Original

Concise headache axis for systematic reporting: needs assessment in Indonesian neurology residents

Henry Riyanto Sofyan, Irma Savitri, Ahmad Rafi Faiq, Aditya Putra, Ery Riady Indrapriambada, Tiara Aninditha

Faculty of Medicine, Universitas Indonesia, Indonesia
Dr. Cipto Mangunkusumo National General Hospital, Central Jakarta, Indonesia

✉

Irma Savitri
irma.savitri.madjid@gmail.com

Edited by:
Marcelo Moraes Valença

Objective
This study aimed to refine and simplify the existing standardized headache reporting axis used in Indonesian neurology training, addressing challenges in usability, efficiency, and diagnostic clarity while maintaining essential clinical detail.

Methods
A qualitative needs assessment was conducted through a focus group discussion involving six neurology residents with experience in headache management at a national referral hospital. Data were collected through a structured, moderator-led discussion, transcribed verbatim, and analyzed thematically using the Steps for Coding and Theorization (SCAT) method to identify core themes and recommendations for revision.

Results
Four major themes emerged: (1) benefits of standardized and systematic reporting; (2) challenges and barriers in documentation; (3) variability and the need for contextual adaptation across clinical settings; and (4) recommendations for simplification and efficiency. Key revisions included merging quality with phenotype, combining severity with functional status, and integrating aura and autonomic symptoms under associated symptoms. The updated axis emphasizes essential dromal elements—phenotype, duration, intensity, and location—while incorporating biopsychosocial factors for a more holistic approach. The tool was also designed to accommodate different clinical contexts, including emergency, outpatient, and inpatient settings.

Conclusion
A concise and structured headache documentation framework enhances diagnostic accuracy, therapeutic decision-making, and clinical efficiency. The revised headache axis offers a flexible yet standardized tool potentially adaptable across care settings, supporting both clinical practice and future research in headache management.

Introduction

Headache is frequently encountered (1). Similar to the rest of the world, in Asia Pacific and Southeast Asia, headache is a common problem (2). Besides having a high prevalence, headache also has an impact on quality of life. According to the Global Burden of Disease data in 2019, headache contributes to 5.37% of a person's years lived with disability (YLDs) and serves as the second most frequent cause of disability after low back pain (3).

Accurate and systematic monitoring of headache characteristics is fundamental to both diagnosis and ongoing management. Headache assessment encompasses numerous clinical elements—including onset, duration, frequency, intensity, location, associated symptoms, and potential triggers or alleviating factors—which, if documented inconsistently or in a scattered manner, can lead to diagnostic uncertainty. The International Classification of Headache Disorders, 3rd edition (ICHD-3), provides a structured diagnostic framework that depends on high-quality clinical data obtained primarily through meticulous history taking. In addition to its diagnostic utility, systematic monitoring is equally critical for therapeutic decision-making, enabling clinicians to assess treatment response, adjust interventions, and optimize long-term care strategies (4). Therefore, implementing a standardized and comprehensive approach to headache documentation is a key component of effective headache care (5).

An earlier version of our headache reporting axis has been in clinical use at our hospital for over six months. However, its implementation has presented several challenges. Clinicians frequently reported that the tool was time-consuming, and despite its comprehensive nature, it often failed to provide a coherent, clinical "big picture" of the patient's headache presentation. As a result, the axis did not consistently support effective diagnostic reasoning or therapeutic decision-making. In response to these limitations, we initiated a focus group discussion (FGD) to critically review and revise the axis. Our primary goals were to develop a version that is both user-friendly and concise, while still capturing the essential clinical elements necessary for accurate diagnosis and management. Ultimately, we aim for this revised axis to serve as a practical and reliable reference point for healthcare professionals involved in headache care.

Methods

Study design and population

This study was conducted in Jakarta, Indonesia by a team of neurologists together with second- to fourth-year neurology residents. An FGD was carried out with six doctors who had completed their rotation in pain and headache, providing them with substantial exposure and experience in managing various types of headache disorders at the national referral hospital. Participants were selected through purposive sampling and were invited via telephone and formal written correspondence. All invited participants consented to take part in the study. The discussion questions were developed and finalized by an expert panel.

Data collection and analysis

The general flow of our data collection and analysis was as follows: (1) formulation of FGD questions; (2) contacting and scheduling moderators and participants; (3) conducting an in-person FGD at Dr. Cipto Mangunkusumo Hospital; (4) verbatim transcription of the discussion; (5) categorization of subthemes and main themes from the transcript; and (6) synthesis of the main themes. The FGD was audio-recorded with participants' consent to ensure accuracy of the verbatim transcription. Data were collected in July 2025, and the session lasted approximately 1.5 hours.

Data collection process followed an iterative process. Transcribed verbatims are put into a table based on the Steps for Coding And Theorization (SCAT) method for thematic analysis. Noteworthy words or phrases from the text were identified, then paraphrased. After that, concepts are identified out of the text and themes as well constructs in considerations of context are developed.

Sampling saturation was decided when verbatim analysis of participants generates similar themes and ideas. All participants of in depth interviews and focused group discussions signed an informed consent. Data was stored in a protected online repository. Components of trustworthiness in our study design are as follows. To address credibility, we did member checking by sending the verbatim focused group discussion to our participant. We also perform investigator triangulation, as (a) focused group discussion was led by a moderator and co-moderator (b) verbatim transcription was performed by two different researchers.

All participants received a brief explanation about the researchers' background, the overall objectives of the study, their specific role within the needs assessment, and the interviewer's position. Ground rules for discussion were also outlined before the session. Aware of their potential bias as neurologists inclined toward clinical interpretation, the researchers maintained reflexivity through regular peer debriefing. The study was grounded in a constructivist paradigm, emphasizing the co-construction of meaning between researchers and participants based on their shared clinical experiences in headache management,

and was reported in accordance with the Standards for Reporting Qualitative Research (SRQR) guidelines.

Results

We conducted an FGD with second- to fourth-year neurology residents. Most participants were female (83%). Based on the thematic analysis, we identified four major themes: benefit of standardization and systematization of reporting; challenges and barriers in reporting; variability and need of adaptation in clinical approaches across settings; and recommendation of simplification and efficiency of the reporting process.

This FGD was conducted to revise the existing headache reporting axis (Table 1), which consists of several core components currently used in clinical practice. While the original structure aimed to capture key headache features, concerns were raised about its lack of clarity, consistency, and practicality. The FGD aimed to refine the axis to support more concise, systematic data collection and improve diagnostic accuracy, monitoring, and treatment decision-making.

Table 1. Initial Headache Axis Documentation

Component	Explanation
Prodromal	Early symptoms that occur before headache onset
Dromal	Main phase of the headache episode
Phenotype	The characteristic clinical features of headache (e.g., migraine, tension-type, etc.)
Provocative	Factors known to trigger headache attacks (e.g., stress, certain foods, lack of sleep, bright light, loud noise)
Palliative	Factors known to relieve headache (e.g., rest, sleep, use of analgesics, being in a dark/quiet room)
Quality	The character or quality of the pain experienced by the patient, such as throbbing, dull, pressing, sharp, or stabbing
Region	The main location of the headache, such as unilateral, bilateral, frontal, or generalized (include regional code according to the headache location map)
Severity	The maximum intensity of the headache, measured using a numeric rating scale (NRS) 0–10
Temporality	Includes Duration (in minutes, hours, or days), Frequency, and Onset: Duration: the longest duration (minutes/hours) of a disabling headache episode Frequency: the number of headache occurrences (per day, per week, or per month) Onset: acute (0–3 months) or chronic (> 3 months); please indicate when the complaints first began
Autonomic symptoms	Associated autonomic symptoms accompanying headache (e.g., red eyes, lacrimation, ptosis, nasal congestion, or rhinorrhea)
Associated symptoms	Other symptoms commonly associated with headache, such as nausea, vomiting, photophobia, phonophobia, and concentration difficulties
Aura	Reversible neurological symptoms that precede or accompany headache (aura)
Post-dromal	The postdromal phase after the headache subsides, during which the patient may still experience fatigue, confusion, low mood, or mild sensitivity
Functional status	The impact of headache on the patient's daily activities, including ability to work, study, engage socially, and perform everyday functions, which may be assessed using instruments such as MIDAS or HIT-6

MIDAS : Migraine Disability Assessment Scale; HIT-6 : Headache Impact Test

The revision process was guided by the following questions outlined in Table 2 below :

Table 2. Focus Group Discussion Questions

Question type	Description
Purpose and applicability of systematic documentation	In your opinion, what is the purpose of systematically documenting headache?
Current practices in documentation	Can the current headache documentation system be applied across different headache cases? Please describe how you currently document headache. How is the determination of headache region currently addressed in documentation?
Challenges and barriers in documentation	What physical examinations are typically performed during headache assessment? What challenges have you encountered in documenting headache? Does the current documentation system facilitate or hinder patient care? How much time does it usually take to complete the record?
Adaptation and contextual differences	Is the documentation setting different between the outpatient clinic and the inpatient ward?
Suggestions for current headache documentation system	Do you have any suggestions for improving the current headache documentation system? If the documentation must be limited to 8 minutes, which components would you prioritize (while still enabling decisions on abortive therapy, prophylaxis, and, if possible, identification of medication overuse headache)? For determining abortive therapy, which points need to be addressed? And for prophylaxis, which points are essential?

1st theme: Benefit of standardization and systematization of reporting

A standardized headache pain reporting format offers significant benefits in guiding clinical decision-making. By organizing patient information in a structured manner, it enables more targeted and consistent diagnosis. Clinicians are better able to identify patterns related to headache characteristics, such as frequency, intensity, duration, and associated symptoms. This clarity helps in differentiating between primary and secondary headache disorders and reduces diagnostic ambiguity. The systematic nature of the format also minimizes variation in data collection between providers, improving diagnostic accuracy and facilitating more uniform clinical judgment across different healthcare settings.

"In my opinion, a systematic headache pain reporting format helps streamline our thinking and clearly directs what needs to be asked to the patient, so in fast-paced settings like our clinic, the questions become more focused."

"The goal is to align perceptions, so everyone is clear on what to look for. The components being asked are focused and help with diagnosis. The person reporting and the one receiving the report should be aligned. Likewise, the patient and doctor are both more directed."

Beyond diagnosis, the standardized format enhances the ability to evaluate and monitor therapeutic outcomes

over time. With consistent documentation of symptom progression, treatment responses, and trigger factors, healthcare providers can more effectively assess whether current therapies are effective or need adjustment. It supports longitudinal tracking, making it easier to detect changes in headache patterns and severity. This continuity of information is especially valuable for chronic cases, where ongoing monitoring is crucial for managing disease progression and optimizing patient care.

2nd theme: Challenges and barriers in reporting, variability and need of adaptation in clinical approaches across settings

While the standardized headache reporting format has been acknowledged as helpful in organizing information and guiding diagnosis, many clinicians noted that it can be time-consuming—particularly during initial consultations. Reports from the field indicate that completing the full format can take up to 30 minutes for new patients, especially when including detailed tools like Migraine Disability Assessment Score (MIDAS) or functional status assessments.In contrast, follow-up visits or inpatient reviews typically require less time (around 5–10 minutes), especially if the format is selectively applied.

3rd theme: Variability and need of adaptation in clinical approaches across settings

Clinical settings vary widely in terms of time constraints, patient acuity, and diagnostic focus, making it necessary to adapt the headache reporting format accordingly. In high-pressure environments like the emergency department (ED), clinicians tend to prioritize rapid triage and immediate decision-making, often using a shortened version of headache documentation to quickly determine urgency—such as whether a computed tomography (CT) scan is needed or if the case involves a life-threatening condition.

"More focus in the ED is on simplifying whether it's an emergency case (whether a CT is needed or not)..."

Visual observation and basic questioning take precedence over comprehensive documentation. In contrast, outpatient settings like clinics allow for more time and depth in history taking. Here, the full format can be applied more effectively, enabling a more thorough evaluation of headache characteristics, etiology, and treatment needs. Meanwhile, in inpatient wards, the format is typically used in a simplified manner for follow-ups and monitoring changes over time, as the diagnostic workup has often been completed.

"In the inpatient ward, it's mostly for follow-up, so the format can be even simpler."

Additionally, adaptation of key components—such as

tailoring abortive and prophylactic treatment plans based on variables like severity, quality, temporality, and comorbidities—needs to reflect the clinical focus of each setting. For example, severity and region may guide abortive treatment decisions in acute cases, while temporality, frequency, and associated symptoms may help guide preventive strategies in chronic presentations. These nuances underscore the importance of contextual flexibility in applying the reporting format across diverse clinical workflows.

4th theme: Recommendation simplification and efficiency of the reporting process

The extended time burden has raised the need for a more streamlined version that maintains diagnostic value while improving practicality in fast-paced clinical settings. One of the proposed approaches to simplification is to focus on core dromal components—such as phenotype, duration, intensity, and location of the headache—which are most directly linked to ICHD-3 based diagnosis and therapeutic planning. Elements like prodromal symptoms, aura, and postdromal features were seen as optional and may be integrated into a broader category such as "associated symptoms" for brevity.

Participants expressed differing views on the relative importance of various components in headache assessment. Prodromal symptoms were considered less useful, except in migraine patients, and therefore not a priority. Functional status was also regarded as non-essential and could be omitted, as severity was seen to provide sufficient information.

In terms of practical application, participants noted distinctions between new and follow-up patients. For new patients, a comprehensive evaluation was recommended, although autonomic symptoms were merged with associated symptoms rather than assessed separately. In contrast, for follow-up patients, a more concise assessment limited to severity and temporality was considered adequate.

"For new patients, all aspects will be assessed except autonomic symptoms, which are combined with associated symptoms. Functional status may not require the MIDAS. For follow-up patients, only severity and temporality will be asked."

Further refinements were also proposed to simplify the framework while maintaining clinical relevance. Suggestions included merging phenotype into quality and combining aura with autonomic and associated symptoms.

"The essential components are Provocative, Palliative, Quality, Region, Severity, and Temporality, complemented by the integration of autonomic symptoms, associated

symptoms, and aura."

In addition to clinical components, participants also emphasized the importance of incorporating biological and psychosocial factors, highlighting the need for a more holistic framework that considers comorbid conditions and psychosocial impacts alongside headache characteristics.

Based on the recommendations gathered during the discussion, the headache reporting axis was revised to incorporate the suggested improvements (Table 3). The updated components reflect a more structured and clinically relevant framework for documenting headache characteristics. In parallel with the revision of the axis itself, the accompanying instructions for use were also refined to ensure clarity, consistency, and ease of implementation in both clinical and research settings.

Table 3. Revised Headache Axis Documentation

Component	Explanation
Dromal	Main phase of the headache episode
Characteristics	Includes the Quality and Phenotype of Headache Quality: The character or nature of the pain experienced by the patient, such as throbbing, dull, pressing, sharp, or stabbing. Phenotype: The characteristic clinical presentation of the headache (e.g., migraine, tension-type, etc.).
Provocative	Factors known to trigger headache attacks (e.g., stress, certain foods, lack of sleep, bright light, loud noise)
Palliative	Factors known to relieve headache (e.g., rest, sleep, use of analgesics, being in a dark/quiet room)
Region	The main location of the headache, such as unilateral, bilateral, frontal, or generalized (include regional code according to the headache location map)
Severity + Functional status	Includes Severity and Functional Status Severity: The intensity of the most severe headache, which can be measured using a 0–10 Numerical Rating Scale (NRS). Functional Status: The impact of headache on the patient's daily activities, including the ability to work, study, engage socially, and perform daily functions (assessed using the MIDAS-Ina instrument).
Temporality	Includes Duration (in minutes, hours, or days), Frequency, and Onset: Duration: the longest duration (minutes/hours) of a disabling headache episode Frequency: the number of headache occurrences (per day, per week, or per month) Onset: acute (0–3 months) or chronic (> 3 months); please indicate when the complaints first began
Associated symptoms	Symptoms that occur before, during, and after the headache (such as nausea, vomiting, photophobia, red eyes, lacrimation, ptosis, nasal congestion, or rhinorrhea). Includes Aura (reversible neurological symptoms that precede or accompany the headache. If the aura is visual, please specify the type number according to the International Headache Society (IHS) visual aura table).
Biopsychososial	Comorbid factors in the form of accompanying medical conditions or psychosocial impairments.

A standardized headache pain reporting format has proven beneficial in supporting diagnostic classification, therapy evaluation, and systematic documentation. However, there remains a need to simplify and adapt the content to fit various healthcare service contexts. Certain components—such as prodromal symptoms, aura, and functional status—are considered optional or can be integrated into associated symptoms. Key

recommendations include streamlining anamnesis points, providing targeted training at primary care facilities, and developing additional visual guidance tools. Summary of the differences between the prior and current axis is described in Table 4.

Table 4. Key Differences Between the Previous and Current Axis Frameworks

Before	After
Prodromal: present	Prodromal: excluded
Dromal: consist of individual components such as phenotype, provocative factors, palliative factors, pain quality, region, severity, temporality, autonomic symptoms, and associated symptoms.	Dromal: Quality and phenotype are combined into characteristics. Severity is combined with functional status.
Associated symptoms is an individual question as part of dromal	Associated symptoms encompass several aspects: aura, autonomic symptoms, prodromal, and postdromal phases.
No components of biopsychosocial factors	Addition of biopsychosocial factors

Discussion

This study identified four key themes in revising the standardized headache monitoring system: (1) the benefits of standardized and systematic reporting; (2) challenges and barriers in documentation; (3) variability and the need for contextual adaptation across clinical settings; and (4) recommendations to simplify and improve reporting efficiency. The revised headache axis integrates quality with phenotype and merges severity with functional status for greater clarity and conciseness. This axis is designed to be used alongside other monitoring tools, including the headache diary and visual aura table.

Based on these refinements, our study demonstrates that a standardized headache documentation format offers a clearer and more structured way for clinicians to collect key information. When patient data are organized in this way, the risk of missing key details is reduced, diagnosis becomes more accurate, and decisions can be made more quickly. This is especially important for headache disorders, which often have overlapping symptoms. A structured format helps distinguish between primary and secondary headaches and also to identify if there are more than one headache entity in a patient (6).

Standardized documentation enhances therapeutic decision-making by enabling consistent recording of key parameters such as frequency, severity, duration, and associated symptoms. This structure allows clinicians to determine more confidently when preventive treatment is warranted and to select the most appropriate acute therapy. For instance, frequency and timing can guide the initiation of prophylaxis, whereas severity and pain quality inform the choice of abortive medication. Moreover, standardized records facilitate longitudinal monitoring,

allowing clinicians to assess treatment response and symptom evolution, which is particularly valuable in chronic headache management. By minimizing variability in data recording across clinicians, this approach promotes continuity of care and enables reliable data comparison for clinical and research purposes.

Our revised headache reporting axis aligns with previously published work by Gago-Veiga et al.(7) in Spain, who proposed a similarly structured framework for headache documentation. Their axis includes core clinical domains such as temporal characteristics, age at onset, pain onset and time to peak, frequency, duration, attack timing, remission patterns, pain quality and intensity, impact on daily function and sleep, pain location, triggering and attenuating factors, and accompanying symptoms with attention to their temporal relationship to pain. Compared to our revised version, their framework is more granular in several aspects—for instance, it explicitly includes remission patterns, distinguishes the impact of headache on sleep as a separate theme, and emphasizes the timing of accompanying symptoms in relation to headache onset. These detailed elements underscore the importance of refining headache history-taking tools to capture the nuanced features essential for accurate diagnosis and personalized treatment planning.

A study in Germany found that documentation of red flags and clinical characteristics was often insufficient, limiting diagnostic accuracy (8). To improve documentation and facilitate timely decisions, we propose a structured and standardized form

Second, the systematic headache reporting tool is intended to improve the efficiency of clinical encounters, particularly in time-limited settings, by structuring the history-taking process. Although completion time may vary with patient complexity, the tool facilitates streamlined data collection during brief consultations. Clinical environments— whether inpatient, outpatient, or emergency—pose distinct demands, and the current version of the axis has not yet been specifically adapted for each context. Nevertheless, the need for a standardized and time-efficient approach remains evident. Do et al.(9) similarly reported that time constraints and structural limitations are major barriers to effective headache management among neurology residents in Denmark. These findings reinforce the practical importance of implementing a systematic reporting framework that supports diagnostic accuracy without increasing clinicians' workload.

Third, our findings show that headache documentation needs to be adapted according to the clinical setting. Each environment—ED, outpatient clinic, and inpatient ward— has its own time constraints, patient needs, and diagnostic priorities.

In high-pressure environments such as the ED, the primary goal is rapid triage and exclusion of life-threatening conditions. Clinicians rely on only the most essential elements of documentation to determine whether urgent investigations, such as neuroimaging, are required. Detailed anamnesis is often replaced by brief, targeted questioning and visual assessment to maintain speed and efficiency. Rimmele et al.(8) reported that the limited time in the ED makes it impractical to document all ICHD-3 criteria, leading clinicians to focus on "red flag" symptoms indicative of secondary headache. Similarly, a review study emphasized that the core responsibility of emergency providers is to differentiate benign from serious headaches and identify patients requiring urgent testing, such as CT or laboratory work (10). To support this process, Rimmele et al. recommended a concise, structured headache form highlighting key warning signs and essential features.

In contrast, outpatient settings permit a more comprehensive assessment. With fewer time constraints, clinicians can apply the complete documentation format to explore headache characteristics in detail, enabling more accurate etiological determination, trigger identification, and tailored planning of abortive and preventive therapies.

In theory, the full headache-history format can be applied in outpatient settings; however, evidence shows that documentation is often incomplete without structured templates. Pershing et al. found that in family medicine clinics, only 2 of 716 headache visits met all ICHD-3 diagnostic criteria, indicating that essential elements— such as attack frequency and associated symptoms— are frequently omitted unless explicitly prompted (5). To address this, specialized headache centers advocate the use of standardized tools such as headache diaries and structured checklists to support risk assessment, trigger identification, and consistent follow-up planning (11). Similarly, a study published in The Journal of Headache and Pain reported that clinicians often emphasize intensity and duration in migraine assessment, while frequency remains the main focus for tension-type headache (12). Collectively, these findings highlight the importance of structured outpatient documentation that captures headache temporality, characteristics, provoking factors, and associated symptoms to refine diagnosis and guide both abortive and preventive management.

In the inpatient setting, documentation is typically streamlined since the diagnostic evaluation is often already complete. In this context, the format primarily serves for follow-up and monitoring of symptom evolution or treatment response. This flexibility ensures that documentation remains clinically relevant without imposing unnecessary workload in settings with established management plans.

Adaptation is equally essential in therapeutic planning. For acute treatment, parameters such as pain quality, location, severity, and psychosocial or comorbid factors inform decisions on medication type, dosage, and route of administration. In contrast, preventive therapy relies more on temporality, associated symptoms, and comorbid conditions. These distinctions demonstrate how a unified documentation framework can be flexibly applied according to clinical objectives, underscoring the importance of contextual adaptation.

Documentation priorities also shift depending on whether the treatment goal is acute relief or long-term prevention. For acute management, detailed reporting of pain severity, quality, and location is essential, as these factors directly inform medication choice and route of administration. The International Headache Society (IHS) global practice recommendations emphasize that simple analgesics and Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) should be considered first-line options for mild to moderate migraine attacks, while triptans are recommended for more severe or NSAID-refractory cases. Additional notes on associated symptoms, such as nausea or vomiting, can also guide the use of adjunctive antiemetics (13).

In contrast, preventive therapy requires systematic documentation of longitudinal patterns, including attack frequency, duration, and temporality, as well as the presence of comorbidities and modifiable triggers. Preventive treatment is indicated for patients with frequent, disabling, or escalating migraine attacks despite optimized acute care, and treatment decisions are best supported by headache diaries and structured symptom tracking over time. Thus, while acute care documentation emphasizes immediate intensity and red-flag features, preventive care relies more heavily on temporal patterns and comorbidity profiles to guide therapy selection and follow-up planning (13).

Overall, these findings emphasize that standardized headache documentation should not be seen as a rigid tool. Instead, it should provide a core framework that can be adapted to diverse clinical workflows, balancing the need for comprehensive information with the realities of time, urgency, and patient care priorities.

Fourth, our findings emphasize the need to balance comprehensiveness and practicality in headache documentation. While structured formats enhance consistency and diagnostic accuracy, participants noted that the current version can be time-consuming, especially during initial consultations—echoing broader concerns that excessive data entry may reduce efficiency without improving diagnostic yield.

Core headache characteristics—phenotype, duration, intensity, and location—were prioritized as most relevant to ICHD-3–based diagnosis and treatment decisions, enabling rapid differentiation between headache subtypes. In contrast, prodromal, aura, and postdromal features were viewed as supplementary and may be more efficiently grouped under "associated symptoms," aligning with expert consensus that these phenomena, though informative, are not universally present.

Views differed regarding functional status: some considered it redundant to severity scales, while others valued it for assessing the broader impact of headache, particularly in chronic cases. This reflects ongoing debate on whether functional impact should be routinely documented or reserved for baseline and follow-up evaluations using instruments such as MIDAS or HIT-6.

An additional insight was the importance of tailoring documentation to the type of clinical encounter. For new patients, participants favored a comprehensive format encompassing all relevant domains, with autonomic symptoms incorporated under associated symptoms. For follow-up visits, a concise focus on severity and temporality was considered adequate to evaluate treatment response and guide ongoing management. This tiered approach balances efficiency with diagnostic depth.

Further refinements aimed to minimize redundancy within the axis, such as merging phenotype with quality and integrating aura into autonomic and associated symptoms. These adjustments simplify data collection without compromising diagnostic or therapeutic value. Participants also highlighted the importance of including biological and psychosocial factors, promoting a more holistic approach that acknowledges the influence of comorbidities and stressors on clinical outcomes.

Consistent with this perspective, incorporating patient-reported outcome measures enhances documentation by capturing the broader impact of headache on daily function and well-being. When combined with standardized symptom assessment tools, these measures provide a more comprehensive understanding of each patient's condition and support treatment decisions that address both physical and psychosocial dimensions of headache disorders (14).

Taken together, these recommendations underscore that standardization does not require rigidity. Instead, a flexible but structured framework—anchored by core diagnostic elements and adaptable to clinical context—may offer the optimal balance between diagnostic accuracy, therapeutic guidance, and practical efficiency. Our revised axis reflects these principles by retaining the most informative domains, integrating overlapping components, and incorporating a biopsychosocial perspective. By doing so, it seeks to provide clinicians with a tool that is both clinically meaningful and feasible to implement across

diverse healthcare settings. Although the revised axis shows promise as a practical framework in our setting, its applicability beyond a tertiary referral center and among non-neurology clinicians remains to be established. External validation in diverse healthcare environments is therefore essential before broader implementation can be recommended.

This study has several limitations. It was conducted at a single national referral hospital, which may limit the broader relevance of the findings. The qualitative sample was small and composed exclusively of neurology residency. All participants shared similar neurology training and worked within the same academic culture. Such homogeneity can create a comfortable consensus environment but also risks a "single-mindedness" or "groupthink" that can stifle divergent thinking and result in one-sided data.

The next step is to implement the revised axis in live practice to evaluate its usability, efficiency, and impact on patient care. Future studies should test the revised documentation axis in a variety of healthcare settings. This includes applying it in secondary-level hospitals, primary care clinics, and other referral centers with different patient populations and health systems. The documentation tool should undergo iterative improvement based on ongoing user feedback. In practice, this means periodically surveying or interviewing clinicians after initial use of the revised axis, then revising the format and content to address any issues.

From a patient safety perspective, is also worth noting that using a systematic headache reporting system is in line with complying with quality assurance sets of headache developed by several organizations, such as the American Headache Society (15). In this set of quality measurements, indicators include documentation of migraine frequency as well as acute and preventive treatment for migraine and cluster headache. Implementing a systematic approach to headache reporting will facilitate the collection of high-quality clinical data.

Conclusion

In conclusion, our study showed our residents expresses the importance of systematic headache reporting, with simplifications focusing on core dromal components—such as phenotype, duration, intensity, and location of the headache. We hope that the implementation of this revised reporting axis in clinical settings will contribute to improved patient care outcomes.

References

1. Olesen J, Jensen RH. The Global Campaign Against Headache and its future relation to IHS and WHO. Cephalalgia 2023;43. Doi:10.1177/03331024231159625.
2. Peng K, Wang S. Epidemiology of Headache Disorders in the Asia-Pacific Region. Headache: The Journal of Head and Face Pain 2014;54:610–8. Doi:10.1111/head.12328.
3. Steiner TJ, Stovner LJ, Jensen R, Uluduz D, Katsarava Z. Migraine remains second among the world's causes of disability, and first among young women: findings from GBD2019. J Headache Pain 2020;21:137. Doi:10.1186/s10194-020-01208-0.
4. Minen MT, George A, Katara A, Lebowitz N, Snyder IC, Busis NA, et al. Headache clinicians' perspectives on the remote monitoring of patients' electronic diary data: A qualitative study. Headache: The Journal of Head and Face Pain 2023;63:917–25. Doi:10.1111/head.14519.
5. Pershing M, Hirekhan O, Syed A, Elliott JO, Toot J. Documentation of International Classification of Headache Disorders Criteria in Patient Medical Records: A Retrospective Cohort Analysis. Cureus 2024. Doi:10.7759/cureus.52209.
6. How to use the classification (2019). Aviable: https://ichd-3.org/how-to-use-the-classification/ (accessed October 29, 2025).
7. Gago-Veiga AB, Camiña Muñiz J, García-Azorín D, González-Quintanilla V, Ordás CM, Torres-Ferrus M, et al. ¿Qué preguntar, cómo explorar y qué escalas usar en el paciente con cefalea? Recomendaciones del Grupo de Estudio de Cefalea de la Sociedad Española de Neurología. Neurología 2022;37:564–74. Doi:10.1016/j.nrl.2018.12.006.
8. Rimmele F, Janke J, Kropp P, Kasch R, Walter U, Jürgens TP. Headache in the Neurological Emergency Department—High Degree of Inadequate Documentation Calls for Structured Assessments. Front Neurol 2022;13. Doi:10.3389/fneur.2022.847484.
9. Do TP, Dømgaard M, Stefansen S, Kristoffersen ES, Ashina M, Hansen JM. Barriers and gaps in headache education: a national cross-sectional survey of neurology residents in Denmark. BMC Med Educ 2022;22:233. Doi:10.1186/s12909-022-03299-6.
10. Baraness L, Baker A. Acute Headache. In: StatPearls Publishing, editor. StatPearls [Internet], Treasure Island (FL); n.d.

11. Walling A. Frequent Headaches: Evaluation and Management. Am Fam Physician 2020;101:419–28.
12. Wang Y, Zhou J, Fan X, Li X, Ran L, Tan G, et al. Classification and clinical features of headache patients: an outpatient clinic study from China. J Headache Pain 2011;12:561–7. Doi:10.1007/s10194-011-0360-2.
13. Puledda F, Sacco S, Diener H-C, Ashina M, Al-Khazali HM, Ashina S, et al. International Headache Society global practice recommendations for the acute pharmacological treatment of migraine. Cephalalgia 2024;44. Doi:10.1177/03331024241252666.
14. van der Meer HA, Visscher CM, Vredeveld T, Nijhuis van der Sanden MW, HH Engelbert R, Speksnijder CM. The diagnostic accuracy of headache measurement instruments: A systematic review and meta-analysis focusing on headaches associated with musculoskeletal symptoms. Cephalalgia 2019;39:1313–32. Doi:10.1177/0333102419840777.
15. Robbins MS, Victorio MC, Bailey M, Cook C, Garza I, Huff JS, et al. Quality improvement in neurology. Neurology 2020;95:866–73. Doi:10.1212/WNL.0000000000010634.

Henry Riyanto Sofyan
https://orcid.org/0000-0001-5702-4968
Irma Savitri
https://orcid.org/0009-0008-3596-8579
Ahmad Rafi Faiq
https://orcid.org/0009-0000-7133-8592
Aditya Putra
https://orcid.org/0000-0003-1294-9259
Ery Riady Indrapriambada
https://orcid.org/0009-0001-7836-4889
Tiara Aninditha
https://orcid.org/0000-0002-8758-2167