

### Headache diaries as an aid to diagnosis

Study details	Patients	Interventions	No. correctly diagnosed	Sensitivity	Specificity	PPV	NPV	Comments
<p><b>Author &amp; Year:</b> Russell et al, 1992<sup>679</sup></p> <p><b>Study design:</b> Diagnostic study</p> <p><b>Section of question:</b> Diagnosis</p> <p><b>Setting:</b> Headache research unit, University hospital, Denmark.</p> <p><b>Duration of follow-up:</b> Four weeks or more</p>	<p><b>Patient group:</b> Adults with migraine</p> <p><b>Inclusion criteria:</b> Migraine patients who used the diary for four weeks or more</p> <p><b>All patients</b> N: 61 47 F, 14M <b>Age (median [range], years):</b> 44 [21-65] <b>Drop outs:</b> none</p>	<p><b>Index test:</b> Diagnostic headache diary developed by one study author. Patients received diary at the end of first visit and were instructed on its use. Diary completed every evening on days in which a headache occurred. Questions included: headache duration, visual or sensory disturbances; location, character and intensity of pain, aggravation by routine physical activity, accompanying symptoms, precipitating factors and medication. Diaries blindly examined by different observers and a diagnosis of headache was made.</p> <p><b>Reference standard:</b> Physician diagnosis of headache classified according to operational diagnostic criteria of the IHS following detailed semi-structured headache history, physical and neurological examination. Physician diagnosis was made prior to use of diary.</p>	<b>Migraine without aura</b>					<p><b>Funding:</b> NR</p> <p><b>Limitations:</b> Lag period of four weeks between physician diagnosis and diary diagnosis. Period of use of diary may not have allowed enough time for diagnosis of episodic/chronic TTH. Study was conducted in a specialised headache research unit in a university hospital; may not be representative sample.</p> <p>*Calculated by NCGC</p>
			54*	94.3% (50/53)*	50% (4/8)*	92.5% (50/54)*	57.1% (4/7)*	
			<b>Migraine with aura</b>					
			44*	72.7% (8/11)*	72% (36/50)*	36.3% (8/22)*	92.3% (36/39)*	
			<b>Episodic Tension-type Headache</b>					
35*	84.2% (16/19)*	45.2% (19/42)*	41% (16/39)*	86.3% (19/22)*				
<b>Chronic Tension-type Headache</b>								
46*	21% (4/19)*	100% (42/42)*	100% (4/4)*	73.6% (42/57)*				

Abbreviations: NR=not reported, NA=not applicable, M/F=male/female, N=total number of patients randomised, TTH=tension type headache, PPV=positive predictive value, NPV=negative predictive value

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<p><b>Author &amp; Year:</b> Phillip et al, 2007<sup>628</sup></p> <p><b>Study design:</b> Diagnostic study</p> <p><b>Section of question:</b> Diagnosis</p> <p><b>Setting:</b> Glostrup university hospital, Denmark</p> <p><b>Duration of follow-up:</b> Diaries kept for 24 headache days for a maximum of 2 months</p>	<p><b>Patient group:</b> Adults with difficult to diagnose headaches.</p> <p><b>Inclusion criteria:</b> Living in Denmark. Able to answer written and verbal questions.</p> <p><b>Patient characteristics:</b> Participants were part of an epidemiological study of headache conducted in general population in 1989 and another cohort of young adults (aged 25-36 years).</p> <p><b>N:</b> 1175 eligible for inclusion; 848 participated (555 clinical interview, 293 telephone interview); 106 identified to receive diary if the interviewer found it difficult to diagnose headaches on based on history alone (unable to characterise headache quality, frequency and/or associated symptoms).</p>	<p><b>Index test:</b> Diagnostic headache diary, based on IHS criteria. Questions focussed on characteristics necessary to diagnose and distinguish between migraine and tension- type headache. Participants were instructed to complete the diary at the end of each headache day. Diaries were examined by two independent observers who were blinded to the clinical diagnosis and the diagnosis of the other observer and a diagnosis was made based upon diary findings.</p> <p><b>Reference standard:</b> Structured clinical headache interview, physical and neurological examination and self administered questionnaire . Headache disorders were diagnosed and coded according to IHS criteria. In cases where subjects did not participate in a clinical interview, a headache diagnostic interview was conducted over the telephone to make a diagnosis of headache.</p>	<b>Migraine:</b>					<p><b>Funding:</b> NR</p> <p><b>Limitations:</b> Some clinical interviews were conducted over the telephone and no physical examination was conducted. Selection of participants for diary use was made on the basis of level of difficulty of clinical diagnosis and may have resulted in a selection bias. Period of use of diary may not have allowed enough time for diagnosis of episodic/chronic TTH. Study was conducted in a university hospital and may not be a representative sample. Small sample size.</p> <p><b>Notes:</b> *Calculated at NCGC. ‡Sensitivity of clinician diagnosis taking diary as reference standard (reported in paper):</p>
			37*	84.8%*‡	75%*‡	90%*	64%*	
			<b>Tension-type headache:</b>					
			39*	88%*‡	66%*‡	97.3%*	29%*	
			<b>Chronic Tension-type headache:</b>					
			77%*					

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	<p><b>All patients</b></p> <p><b>N:</b> 106 (received a diary), 49 (returned diary), 41(clinical interview), 8 (telephone interview), 4 (incomplete diary), 45 (analysed)</p> <p><b>Age (mean, range):</b> 44, 26-70 years</p> <p><b>Sex M:F</b> 1:3.1</p> <p><b>Dropouts:</b> 57</p>	Physician diagnosis was made prior to use of diary.						Migraine (90%) and Tension-type headache (97%); Specificity of clinician diagnosis taking diary as reference standard (reported in paper): Migraine (64%) and Tension-type headache (29%).

Abbreviations: NR=not reported, NA=not applicable, M/F=male/female, N=total number of patients randomised, IHS=international headache society, TTH=tension type headache, PPV=positive predictive value, NPV=negative predictive value

Study details	Patients	Intervention	No. correctly diagnosed	Sensitivity	Specificity	PPV	NPV	Comments
<b>Author &amp; Year:</b> Tassorelli et al, 2008 <sup>772</sup>  <b>Study design:</b> Diagnostic study  <b>Section of question:</b> Diagnosis  <b>Setting:</b> Headache centres at Copenhagen, Denmark and Pavia, Italy  <b>Duration of follow-up:</b> Four weeks	<b>Patient group:</b> People aged >11 with undiagnosed headache  <b>Inclusion criteria:</b> New headache patients awaiting consultation at 2 headache centres.  <b>All patients:</b> <b>N:</b> 84 (received diary), 78 (completed diary), 2 (excluded as diagnosed as cluster headache patients at clinical interview), 76 (analysed) Sex M/F: 21/55 (1:2.6)  <b>Mean age (yrs [range]):</b> 39.1 [11-85]  <b>Duration of headache (mean [range]):</b> 17.5 [1-70]	<b>Index test:</b> Diagnostic headache diary using ICHD-II diagnostic criteria for migraine, tension type headache and medication overuse headache.  Diary contained detailed instructions and was required to be filled up on a daily basis by the patients. Diary was mailed to participants at least 4 weeks prior to their first consultation. Diary was assessed by two senior physicians who were blinded to the patients' history and to the diagnosis based on clinical interview and examination and a diagnosis of headache was made.  <b>Reference standard:</b> Clinical interview obtaining headache history and physical examination leading to diagnosis of headache. Physician diagnosis was made after use of diary.	<b>Migraine</b>					<b>Funding:</b> NR  <b>Limitations:</b> Clinical interviews were conducted by two separate physicians in different centres. Period of use of diary may not have allowed enough time for diagnosis of episodic/chronic TTH.  Study was conducted in a specialised headache research unit in a university hospital and may not be representative sample.  <b>Notes:</b> *Calculated by reviewer at NCGC. ‡Sensitivity of diary taking clinician diagnosis as reference standard reported in paper as 92% (59/66). † Specificity of diary taking clinician diagnosis as reference standard reported in paper as 87% (54/62).
			66*	92.1%*‡ (59/64)	58.3%	92.1%*	58.3%*	
			<b>Tension-type headache</b>					
			49*	75%	58.3%	51.2%*	80%*	
			<b>Medication overuse headache</b>					
			64*	75%	86.6%*† (52/60)	60%*	92.8%*	

Abbreviations: NR=not reported, NA=not applicable, M/F=male/female, N=total number of patients randomised, SD=Standard deviation, TTH=tension type headache, PPV=positive predictive value, NPV=negative predictive value