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# EVIDENCE-BASED PRACTICE IN THE FIELD OF REHABILITATION

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**ABSTRACT — Background:** At universities, the EBP course occurs within the master's degree or doctorate studies. To be able to make the right decision based on finding relevant evidence is one of basic skills of a university educated graduate of medical fields.

**Objectives:** The aim of this study was to determine the degree of awareness of physiotherapy and occupational therapy students about the principles of Evidence Based Practice (EBP), to inquire into their ability to use electronic information resources for searching strategies, and apply the results in practice.

**Methods:** Students in this study were tested by means of a questionnaire survey at the beginning and at the end of the training course Evidence Based Practice for rehabilitation disciplines.

**Results:** The results show that after completing EBP course, students were able to define the term, to search in electronic information resources, and to apply the results to practical tasks more efficiently.

**Conclusions:** In this pilot study, significant differences in the results have been found between the answers to the questions in the input and output surveys. The results confirm our hypothesis about the benefits of the EBP course, even in undergraduate studies. The students can apply acquired knowledge and skills in subsequent studies.

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## INTRODUCTION

Evidence-based practice (EBP) is an interdisciplinary approach which appeared for the very first time in medicine as Evidence-Based Medicine and subsequently was transferred to other fields, e.g. psychology, nursing, education etc. First EBM principles occurred in clinical practice in the beginning of the 20th century in surgery. Later on more extensive studies were published, e.g. in the treatment of tuberculosis. However, the first one who applied statistic evaluation of therapeutic results, the French physician Charles-Alexandre Louis, proved blood-letting ineffective. The term EBM itself was probably used for the first time in the 1990s by MacMasters University employees as "systemic approach to the analysis of published research papers as the basis for clinical decision-making" [1].

Since 1995, the concept of evidence based practice has developed also in other health care branches, e.g. in nursing (Evidence Based Nursing), midwifery (Evidence Based Midwifery), in physiotherapy (Evidence Based Physiotherapy), occupational therapy (Evidence Based Occupational Therapy), in public health (Evidence Based Public Health), but also outside health service, e.g. in librarianship (Evidence Based Librarianship) and in law (Evidence Based Law). The World Confederation for Physical Therapy (European region) defined EBP as "a commitment to use the best available evidence to inform decision-making about the care of individuals that involves integrating physiotherapist practitioners and individual professional judgement with evidence gained through systematic research" [2].

The principle of EBP application is making decisions about further procedure for patients based

on research, where efficiency of procedures is compared and the best possible solution is searched out for the given case. EBP makes problem solution in clinical practice possible and ensures an effective approach to clinical decision making based on searching for the best and latest evidence, clinical experience, patients' evaluation and value preference connected with health care [3].

Evidence based practice is one of those approaches that enable future health care providers to manage an explosion of new technologies, findings, literature, and it will consequently lead to improvement of patient's results. Courses aimed at EBP in study programmes in rehabilitation field can be found at universities of medicine or health studies, either separately, or the EBP principles are implemented in other education courses, most frequently in research methodology. EBP has provided a great development especially in nursing [4,5].

In the field of rehabilitation, Evidence Based Practice (EBP) is a very frequently discussed term in practice. There are no uniform estimations of using EBP principles and both supporters and eager opponents of this approach can be found. Obviously, the clinical practice itself is not the most important argument to decide on the application of a specific therapeutic procedure for physical treatment. Economic, personal and technical aspects must be considered, too. Integrating EBP into the education is the most frequently used in nursing. Also, most studies dealing with the evaluation of the benefits of EBP by nurses. For students of physiotherapy, EBP principles are not applied in teaching standards. Physiotherapy students mostly learn basics of Evidence Based Practice during their Master study. This is a major reason why they are hardly able to apply the EBP fundamentals in practical therapy after graduation.

A piece of work from 2009 examined the awareness of EBP at Czech occupational therapy facilities by means of a question form [6]. Very low awareness about EBP among occupational therapists was concluded, although it was included in undergraduate university education in nursing simultaneously [6].

## EVIDENCE-BASED PRACTICE IN STUDY PLANS OF REHABILITATION BRANCHES AT THE FACULTY OF MEDICINE, UNIVERSITY OF OSTRAVA

As mentioned above, nursing has the longest tradition of involving EBP in curricula where also the

methods of project teaching are being used. Project education is based on theory and practice interconnection and improves the student's creativity. Using a project in teaching of the course Evidence based practice shows to be an effective way of how to acquire knowledge and use it to solve problems relevant to clinical practice [7].

Within a project focused on teaching innovation in paramedical study branches, a new course Evidence Based Practice in Rehabilitation Branches was created which was integrated into study plans of the branches physiotherapy and occupational therapy. To support the teaching, a resource text was elaborated and e-learning course within LMS Moodle was created [8-10].

### Pilot courses

The course was involved in teaching for the very first time in the study programme Specialization in health service in the branches physiotherapy and occupational therapy in summer semester of the academic year 2011/2012. The course was offered to students of physiotherapy and occupational therapy within one common course because of a very useful cooperation of these professions in comprehensive patient's therapy in practice. There was also the intention to develop common topics for problem solution within multidisciplinary approach.

The teaching was led in a combined form with e-learning support and emphasis on the work itself. Students got a theoretical part that explained EBP history and principals, methods of how to formulate the clinical question (PICOT: P - stands for patient population, I - represent issue of concern or intervention, C - stands of comparison intervention, O - signifies outcome, T - stands for time duration) and how to evaluate the results found. The EBP application in the classes referred to searching in electronic information sources available at the university. In collaboration with a university librarian, the most suitable electronic databases for rehabilitation branches were searched out. Students were acquainted with principles of searching according to key words in Czech as well as in English languages and they practised searching for solution of real tasks in electronic databases. In the e-learning course, students elaborated five assignments. The tasks concerned both to work with electronic databases and search strategy but also to form clinical questions. As a course conclusion, each student compiled a case study related to a particular diagnosis in which he/she chose a treatment strategy related to the sought arguments [10].

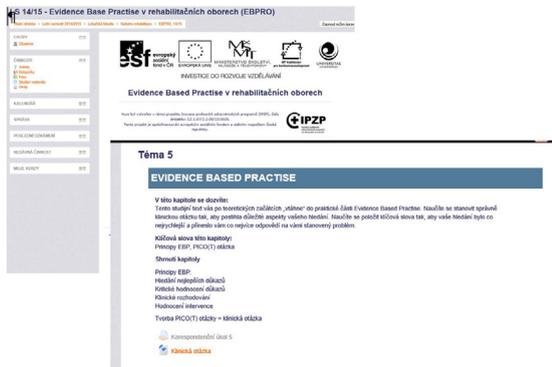
Within practical skills, a portion of searching in electronic databases, available at the University of

Ostrava, was involved in the course. A university librarian, who participates in teaching, seeks out the up-to-date information databases especially suitable for physiotherapists and occupational therapists so that the students can search for and work with professionally directed pieces of information.

## Implementation in standard teaching

In academic year 2014/2015, the course was implemented in the bachelor study of physiotherapy as obligatory-optional or optional course in the summer semester of the second year of study. From this time onwards, the course has been taught five times, and 68 students have completed the course.

The teaching is implemented, as mentioned above, with an e-learning support in LMS Moodle. The illustration of the setting is shown in Figure 1.



**FIGURE 1.** Setting of the e-learning course EBP in rehabilitation fields. In topic 5, students learn how to formulate the PICOT question in the right way so that the question expresses important aspects of search

Within the course, students compiled particular case studies in the form of correspondent tasks. Students picked up from 10 offered case studies – case studies concerning patient with autism, with apallic syndrome, cerebral palsy, urinary incontinence, multiple sclerosis, the issue of doing sports during pregnancy, falls in senior facilities, well-timed diagnosis of defective posture, amputations and signs of dementia are being solved. Figure 2 presents selected issues solved by EBP methods.

## METHODS

In the pilot course in academic year 2011/2012, an interview took place in the first lesson where the students explained why they had enrolled the EBP course,

and what their expectations were. Most students did not know what the term Evidence Based Practice means, they had no expectations and they enrolled the course due to its attractive credit rating. At the course end, an interview with students proceeded again. It aimed to evaluate the course, specify particular benefits for individual students and analyse deficiencies. It was observed that students missed basic orientation in research frequently. In searching in electronic information resources, students were successful under direct teacher's guidance only.

In academic years 2013/2014 and 2014/2015 students were offered to take part in initial and final course evaluation. The survey was conducted via a questionnaire. The questionnaire included both closed and open questions aimed to find out how students understand the concept of Evidence Based Practice, whether they can explain it. We also wanted to find out if they know the electronic information resources and focus on the search strategies (Figure 3). Students' answers were evaluated in percentages. The questionnaire was applied twice as entrance and exit survey and the results were compared.

## RESULTS

Twenty-six students in two academic years participated in the study, all have filled in the input survey while the final one was completed by 20 students.

Only 7 students out of the total 26 involved in the initial survey knew the term EBP in advance, the other heard it for the very first time. Out of 7 students, who had heard the term before, only three answered that they knew what the results acquired by means of EBP could be used for and just one student out of these three characterized EBP correctly. There was a different situation after the end of the course. 20 students took part in the final survey and all of them answered positively the question whether they are able to define meaning of the term EBP. In addition, each answer contained proper example of EBP result practical application.

The orientation in electronic university databases was another part of teaching. In the initial survey, 15 students out of 26 stated they had already used any database. This low number shows that students were not used to search for needed pieces of information by means of EIS very much. Most of them (17 students) mentioned the Internet without any detailed specification as the most common source of information. Then, during oral questioning, they mentioned only general search engines as Google or Seznam.cz and the like. It took them too much time to find the needed information due to the lack of any searching strategy, and they did not know about existing special databases

## Kazuistika č. 9

„Fyzioterapeut má v péči 45letou ženu, která k němu byla doporučena urologem s diagnózou stresové inkontinence, stupeň dvě dle Ingemanna-Sumberga – únik moče při lehké fyzické námaze. Fyzioterapeut ženě doporučil speciální cvičení a zároveň doporučuje terapeutickou intervenci pro zátěžové držení těla, které žena má. Pacientka má v anamnéze tři porody, operaci zánětu stěpého střeva v dětství, sedavé zaměstnání. V posledním roce přibrala 10 kilogramů, má nadváhu. Protože chtěla opět mít svou pávodní váhu, začala pravidelně cvičit. Nejvíce ji obtěžuje bolest zad v oblasti bederní páteře a únik moče při cvičení. Rehabilitaci příliš nevíří, přečetla si na internetu, že ji stejně čeká operace. Fyzioterapeut zvažuje jak ženu motivovat k pravidelnému cvičení svalů pánevního dna.“

**Klinická otázka:** „Jak správné motivovat pacientku pravidelnému cvičení pánevního dna, abychohmpředěšl operaci?“

## PICOT

**P aatient** - pacientka se stresovou inkontinencí stupeň č. 2 dle Ingemanna-Sumberga.

**I ntervention** - motivace k pravidelnému cvičení svalů pánevního dna

**C omparation** - nic

**O utcomes** - zmírnit stresovou inkontinenci, předejít operaci

## Klíčová slova:

- Ženy, stresová inkontinence, terapie svalů pánevního dna, špatné držení těla, nadváha, bolest bederní páteře, motivace
- Females, stress incontinence, Pelvic Floor Muscles Exercise, -PFME, bad posture, obesity, lumbar pain, motivation

## Podmínky vyhledávání:

Jazyk: angličtina, čeština

Rok publikace: 2005 – 2014

## Typ studií/publikací:

- 1) Systematické přehledy nebo meta-analýzy (Systematic Review or Meta-Analysis)
- 2) Randomizovaný kontrolovaný pokus (Randomized Controlled Trial)

## Použité databáze:

- 1) SpringerLink
- 2) PubMed
- 3) Medvik
- 4) Google Scholar

## Citace a internetové zdroje:

1. <http://www.njms.rg.edu/fall/10.1056/NEJMe0210627>
2. <http://www.medrxiv.org/content/10.1101/2019.08.14.19144031.v1.full.pdf?r=355098&page=8>
3. <http://link.springer.com/article/10.1007%2F300192-008-0616-9/fulltext.html>
4. <https://onk.uk.zcu.cz/bitstream/handle/11025/7524/Fester%20Havlova%20-%20Bakalarska%20praca.pdf?sequence=1>

## Souhrn informací:

## 1.

Holandská randomizovaná studie je srovnávací chirurgickou léčbu s fyzioterapií. Kosař s těchto metod zlepšil stresovou inkontinenci. V období od března 2008 do května 2010, celkem bylo požádáno 656 žen s převládající stresovou inkontinencí, z nichž 460 dalo písemný informovaný souhlas. Tyto ženy byly náhodně rozděleny do skupin chirurgie (230) a fyzioterapie (230).

Analýza byla provedena na 215 ženách zařazených do skupiny chirurgie a 202 žen, přiřazené ke skupině fyzioterapie. Po 12 měsících, bylo k dispozici 196 žen CH (91,2 %) a 174 žen F (86,1%).

Ve skupině fyzioterapie, 99 žen (49,0 %) přešlo v polovině času daného výzkumu 31,7 ± 12,7 týdnů do skupiny chirurgie. Tento přechod komplikovalo interpretace výsledků. Proto zavedli v těchto žen dotazník, ze kterého vyplynulo, že předchozí fyzioterapeutická léčba jim pomohla rychleji „uzdravit“ po operaci.

Frekvence zlepšení ve skupině chirurgii (90,8 %) byl mírně vyšší, než je uvedeno v literatuře (68-87 %) 64,4 % žen ze skupiny fyzioterapie zaznamenalo zlepšení, avšak toto číslo zahrnovalo i ženy, které přešly na operaci. 43% žen, jež nepřešly na chirurgickou léčbu, zaznamenaly zlepšení své inkontinence.

V souhrnu lze konstatovat, že výsledky naší 12-ti měsíční studie ukazují, že ženy se středně těžkou až těžkou stresovou inkontinencí mají významně lepší subjektivní a objektivní výsledky po operaci než po fyzioterapii.

## 2.

Cíleek pojednávající o konzervativní léčbě ženské močové inkontinence, jejich možnostech a efektivitě. V léčbě stresové inkontinence platí zásada vyčerpání všech možností konzervativních způsobů léčby před indikací k chirurgické intervenci. Konzervativní léčba obsahuje rehabilitaci svalů pánevního dna (Kegelovy cviky, vaginální konusy, elektrostimulaci), medikamentózní léčbu, pesary, uretrální obturující tělíska. Tato léčba se využívá v lehkých formách stresové inkontinence. U těžkých forem je kauzálním řešením chirurgická léčba.

## 3.

Zpěšji studie poukázala, jaký má vliv mírné snížení hmotnosti u obézních žen s prokázanou inkontinencí. 64 inkontinentních ženám byl nabídnut program na snížení hmotnosti s cílovou ztrátou 5-10 %. To zahrnovalo nízkokalorickou dietu a cvičení. 42 žen (65 %) dosáhlo cílového úbytku hmotnosti a měly významné snížení BMI. Klimický i statistický se významně zlepšila kvalita života. Tyto výsledky naznačují, že snížení hmotnosti o 5 % počáteční tělesné hmotnosti může zlepšit stav inkontinence moči a jeho vliv na kvalitu života u obézních žen.

## 3.

Studie je bakalářská práce z Jihočeské univerzity. Studentka vytvořila hypotézu, že pravidelným cvičením svalů pánevního dna lze tyto svaly posílit a zároveň zmírnit příznaky stresové inkontinence. Tato stanovena hypotéza na základě 3 kazuistik se potvrdila. Studentka pracovala dle „Otváracího modelu“. Cvičení bylo zaměřeno na odbourání dysfunkce posturální stability, dále na nácvik dechového stereotypu a na cviky PD. Podle výsledků palpálního vyšetření PD a vyšetření PD perineum studentka zjistila, že se maximální svalová síla všech tří pacientek minimálně zvětsila. Dále se ale výrazně zlepšila délka svalové kontrakce. Pacientky subjektivně popisovaly zlepšení příznaků inkontinence a celkově se cítily mnohem lépe. Jejich psychický stav se zlepšil. Předpokladem však byla plná aktivní spolupráce pacientek.

## Výsledek:

Konzervativní léčba ve fyzioterapii, u naší pacientky se středně těžkou inkontinencí, má své uplatnění. I když studie jasně dokazují lepší prognózy po chirurgické léčbě. Pacientce bych především vysvětlila, že jakýkoliv operační zákrok je velkým zásahem do těla.

Poukázala bych na fakt, že snížení její hmotnosti, nám může pomoci snížit příznaky inkontinence. Navrhla bych jí návštěvu výživové poradkyně či diabetologa. Dále bych poukázala, že nadměrné zátěže na postelovacích strojích mohou vést ke zhoršení jejího stavu. Ukázala bych jí jak správně cvičit, aby nepřetěžovala své pánevní dna.

Dále bych využila všech alternativ v konzervativní léčbě – cvičení na svaly pánevního dna, behaviorální terapii. Pomocí dechových cvičení naučit pacientku také relaxaci svalů. Určitě bych do léčby zahrнула biofeedback terapii, díky které bude mít pacientka zpětnou vazbu, jak její svaly pracují. Uvidí prokazatelný důkaz o tom, že naše cvičení opravdu pomáhá zlepšit její funkci pánevního dna.

A především mít vždy na paměti, že vše je také o psychice dané pacientky. Aby měla správnou motivaci k pravidelnému aktivnímu cvičení, měli bychom být nejen fyzioterapeuti, ale i „psychologové“.

**FIGURE 2.** Illustration of solving a case study of a patient with urinary incontinence. The student had to answer the question how to motivate the patient to exercise the pelvic floor muscles regularly in order to avoid surgery

Formulář obsahuje povinná pole označená \*

☺ (1) Dokážete definovat obsah pojmu Evidence Based Practise? \*

☺ (1) Víte k čemu se EBP využívá? \*

☺ (1) Pokud jste na předchozí otázku odpověděli ano, pak napište k čemu se EBP využívá.

☺ (1) Využili jste doposud některou z elektronických databází, které nabízí OUP? \*

☺ (1) Proč jste si předmět zvolili? \*

vyšší kreditové hodnocení

zájem o obsah předmětu

vhodný čas realizace předmětu

jiné

☺ (1) Pokud jste v předchozí otázce zvolili "jiné" důvody zápisu předmětu, uveďte, prosím, jaké?

☺ (1) Když chcete získat nějaké odborné informace, odkud je nejčastěji získáváte? \*

☺ (1) Myslíte si, že by vám absolvování kurzu mohlo pomoci k výběru tématu bakalářské práce? \*

**FIGURE 3.** Initial questionnaire in the beginning of teaching

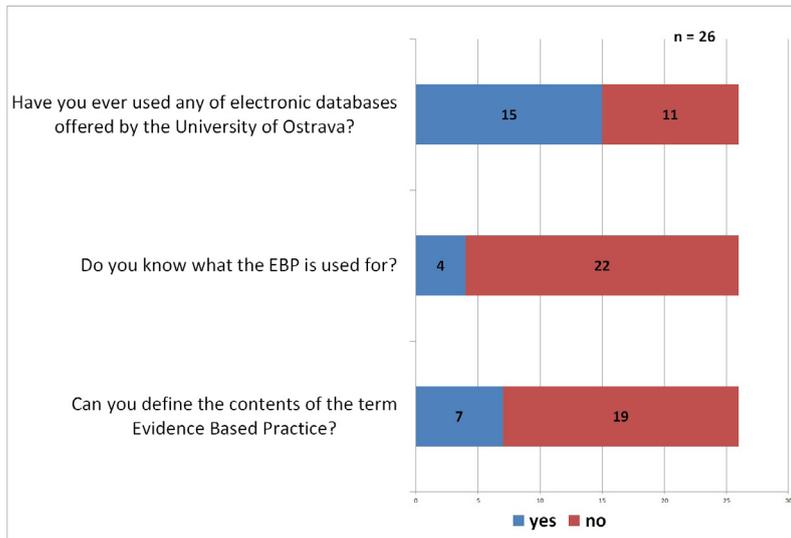


FIGURE 4. Illustration of outputs of the initial questionnaire

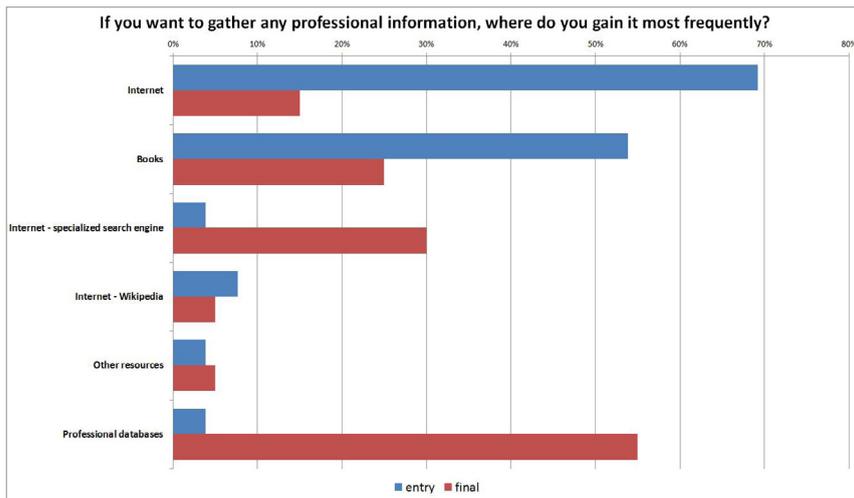


FIGURE 5. Reasons for not using VPs

for physical therapy or occupational therapy, either. Professional books or journals were given as the most frequent source of information. In the final survey, all 20 respondents replied they started using university EIS to a larger extent to search information for study. EBSCO, MEDLINE and Google Scholar (100%) were found most beneficial. Although the students got familiar with university EIS, searching strategy, defining the key words and their English equivalents seemed to be their permanent problems. These troubles were especially obvious when they should have worked without tutor's assistance.

## DISCUSSION

Although this was just a pilot survey with a small number of participants, the results are interesting and inspiring. The introduction of EBP in physiotherapy and occupational therapy curricula at the undergraduate level is not quite standard, this is rather the domain of nursing. The research of the effectiveness of acquired knowledge and skills after the completion of such a course of study can be found mostly in nursing, too. Our results related to the understanding and definition of EBP and its contents correspond to the results of Martinez et al. [12], performed in university nursing students. Increased skills in using EBP tools after 15 weeks of education were discovered, which is almost identical to our time allocation of 14 weeks.

Nevertheless, it should be noted that at least some students of the bachelor study fields physiotherapy and occupational therapy knew the term but they cannot explain it correctly. The above mentioned results imply that students have learned both EBP principles and the application of EBP outputs in practice.

Other studies [15], however, describe the EBP principles to be difficult to understand and worse to apply in clinical practice, and the students are looking for a way how to keep the skills acquired at university in their working environment.

Olsen et al. [16] point to the fact that physiotherapy students who had EBP courses in their curricula, were able to form and ask questions and critically evaluate research results.

At the beginning of our research, students in the survey reported that they used mainly books, textbooks or journals to gather the necessary information. Few among them featured electronic sources as a source of information. If even used, general-purpose Internet resources such as Google or Seznam were used, despite the negligible scientific value of their information.

The study [17] reported similar results, and also pointed to the fact that students rather proceed from such resources, if adequate training and skills in work with electronic information sources were not provided to them. As a further option to gain professional experience for deciding on appropriate therapy, the respondents reported their personal experience and advice of senior colleagues.

Our students positively valued the fact that they were able to make a basic search related to their bachelor thesis. Eight students mentioned the EBP course helped them to choose or elaborate the topic of the bachelor thesis.

## CONCLUSION

Our view to the accuracy of involvement of a course dealing with the solution of clinical questions based on the EBP principles in curricula even at the undergraduate level was also supported by the systematic review of MOTA DA SILVA et al. [13], in which the need to increase theoretical information and practical skills to enhance EBP skills of physiotherapists in deciding on therapy for the patient was demonstrated. As mentioned above, nursing disciplines have a long history in teaching the EBP principles, thereby the competence of nurses to apply this scientifically based knowledge into practice is increased [14].

When the efficiency of our course is evaluated, we can say the students positively value the use of information presented in the course for their further studies, and mainly for future practice. They learned how to specify a problem and find possible solutions with the aid of EIS. This was shown especially during assignments and mainly during elaborating a particular case history. Students were able to form the PICOT question and find possible therapy for a particular case. Considering they were also acquainted with essentials of research methodology, they were able to determine which of the found pieces of evidence was of highest significance, and they learned at least the principles of critical evidence analysis in this way [11].

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