education experience in pain management. 2014 [cited 2022 May 2];29(1):73–5. Available from: <https://www.tandfonline.com/doi/abs/https://doi.org/10.3109/13561820.2014.917613>
36. Leegaard M, Valeberg BT, Haugstad GK, Utne I. Survey of Pain Curricula for Healthcare Professionals in Norway. <https://doi.org/10.1177/010740831403400110>. 2014 [cited 2022 May 3];34(1):42–5. Available from: <https://journals.sagepub.com/doi/abs/10.1177/010740831403400110>
37. Miró J, Castarlenas E, Solé E, Martí L, Salvat I, Reinoso-Barbero F. Pain curricula across healthcare professions undergraduate degrees: A cross-sectional study in Catalonia, Spain. *BMC Med Educ*. 2019 [cited 2022 May 1];19(1):1–8. Available from: <https://bmcmmeduc.biomedcentral.com/articles/https://doi.org/10.1186/s12909-019-1741-5>
38. Cuff P, Watt-Watson J, Carr E, Dale R, Devonshire E, Dunleavy K, et al. Barriers and facilitators to initiating and sustaining interprofessional pain education. *J Interprofessional Educ Pract*. 2022;29:100581.
39. Abdul Rahman M, Huijer HAS, Noureddine S. Lebanese nurses' knowledge regarding pain management. *Leban Journal Nurs*. 2013;3:10–2.
40. Uysal N. Clearing barriers in cancer pain management: role of nurses. *Int J Caring Sci*. 2018;11(2).
41. de la Vega R, Roset R, Galán S, Miró J, Fibroline. A mobile app for improving the quality of life of young people with fibromyalgia. *J Health Psychol*. 2018 [cited 2020 Feb 6];23(1):67–78. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27225285>
42. Fisher E, Law E, Dudeney J, Palermo TM, Stewart G, Eccleston C. Psychological therapies for the management of chronic and recurrent pain in children and adolescents. *Cochrane Database of Systematic Reviews*. 2018 [cited 2022 Dec 15];2018(9). Available from: <https://www.cochranelibrary.com/cdsr/doi/https://doi.org/10.1002/14651858.CD003968.pub5/full>
43. Landry BW, Fischer PR, Driscoll SW, Koch KM, Harbeck-Weber C, Mack KJ, et al. Managing chronic pain in children and adolescents: A clinical review. *PM&R*. 2015;7(11):S295–315.
44. Odell S, Logan DE. Pediatric pain management: the multidisciplinary approach. *J Pain Res*. 2013 [cited 2022 Dec 15];6:785. Available from: [pmc/articles/PMC3829620/](https://pmc/articles/PMC3829620/)
45. Briggs EV, Battelli D, Gordon D, Kopf A, Ribeiro S, Puig MM et al. Current pain education within undergraduate medical studies across Europe: Advancing the Provision of Pain Education and Learning (APPEAL) study. *BMJ Open*. 2015 [cited 2022 Dec 14];5(8):e006984. Available from: <https://bmjopen.bmj.com/content/5/8/e006984>
46. El Achi N, Honein-Abouhaidar G, Rizk A, Kobeissi E, Papamichail A, Meagher K et al. Assessing the capacity for conflict and health research in Lebanon: A qualitative study. *Confl Health*. 2020 [cited 2022 Dec 15];14(1):1–18. Available from: <https://conflictandhealth.biomedcentral.com/articles/https://doi.org/10.1186/s13031-020-00304-x>

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