

Headache: A Marker of Depression

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Patients who presented with a chief complaint of headache in the outpatient family practice setting were found to have a high prevalence of depression (63%) by the Zung Self-Rating Depression Scale (SDS) index. A statistically significant relationship was found between the frequency of headaches ($P = .03$) with level of depression. In fact, 74% of patients with headaches recurring almost every day had a clinically significant depression diagnosed as defined by the Zung SDS score. The Zung SDS score also correlated with the length of time that the problem of headache existed ($P < .05$).

Item analysis of the individual 20-item depression score revealed that four questions accounted for 93% of the variance. This analysis suggests that shorter, more abbreviated screening questions could be developed and refined in the future for use by the busy clinician.

Headache is an important marker for depression in the primary care setting. It can be inferred from this study that the clinician may need to focus more on treating the entity of depression than on treating just the symptom of headache.

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Depression has been referred to as the great masquerader of modern medicine.¹ It has been noted that the presence of depression is often subtle and the diagnosis is often missed.² In addition, those individuals among the general population with a history of disabling or severe headache scored significantly higher on tests of depression and anxiety.³

Other investigators have found a close link between depression and headache. More specifically, Garvey et al⁴ noted that 63 out of 116 depressed patients (54%) experienced significant headaches. Although many investigators have noted the high prevalence of headaches in patients who present with depression, the converse has not been as well studied.

A research study was designed to focus on the prevalence of depression in those patients who present to the family physician's office with the chief complaint of headache.

METHODS

All patients who came to the Family Practice Center during a 3-month period with a chief complaint of headache were given the opportunity to complete a research questionnaire on a consecutive basis. No patients declined to participate, and patients were admitted to the study regardless of the duration (ranging from 1 day to years) of a complaint of headache. A total of 44 patients participated in the study. Four patient questionnaires were later withdrawn because of incomplete data. Of the 40 patients included in the statistical analysis, 5 were male and 35 were female. The age of the subjects ranged from 15 to 67 years. Subjects who were found to have a diagnosis of sinusitis (three patients) or upper respiratory tract infections (two patients) were excluded from the research instrument.

Design

A questionnaire was designed to elicit information about the frequency, duration, and severity of the respondent's headaches as well as specific descriptions of headache symptoms. In addition, demographic data were collected, including a family history, prior diagnosis, and pharmacological intervention. A disguised 20-item instrument to measure specific characteristics of depression was incor-

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porated into the questionnaire, which yielded a depression index (Figure 1). Zung⁵ has detailed his self-rating scale in an article that explains the method of scoring and discusses its clinical use.

The "equivalent clinical global impression" categories for the Zung Self-rating Depression Scale (SDS) are as follows: below 50 = within normal range, no psychopathology; 50 to 59 = presence of minimal to mild depression; 60 to 69 = presence of moderate to marked depression; and 70 and over = presence of severe to most extremely depressed.

Participation in the study was voluntary and required written informed consent. Patients who came to the office with a chief complaint of headache were asked by a nurse, who was blinded to this study, to complete the research questionnaire before being seen by the physician. A review of the patient's medical record was also used for data-collection purposes.

RESULTS

The total of 40 patients who participated in the study had Zung SDS scores ranging from 32 to 68 (possible range 25 to 100), with 63% of them being above 50. In addition, 74% of a subset of respondents (23) who reported having headaches almost every day had a score above 50.

A significant correlation was shown not only between the Zung SDS score and frequency of headache ($P < .03$) but also between the Zung SDS score and the length of time that the problem existed ($P = .05$). There was not a significant correlation in the total sample population between the Zung SDS score and the duration of each episode of headache. On the other hand, in the subset population of respondents having headaches almost every day, there was a significant correlation between the Zung SDS score and duration of each episode of headache.

An item analysis was performed on the 20 items of the Zung SDS for the total study population as well as for those respondents who reported having headaches almost every day. For the total study population, the combination of items 20, 14, 17, and 1 (listed in order of decreasing significance) was found to account for 89% of the variance in the Zung SDS score. In the subgroup with headaches almost every day, items 15, 12, 11, and 1 were found to account for 93% of the variance in the Zung SDS score (Figure 1 displays the individual numbered items).

DISCUSSION

This study demonstrates the strikingly high prevalence of clinically significant depression in patients who present to the family physician's office with a chief complaint of headache.

Although other investigators have also suggested a close link between depression and headache, the majority have dealt with referral subspecialty populations. For example, Haack and Kick⁶ in Germany noted that 46% of patients ($n = 148$) referred for purely neurologic assessment of headache were found to have an endogenous depression. Diamond and Dalessio⁷ state that most patients with muscle contraction headaches have an underlying depression.

Despite a number of studies in the literature linking headache and depression, it appears that depression is frequently underdiagnosed in patients who present with headache to the primary care physician.

Katon⁸ showed that primary care physicians fail to diagnose depression more than 50% of the time among their general patient population. Notably, somatization has been cited as one of the major reasons for inaccurate diagnosis by nonpsychiatric physicians.^{8,9} Furthermore, Shurman et al¹⁰ found that 72% of patients visiting the general medical physician who were given a psychiatric diagnosis had some sort of physical symptom as their chief complaint. The findings in this study indicate that headache may indeed be an important somatic marker for depression.

Another significant finding in this study is the statistically significant relationship between the frequency of headaches and the Zung SDS score. More specifically, those patients with headaches that recurred almost on a daily basis had a 74% chance of meeting the Zung criteria for depression. Also, the length of time that a patient had the problem of headaches (ie, from a few days to several months) correlated significantly with the Zung SDS score.

In this study, the type of headache that was associated with depression was purposely not defined, in part, because the distinction between different headache types may not be sufficiently clear. In fact, some investigators suggest that the various types of headache are not very different. For example, Bass et al¹¹ concluded that the distinction between common migraine and muscle contraction headaches had no predictive value. They went so far as to suggest that muscle contraction and common migraine headache should be classified under a single entity, "recurrent non-specific headache." Several other investigators studying various aspects of tension and migraine headaches also failed to find a clear distinction between the two entities.¹²⁻¹⁴

The clinical value of this study may be in the finding that among all headaches, regardless of type, there is a high prevalence of depression.

A prevalence study certainly does not reveal whether the depression caused the headache or whether chronic headaches might cause the depression. In fact, a third causative factor (such as a common biochemical vulnerability involving the serotonin-norepinephrine neurotrans-

	None OR a Little of the Time	Some of the Time	Good Part of the Time	Most OR All of the Time
1. I feel down-hearted, blue and sad	1	2	3	4
2. Morning is when I feel the best	4	3	2	1
3. I have crying spells or feel like it	1	2	3	4
4. I have trouble sleeping through the night	1	2	3	4
5. I eat as much as I used to	4	3	2	1
6. I enjoy looking at, talking to and being with attractive women/men	4	3	2	1
7. I notice that I am losing weight	1	2	3	4
8. I have trouble with constipation	1	2	3	4
9. My heart beats faster than usual	1	2	3	4
10. I get tired for no reason	1	2	3	4
11. My mind is as clear as it used to be	4	3	2	1
12. I find it easy to do the things I used to	4	3	2	1
13. I am restless and can't keep still	1	2	3	4
14. I feel hopeful about the future	4	3	2	1
15. I am more irritable than usual	1	2	3	4
16. I find it easy to make decisions	4	3	2	1
17. I feel that I am useful and needed	4	3	2	1
18. My life is pretty full	4	3	2	1
19. I feel that others would be better off if I were dead	1	2	3	4
20. I still enjoy the things I used to do	4	3	2	1

Figure 1. Zung Depression Questionnaire. Self-rating Depression Scale (SDS), copyright W. Zung, 1965, 1974. All rights reserved. Reproduced with the permission of the author.

mitters) could account for both entities occurring so commonly together.¹⁵ This explanation might also account for the high response of both migraines and muscle contrac-

tion headaches to tricyclic antidepressants.^{7,16,17} Of additional interest was the item analysis performed on the 20 items of the Zung SDS. Among the patients with

headaches recurring almost every day, the items 15, 12, 11, and 1 were found to account for 93% of the variance in the Zung SDS score. On this instrument these questions correlated most highly with a significant level of depression.

The Zung SDS is one of the most frequently used self-rating questionnaires that tests for depression. Zung et al¹⁸ have claimed that it correlates well with the depression scale on the Minnesota Multiphasic Personality Inventory, while others have claimed that the Zung test is relatively insensitive and crude.¹⁹ A high score on the Zung SDS does not necessarily distinguish a patient who suffers a major depression from one with similar symptoms that are due to other categories of psychopathology, eg, somatization disorder, dysthymic disorder, bereavement, etc. A future study employing more precise methods of detecting specific psychiatric diagnostic categories could be useful.

Despite the clinical usefulness of the Zung scale, it is clear that many family physicians do not routinely use such screening questionnaires in their practice. Further research is needed to perfect simple screening instruments for assessing depression in family practice. A simple set of key questions that would rapidly screen for depression would be more clinically useful in the context of the busy physician's setting.

Some therapeutic implications are equally important. Currently, nonsteroidal anti-inflammatory drugs, β -blockers, calcium-channel blockers, and tricyclic antidepressant medications are often cited as treatment options for recurrent headaches.^{16,17} It appears from clinical experience that there may be a bias toward using a medical drug rather than a psychotropic drug in treating what the patient perceives as a medical problem. Consequently, possibly because of both patient and physician bias, tricyclic antidepressants are often used as second-line medications.

Second, there appears to be an undue emphasis on using tricyclic antidepressant medications for migraine prophylaxis independent of their antidepressant effect. Furthermore, this prophylaxis is claimed to be accomplished at lower doses than that needed for treating depression.^{20,21} This bias probably has led many physicians to treat the symptom of headache while undertreating the underlying depression with inadequate doses of antidepressants.

Findings from this study suggest that the clinician may need to focus on treating the entity of depression rather than treating just the symptoms of headache, especially since medications such as β -blockers, anxiolytics, and narcotics have been reported as possibly aggravating depression.^{22,23}

In summary, the study results demonstrate the high prevalence of depression among those patients who come

to the family physician with a chief complaint of headache. Because of the relatively small sample size of this study, these results may not generalize to all primary care patients. Nonetheless, the need to give strong consideration to depression in the differential diagnosis is underscored, since many symptomatic treatments for headache may indeed mask and even perhaps further aggravate the depressive syndrome.

Further research should be undertaken to uncover other somatic masks of depression that present to the family physician. Larger studies on specific chief symptoms may help focus the primary physician to diagnose more actively this highly underdiagnosed condition.

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