



What I miss most in our professional journals

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Whenever I read a professional journal – and I read a lot of them – I come across articles, which satisfy my scientific curiosity. Also, there is a certain amount of publication which I flip over because they do not attract my attention. So as a matter of fact each journal contains publications on different subjects and also of different quality.

But do you, do I know what the majority of a journal's articles deal with? The answer is somewhat influenced by the journal you choose because there are the ones which are more clinically orientated and the other ones which have a more scientific character. Nevertheless, a real quality journal will present an almost perfect blend between these two aspects. Therefore, I took the year 2001 issues of the *American Journal of Orthodontics and Dentofacial Orthopedics* and looked at 100 consecutive articles. I choose this journal because I assume it is the orthodontic journal with the highest circulation and in some way it is the gold standard of our professional periodicals. Explicitly, I like to state that this remark does not imply that other journals have a superb standing. But in any case a choice had to be made and I am convinced that my evaluation would have resulted almost into the same conclusions had I taken a different journal.

To categorize the content of a given article I made up my own keywords for every paper. Of course these were too numerous and therefore I had to condense them gradually even at the risk of an oversimplification. The various categories I finally established were as follows:

- Clinical studies,
- x-ray studies,
- animal/histological studies,
- studies on function,
- studies covering mathematic/mechanical aspects,
- studies using models, slides and other clinical records,
- studies on electronic data processing and finite elements, and

- miscellaneous.

I was not really surprised to realize that 24 % of all articles dealt with cephalometry, i.e. cephalometry was the main aspect in the method as well as in the result section.

It is my impression and opinion that cephalograms are to some degree overused. Why is this? Because they are routinely taken in every patient and are therefore almost always available. Also, cephalograms are relatively easy to analyze. On the other side we should realize that not all clinically observed changes are 100% reflected on a cephalogram. The reasons for this fact are manifold but first of all related mainly to distortion and blurring. But also, in every case the third dimension, the transverse dimension is not directly presented. Thus, every dental arch is not imaged as the curved structure it actually is but as a straight line. Even if the arch width has a limited influence on the arch perimeter it is nevertheless existing (Motoyoshi et al., 2002). Also, I feel the method, for instance, is not appropriate for an article which deals with the soft tissue response to a certain surgical procedure. I think if soft tissues are evaluated - a delicate aesthetical matter - a 2-D or 3-D extraoral method would be much more appropriate (Ismail et al., 2002). Finally, we should never forget that cephalometry is an invasive method and no cephalogram could be taken without a medical indication. Therefore, for the sake of our patients we can only apply non-invasive methods if records are taken solely because of research interest.

Studies on other roentgenograms as panorex or periapicals amount to 8%. If this number is added to the previous mentioned 24% then 32%, i.e. almost 1/3 of all evaluate articles are related to roentgenograms.

The next frequent category - 19% - is the one of clinical studies. This is to me very good news because after all orthodontics is clinical work. Still, if this number is compared to the percentage of roentgenograms I personally would wish this number



would increase even more.

The third (forth if cephalograms and other roentgenograms are taken as different entities) most frequent category is studies on materials and mechanics with 12%.

This is again some good news because modern orthodontics owes a lot to technological advancements. However, there is a problem because the progress is so fast that it is difficult for the journals to keep up with this speed in a fast publication. Specifically, that means that if the waiting list for a given article in a quality orthodontic journal is about 2 years it could happen (and did already in the past) that the test material in question has already been changed (improved), replaced or even withdrawn from the market without replacement. This might sound a bit too farfetched especially in context with the mentioned years (Ismail et al., 2002). However, we have to realize that the time frame of such a study is much larger. Only after the new material is officially released some researchers will decide to investigate it. They design a study, define a sample, collect their data, perform the necessary statistical evaluation, and finally start to write up their paper. After submission the author's work is scrutinized by the referees (who might also need some time) and sent back to them – most of the times for some smaller or bigger changes. Taking all this into consideration it is not unlikely to assume that 3 and more years may have past before this publication will be printed on paper and ready to be read.

A short calculation at this point shows that the so far mentioned subjects amount to 63%, i.e. roughly 2/3 of a journal's content.

The next categories have all about the same frequency. These are animal studies/histological studies (9%), studies with computers and finite element simulation (8%) and studies based on traditional records such as models, slides, photographs etc. (6%). I personally feel it is good that these reliable methods are still in use. Not only are they non-invasive in their nature but as for example one article recently pointed out models can in some aspect serve the same purpose as the usually preferred cephalograms (Hoggan and Sadowsky, 2001).

On the other side, I am concerned that only 5% of all the screened articles dealt with studies on function. After all, no orthodontic treatment should only be performed so that an ideal pair of models results or the teeth look good in a person's face. The main objective for any orthodontic therapy has to be that the treated part of the body, i.e. the dentition becomes healthy, remains healthy and performs as perfectly as possible

under all conditions. Any part of the human body is only as good as its function is adequate. Therefore, it seems surprising that so few studies try to gain more insight into the subject of function. The reason for the limited number of studies on function might be that they are rather complex and complicated to conduct. All the so far listed numbers add up to 91%. This leaves 9% articles, which can be categorized best as "miscellaneous". Examples for this kind of publications are for instance very intrigue papers on certain genes, proteins, hormones and fibers. I sometimes felt that such articles were so specific that – at least at present – they have no impact on daily orthodontics. Therefore, it might have been better to published them in some very specialized journal. On the other hand is the overall percentage of these publications so low that they really do not present a problem i.e. they can be part of a journal with a wide scope of scientific interest.

The initial question was that I miss most in our professional journals. Actually, very little because they satisfy our professional interests in any way. But even if the existing situation is good it probably can still be improved. I personally wish there were even more studies on very common, everyday clinical aspects. For instance, split mouth studies about the best method to move canines distally evaluating not only the mechanism which moves the tooth the best (considering speed and periodontal integrity) but also simultaneously finding out what influence the occlusion (intercuspatation, muscle pattern) has on this tooth movement procedure.

Also I wish more scientists would study orofacial muscle function more often. Finally, I would feel better if all research was carried out with the least invasive method available.

The question what I miss most should be followed by the one "What could editors of orthodontic journals do to influence the existing situation in the described (or any other) way? I guess editors have in this connection some two to three options. The first one could be that from time to time they should do a little evaluation of their journal as I did here. They will find out how much their journal serves the assumed needs of their readers and how much it educates them to treat their patients better. If any editor feels after this evaluation that his journal tends to deviate from the character he wants his journal to have than, for instance, he could state in certain intervals in his editorials which kind of articles he would prefer to be submitted.

Editors could also expedite researches on preferable subjects with least invasive methods. Finally, they could invite outstanding researchers to work on



promising subjects like for instance finite elements. Further, very complex material should be given a chance for a most extensive presentation in the internet. Would it not be interesting for a reader (viewer) if he could actually see an experiment taking place in real time?

The final question of this little discussion is: How representative was the evaluation presented in this paper? Just after I finished my work my well esteemed colleague, Professor Hans Panzer sent me a doctoral thesis which was recently submitted to his faculty (Karami, 2000). I was surprised that this very comprehensive and detailed study lead to very similar results. In this regard maybe my evaluation was quite representative for what is going on in our professional journals. Maybe also, that my interpretations and suggestions could help a little bit to improve the quality of our professional journals even more.

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