



# Is anecdotal evidence undervalued?

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**Abstract:** There have been growing reservations about the appropriateness of dismissing anecdotal evidence as a significant and acceptable form of clinical evidence.

The question is explored here as to whether anecdotal evidence has attracted appropriate recognition in the biological sciences, and further should it be ranked higher than its current status as providing significant clinical evidence.

The authors could not locate any scientific study which conclusively justified the relegation of anecdotal evidence to the level it is currently rated. They concluded that it is only the current narrative that has swept away anecdotal evidence without due investigation and scientific assessment of a notion that seemed to have merit.

This appears to have become a self-perpetuating trend, in being dismissive of what some would regard as a lower level of formal evidence in health care.

Contrary to this, there has been mounting support for appreciating the contribution that this model of evidence can offer, and that it should therefore be afforded greater recognition within the hierarchy of evidence.

**Indexing terms:** Anecdotal evidence; Evidence Based Medicine; Evidence based Practice; Hierarchy of evidence; Clinical guidelines.

## Introduction

This review of anecdotal evidence at a clinical level notes the reservations of its relegation on the pyramidal hierarchy of evidence, and the contribution such evidence has made as a pragmatic, logical and every day link to clinical practice. It is but one of the sources of evidence to be considered. In an unreferenced statement in 2016, Harvey claimed that *'The plural of anecdote is not evidence.'* and later that *'Anecdotes are unacceptable low-level evidence.'* These comments are not consistent with the material to be presented here. (1)

As the considered founders of evidence-based medicine, Sackett et al initially emphasised the integration of three pillars as the basis of EBM. However, it appears that one pillar – external evidence – now greatly dominates at the expense of the other two – individual clinical expertise and the individual patients' predicament, rights and preferences. It is suggested here that individual clinical expertise is the experience base so vital to these pillars. (2, 3)

In addition, the relegation of anecdotal evidence does not appear to be justified by scientific research and is predominantly opinion based. Its virtual dismissal from the clinical situation seems to have been an unresearched and unjustified trend that has become fashionable. (4, 5, 6)

*... at the very least, anecdotal findings may justify and initiate more formal research. Without anecdotal evidence, many discoveries would not have been made, or made as early as they were. Many meta-analyses and RCTs have arisen from anecdotal findings in the first instance ...'*



Anecdotal evidence has been defined as being 'based on personal observation, case study reports, or random investigations rather than systematic scientific evaluation.' (7)

Empirical evidence is defined as being '*based on experience and observation rather than on systematic logic.*' Experienced physicians often use empirical reasoning to make diagnoses, based on having seen many cases over the years. Less-experienced physicians are more likely to use diagnostic guides and manuals. In practice, both approaches (if properly applied) can lead to the same diagnosis. Case reports have been recorded in medical journals for decades, and it is suggested they form the foundation for ongoing research and enhancing clinical applications. (8)

In placing the various forms of clinical evidence into perspective, Tonelli opined that '*Proponents of evidence-based medicine have made a conceptual error by grouping knowledge derived from clinical experience and physiologic rationale under the heading of "evidence" and then have compounded the error by developing hierarchies of "evidence" that relegate these forms of medical knowledge to the lowest rungs.*' He asserted that there are limitations in the EBM model as it is presently adopted. (9, 10)

Under these definitions, it would seem reasonable for anecdotal evidence to be classified and recognised in the numerous tables of clinical evidence. Case reports have also been maligned, and are regarded as anecdotal evidence on some hierarchical tables. (11, 12, 13)

In less formal appellations, the base of one pyramid includes background information and expert opinion. This website states that '*This level might also include anecdotal evidence.*' It also portrays the pyramid in two sections with the upper three levels designated '*filtered information*' and the lower '*unfiltered information*'. (14)

During a consultation, so much verbal information can be acquired - some intuitively extracted, and some in narrative form which cannot be quantified. Ekin and Jadad are quite decisive in stating that anecdotes as being '*powerful tools that humans use to make decisions*' and noting their power and influence, but that '*they are sometimes misused, and sometimes undervalued.*' Further, they advise against '*under-estimating the role of anecdotal information in health care decisions.*' (15)

Anecdotal evidence may not be immediately subject to formal research, analysis or examination, although it may provide original grounds to justify being formally assessed. In a similar vein, patient narratives may not be definitively measured when so much verbal information transpires in a consultation. These are a part of the gathering of evidence to make informed diagnostic decisions just as a detailed patient's prior history is a crucial contribution but hardly measurable. (16)

In 2021, Ebrall suggested an innovative pyramidal hierarchy as a more appropriate allocation of informing and recognising the value of anecdotal evidence derived from chiropractic clinical experiences. In 2006, Lutzer identified a possible cause in the apparent relegation of anecdotal evidence in that '*The emphasis on hard science tends to devalue multifaceted highly developed clinical expertise largely derived from experience and a detailed study and understanding of individual patients.*' (17, 18)

Rather than being dismissed, all evidence has the potential to contribute towards arriving at clinical decisions. Again, Ekin and Jadad warn that '*If evidenced-based health care is to meet its potential, the important role of anecdotes must be acknowledged, studied and utilised.*' (15)

In this series, the acronyms for Evidence Based Medicine (EBM), Evidence Based Practice (EBP) and Evidence Based Health Care (EBHC) are to be used interchangeably.

## Review

As noted, many authors acknowledge the potential contribution that could be made by the inclusion of anecdotal evidence in EBM. The strength of these views essentially encourages consideration of anecdotal evidence and could justify greater appreciation for this form of clinical support.

It could be assumed that in rejecting anecdotal evidence negative outcomes would be rejected as well as the positive outcome reports. It would be inappropriate to reject both forms of anecdotal evidence – baby and bathwater come to mind. Even RCTs have to be based more on clinical observations than on a vague untested theory.

Although only a few hierarchical pyramids include anecdotal evidence, no research evidence was found which demonstrated that the value of anecdotal evidence is such that it is not deserving of reasonable recognition in clinical practice, along with the other levels of evidence. (11)

It has been declared that *'anecdotal evidence is the basis of all evidence'*, (19) and that *'anecdotal evidence is a special kind of evidence'*. (20) In an insightful paper, Stevenson stated further that *'Doctors effectively and necessarily use anecdotal evidence every day. These bastions of evidence-based medicine actually base most of their practices on anecdotes ...'*, and that *'Ultimately, the only evidence that truly matters is anecdotal: what a treatment does to the individual.'* (19)

These critical components which may be regarded as anecdotal evidence are derived from clinicians' acquired training, observations, interpretations, and experience. Smith affirms that *'Doctors are most likely to seek answers to questions from other doctors.'* (21) The rest is inherent proficiency and unrecorded expertise incorporating mechanism-based reasoning. (22) The integration and application of all these factors comprise intuitive elements of anecdotal-based evaluation.

Aronson and Hauben state that *'Many adverse drug reactions are first reported anecdotally ... by which we mean either individual cases or small case series, are generally regarded as providing poor quality evidence.'* They opine further that some anecdotal evidence can be so convincing (adverse drug reactions) that further verification is not needed, but if well documented *'such reactions could serve as gold standards ...'* This implies that if the anecdotal evidence is so strong, there is no point in confirming a negative outcome with repeated research (not to mention the adverse effects on patients). If such evidence can be so strong in a negative vein, it would follow that they must at times be of a similar gold standard in a positive sense. (23)

It is suggested here that no health profession would stagnate if the anecdotal observations noted in practice were not first noted and then explored. (24) The positive ones may then be developed, but the negative ones should also be published and appropriately categorised.

Anecdotal findings are an essential element of everyday practice, both for positive and negative findings. It is practitioner experience that can correlate obscure symptoms with patient outcomes, sometimes by bypassing recommended guidelines. Clinical observations should not be written off where they may be regarded as anecdotal evidence.

Without anecdotal evidence, even cases with negative outcomes would be less likely to attract such attention. In addition, it is unlikely that research into a particular therapeutic approach would be initiated when the anecdotal evidence indicates adverse outcomes because of the anecdotal reports.

A further paper originating from the *Oxford Centre for Evidence Based Medicine (OCEBM)* supports the case for anecdotal evidence in stating that it *'can sometimes provide definitive evidence.'* (23)

Linehans clarifies an additional role for anecdotal evidence when he states that '*Anecdotal evidence alerts us to a problem and gives us some indication as to what is going on. The scientific studies are needed to get some rational answers.*' (25)

Campo also supports a role for anecdotal evidence, when he avers that '*Our patients' stories too, if only we could listen to them less critically and cynically, might similarly inspire us to the more practically important discoveries of what truly ails them.*'

*'Whether we choose to admit it or not, the anecdote continues to be an important engine of novel ideas in medicine.'* (26)

### Mechanism-based reasoning

One form of anecdotal evidence is mechanism-based reasoning. Howick defines this as involving '*an inference from mechanisms to claims that an intervention produces a patient-relevant outcome. Such reasoning will involve an inferential chain linking the intervention (such as antiarrhythmic drugs) with a clinical outcome (such as mortality)*'. Such a rationale could apply as justifying efficacy in a number of health fields. (22)

Aronson supports this view when he acknowledged anecdotal evidence by noting '*... that if mechanism-based reasoning were a form of evidence, there might be cases in which it could be used as strong evidence, in the way that anecdotal observations, usually regarded as poor evidence, can sometimes afford strong evidence in determining both beneficial and harmful effects of therapeutic procedures.*' (27)

### Discussion

The relegation of anecdotal evidence seems to have become in vogue without the scientific scrutiny to justify the demotion. Because this trend seems to be based on opinion without formal assessment, it cannot reflect or be considered as a scientific standard. While such skepticism may be more relevant in the pure and laboratory sciences, it is an unjustified dismissal without regard for the wider ramifications of clinical encounters.

The ambiguity regarding anecdotal evidence in the primary contact clinical setting is exposed by the dichotomy of opinion concerning its significance. The very concept of anecdotal evidence is centred around opinion (26) as no formal scientific study appears to have definitively demonstrated or justified its virtual dismissal as a legitimate category in the clinical setting.

Golub argues that at times the judicious use of anecdotal evidence may be a special kind of empirical evidence. In questioning the direct experience of a practitioner in favour of indirect observations by researchers, Nicolette cogently argues that '*all evidence is anecdotal.*' (28, 29)

The entrenched preconceived dominance of formal evidence seems to have been imposed upon health practitioners to the extent that the default position essentially precludes anecdotal evidence from evidential hierarchies and encumbers clinical guidelines. As noted above, Campo highlighted this point when he stated '*When we fail to listen to our patients' stories, we lose the opportunity to discover what truly ails them.*' (26)

Anecdotal narratives are an important part of virtually every consultation in daily practice. Such clinical evidence can be involved in assessing patient presentations, progress, and outcomes. To assume that a relatively recent formal system of evidence is so superior and appropriate that anecdotal reports should be virtually dismissed is unjustified and not in the interest of practitioners or their patients.

Such a tendency tends to overlook two of the three components in Sackett's original concept, clinical expertise and patient values. Basically, the adoption of just the one element only recognises the external evidence factor as the dominant, if not sole element in Sackett's EBM model. (1, 30)

While anecdotal evidence may have its limitations, the volume of its support would suggest that at times, it is appropriate, and its contribution may be sufficient for it be integrated to intensify Evidence Based Health Care. Then again EBM may not be as perfect for clinical purposes as noted by other studies. (31, 32)

The pyramidal hierarchy of evidence levels is dominated with meta-analyses, systematic reviews and RCTs, as the peak categories. There appears to be little or no formal confirmation process as to the appropriateness of categorising or omitting evidence from the various published hierarchical pyramids. (10)

Typically, anecdotal evidence obtained in clinical encounters can comprise reports relayed by patients as well as observations by practitioners from the background experiences. As such, their practical use on a daily basis is a most appropriate and practical method of conducting patient care. The detail contained in patient-initiated evidence as in their symptoms, progress, response, and the patient's own assessment throughout care, can potentially aid and influence management. (33)

The practitioner-initiated evidence can be derived and interpreted from details provided by previous case histories, signs, symptoms, examination procedures and testing, experience and knowledge. In certain cases, this accumulated evidence may not be in the recognisable formality of structured studies, and clinical guidelines need to accommodate such evidence. (34)

It could be argued that for the clinical setting, and unlike laboratory and pharmaceutical modelling, many procedures, observations, and therapies related to clinical care are not necessarily suitable for similar formal analyses, partly due to the many variable factors in patient management. (35, 36)

Anecdotal evidence in one form or another can be weak or convincing. When judiciously utilised however, its extraction and application needs to be sagacious. It may also be the trigger for worthwhile innovation and discovery, providing the basis for development and researching of clinical findings which may not have been previously reported. Ebrall and Doyle conclude that *'Case reports represent high evidential value for chiropractors' and therefore have the potential for 'improving patient care'*. They note that the British medical journal *The Lancet* itself publishes single case reports for similar reasons. (37)

In calling for greater recognition of anecdotal evidence, Macnaughton states clearly that *'it is important to examine more closely the use of anecdotes in medicine, both in learning and in practice.'* (38)

In a similar vein, Charlton concludes clearly by noting that *'Observations can be criticised for being anecdotal. However, in the search for greater scientific objectivity, the habit of curiosity, once the very quintessence of medical discovery, may be lost. Anecdotal observations alone cannot be taken to show cause and effect, but they may provide stimuli for potentially important research.'* (39)

Nicolette concludes with a somewhat fundamental and analytical assessment by stating *'It's all anecdotal, when you come right down to it. Whose anecdotes do you trust?'* (29)

Howick et al from OCEBM, concluded that *'all relevant evidence is a fundamental tenet of scientific method (reproducibility).'* This inferred that all levels of evidence should be considered in assessing EBM. (22)

Ieraci recently confirmed that empirical evidence of acupuncture plays a crucial role in normal medical training. She stated that this element, direct observation, *'is core to medical training.'* Further, she acknowledges that modern medical practices *'continue to use therapies that are not based on valid physiological evidence.'* As physiology is an evolving science, such evidence may yet

explain this type of phenomenon. The matters of patient satisfaction and patient demand were not addressed. (40)

The relegation of anecdotal evidence in the clinical setting may be considered a restraint on genuine research and clinical efficacy. It is recognised that in the pure sciences this may be appropriate, but in the clinical setting such evidence has more practical considerations. The nature of verbal exchange that takes place has the potential to provide details which can be both informative and confirmatory, ultimately contributing towards positive results in improved patient outcomes. It may also serve as a caveat against particular clinical evidence. Consultations and case histories would also be basic contributions in constructing such empirical evidence.

If the patient describes symptoms, they become a part of a clinical picture which must be recorded and considered, clinically and legally. It seems that if a practitioner reports these together with signs, clinical experience and their own research and findings, it is not considered worthy of sharing as a part of assessing gathered evidence if anecdotal evidence is not acknowledged.

In a discerning observation Draper and Ebrall opined that *'The pedagogical efficiency of anecdote is also evident in its capacity to contextualise the information at hand. Context helps us determine the interpretation of discourse; context helps make meaning clear.'* They go further to state *'Anecdotes are a powerful way of conveying complex multidimensional ideas. By assembling a comprehensive description of the circumstances and conditions which comprise the event and in a manner which connects, anecdote shapes the way we understand'*. Such prescient reflections emphasise the gathering of all available evidence towards forming clinical decisions. (41)

The authors maintain that the chiropractic profession has demonstrated both proof of concept and proof of efficacy over the 120 years of its existence. They acknowledge that these are still evolving as is the supporting pathophysiological evidence.

We would also submit that if anecdotal evidence is not recognised why is it published in medical journals, with some of them specialising in this informative medium.

### Conclusion

The relegation of anecdotal evidence in the clinical setting appears to have been more of an unresearched popularised notion based more on contagious opinion than research. It is recognised that in the pure sciences this may be appropriate, but in the practical clinical setting such evidence has to be a practical consideration given the nature of verbal intercourse that takes place. Anecdotal evidence may not be regarded as evidence in a strictly formal aspect by some, but it can be both informative and confirmatory, particularly in a practical clinical sense. (8)

To dismiss anecdotal evidence is to assume that it has no valid basis or contribution to make at all. It is suggested that in conjunction with clinical experience, the judicious use of less formalised evidence can play a critical role in everyday clinical care.

It is submitted further that not to grant greater recognition to anecdotal evidence at the clinical interface, is unscientific and a disservice to patients, as it removes a valuable tool for assessment by clinicians in the determination of patient care and management.

In addition, much clinical evidence could pass unrecorded without the input from new findings, experience, and ideas. These established precedents from field practitioners in health care may reveal many innovative and positive findings (as well as the negative). Discoveries and developments must initially originate from somewhere.

In the practice setting, degrees of informal anecdotal evidence are used daily either consciously or subconsciously. That evidence deserves to receive appropriate recognition in order to elucidate patient findings and improve outcomes. Clinical guidelines need to accommodate that

evidence. It could be remiss of practitioners not to report and record anecdotal observations that may be relevant – and even more so if it was negative evidence or felt to be critical to a case.

Formal evidence alone is not necessarily sufficient to make critical clinical decisions and recommendations.

It is submitted that at the very least, anecdotal findings may justify and initiate more formal research. Without anecdotal evidence, many discoveries would not have been made, or made as early as they were. It could be said that many meta-analyses and RCTs have arisen from anecdotal findings in the first instance.

Macnaughton crystallises the findings of this review by stating, *'Anecdotes and stories, therefore, are integral to medical practice, and to the education of practising it.'* She goes on to say *'Although knowledge obtained through scientific endeavour in medicine is being vaunted as superior to knowledge obtained in other ways, learning from anecdotes and stories and being alert to their use by patients are essential to good medicine. This kind of knowledge enables doctors to deal with patients as individuals and to respect their uniqueness as persons.'* (37)

Consequently, greater recognition of anecdotal clinical reports of findings is called for. *'... ignoring the less readily measured dimensions may be dangerous. Rich sources of evidence also include the anecdotal, which are so often slated ...'* (42)

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