

Synopsis of publications in Dentistry from the University of the Western Cape.



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ABSTRACT

Staff are encouraged to complete research and to ensure that these projects translate into quality publications. Such studies are required to have scientific merit and should inform clinical practices.

Aim

To determine the barriers to publishing research and to critically evaluate completed publications.

Method

Ethical clearance was obtained from the Biomedical Research Ethics Committee (Registration No: 14/3/23). This was a cross-sectional descriptive study investigating the publications for the period 2005-2012. Questionnaires were administered via SurveyMonkey, e-mailed or staff were given copies to complete. Data were captured and analyzed in Microsoft Excel. Publications were critically analysed to determine the structure applied, recognising the academic scope of the respective journals.

Results

Responses to the questionnaire were received from 30 staff members and one postgraduate student. Eighty six (72.3%) registered research protocols had resulted in a publication. Failure to publish was attributed to: time-constraints, lack of resources and rejection by editors. Publications were mostly case reports (31%), cross-sectional studies (19%) and literature reviews (17%).

Conclusions

Barriers in translating research into publications were identified; these should be addressed to further improve support to for staff. The publication rate, linked to the quality of the study, differed per department.

INTRODUCTION

The directive from institutional management structures to staff is to increase research and subsequently the rate of publication as subsidies to the University are based on this output.¹ More importantly, conducting research is an essential component of academic growth and development and self-directed lifelong learning.^{1,2} Furthermore, rigorous research is a pre-requisite for optimal teaching in the academic domain and as such ensures improved patient care through technological and clinical advances, namely evidenced-based dentistry.^{2,3}

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ACRONYMS

A-PR: advanced PRF

L-PRF: leukocyte and platelet- rich fibrin

SEM: scanning electron microscopy

According to Kitchin and Fuller (2005), translating research into a publication should be a natural progression.⁴ Besides the financial implications (both the benefits and expenses), staff are expected to ensure that this process occurs regularly and frequently, as part of their conditions of employment. Academic institutions will be regarded as, or measured as, successful, depending on their research output and subsequent rate of publications.² Increasing the number of publications, both nationally and internationally, makes research available to a wider audience and ensures the internationalization of the institution.²

There are, however, a number of factors that may influence the progression of research to publication. The literature highlights several reasons why the rate of publication has been of concern to institutions and other researchers.⁵ Most of this is due to a phenomenon called publication bias, defined as 'selective publication of research', which commonly occurs in clinical research.⁵ This is attributed to the fact that positive results are readily published, circulated earlier and in journals with higher impact factors.⁶ The literature states that publication bias can be reduced by pre-registering a research project with an Ethics Committee.⁶ It has also been shown that by registering clinical trials with well-designed protocols on trial registries and/or other similar sites and by publishing these registrations, publication bias may be reduced.^{6,7} There are nevertheless still a number of contributing factors that restrain the progression from research to publication including the following: lack of time (too busy to publish), lack of support, research is not worthy of publication, too self-critical of their own research, cannot accept criticisms and lack of resources being the commonest.⁸

Evidence-based research, in any discipline, is produced by primary researchers using rigorous, reliable and valid methodologies.^{9,10} Research should also be relevant to clinical practice and at the same time allow secondary researchers to critically appraise work using validated tools as occurs when systematic reviews are conducted.^{9,10} Depending on the thoroughness with which studies are undertaken, described as having rigorous methodologies, critical observers can establish a benchmark for the type of research conducted at the institution and the consequent publications.^{11, 12} A disciplined, structured approach can serve as a guide to young researchers but at the same time, may allow the more established investigators to reflect on their past practices and this could encourage improvement if indicated.

The basis of dental research is formed by the combination of biomedical and materials studies. Most projects at dental institutions are laboratory-based and very few, if any, are clinically-related research.^{5,10} It is important to establish whether the

research, which is creating evidence, is credible. Only then can the specific, proven research be used to change teachings and clinical practices at teaching institutions and in private and public settings.

Methodologies employed in dental research include studies of different designs, for example, systematic reviews, descriptive, cross-sectional, cohort, randomized and non-randomized controlled trials.¹³ Reliability may be interpreted by categorizing study designs according to the levels of evidence. The evidence based pyramid is an example of this where high quality evidence such as systematic reviews and randomized controlled clinical trials are at the apex of the pyramid, followed by cohort, case-control and cross sectional studies. Case reports and laboratory study designs are at the base of the pyramid, representing lower levels of evidence.¹⁴ Analyses used by researchers may also include those of a qualitative and/or a quantitative nature.¹³

According to research conducted by Palese, Coletti and Dante (2012), the design of the study essentially impacts on the rate of publication.¹⁵ For example, a systematic review (with or without a meta-analysis) is published faster than any other study design type.¹⁵ Grossman, Mogotsi and Cleaton-Jones (2006) also make reference to the rigor that should be followed in research which would ensure that research is published in accredited journals.¹⁶ It has therefore become common practice for journals to request the completion of checklists or consensus statements when submitting a publication, for example, Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), Transparent Reporting of Evaluations with Non-randomized Designs (TREND) and Consolidated Standards of Reporting Trials (CONSORT) which is an indication of the value of such thoroughness.^{17,18} The reasoning is to give credence to the structure of the study as reported in the publication and to ensure reduction of bias.^{17,18} Thus a quality study with high quality evidence should be translated into a quality publication and within a peer-reviewed accredited journal.

This background formed the basis in formulating the following research questions which are translated into the aim and objectives of the study:

- What are the barriers experienced by researchers to publish quality publications?
- Do the publications produced by UWC's Faculty of Dentistry staff and students demonstrate that a structured approach was used in their research?

The aim of this study was to determine the barriers related to publishing and to critically evaluate publications of staff and students at UWC's Faculty of Dentistry. The objectives were:

1. To determine the outcome of all research protocols registered for the period 2005-2012.
2. To explore the reported barriers to the publication of completed research which had been conducted by staff and students.
3. To critically evaluate publications to establish the rigor and structure related to the research, using a standardized checklist.

METHODOLOGY

The first part of the study investigated why research at University of the Western Cape (UWC) Faculty of Dentistry is not readily published, yet many research projects are registered and completed. The second part of the study critically evaluated the publications related to the rigor with which the research was conducted and whether this was adequately reported. A checklist was thus formulated for this aspect using several validated statements and/or checklists as a guide.^{17,18}

A cross-sectional descriptive study was conducted, investigating the data related to all completed research and subsequent publications for the period 2005-2012. UWC Research and Development Committee was approached for a list of research protocols that had been registered and a list of publications that had been produced by staff and students of the Faculty of Dentistry for the period 2005-2012. The principal investigators

also scoured all online search engines for publications by UWC staff and students for this period.

The project was registered with UWC Biomedical Research Ethics Committee (Registration No: 14/3/23) and all participants completed consent forms according to the Declaration of Helsinki.¹⁹

For the first part of the study, the researchers (including both those who have and those who have not yet published) were asked to complete a questionnaire related to their research and/or publication experience/s. For the second part of the study, the principal investigators critically evaluated all accessed publications for the study period by completing the formulated checklist for each publication. Aspects which were examined were related to research question, study design, sampling, reporting of results, generalizability of results and conflict of interests. The work for the study was divided within the group of four members, and each aspect of the checklist and questionnaire was checked. Disputes were resolved by discussion between two of the researchers and where consensus could not then be reached, the group made a decision.

Discussions with regard to study design, type of research, statistical analyses were conducted with the statistician prior to conducting the study. Power calculations were not required as all staff and students who had published research were included in the study. Data were captured in Microsoft Excel and analyzed by the statistician and the primary researchers.

RESULTS

Responses to the questionnaire were received from 30 staff members and one postgraduate student who had all engaged in research during the period of 2005-2012. All Departments at the Faculty were adequately represented, with 74.2% dentists, 16.1% oral hygienists, 3.2% from Radiology and 6.5% from the Research Institute. Of the 31 participants, 23 had a BChD degree, seven had an MSc, 14 held an MChD, seven were PhD qualified and five had obtained a postgraduate diploma in Dentistry. The oral hygienists included one with a Master's degree and one with a Doctorate.

There were 119 registered research protocols for the period 2005-2012, and 86 (72.3%) had resulted in a publication (Figure 1).

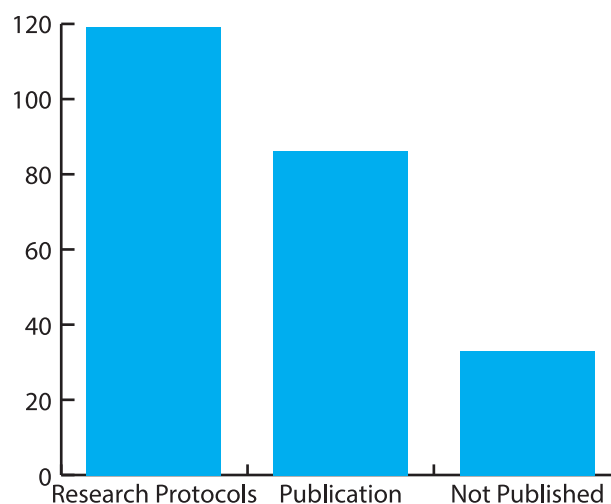


Figure 1: Rate of publication

The benefits with regard to publications identified by respondents include: funding; which could be used for other work at the institution, academic recognition amongst peers, academic development, enquiries from other researchers related to research and invitations to present research at conferences (both nationally and internationally). Most of these research projects were published in accredited journals and as conference proceedings which ensure financial benefit.

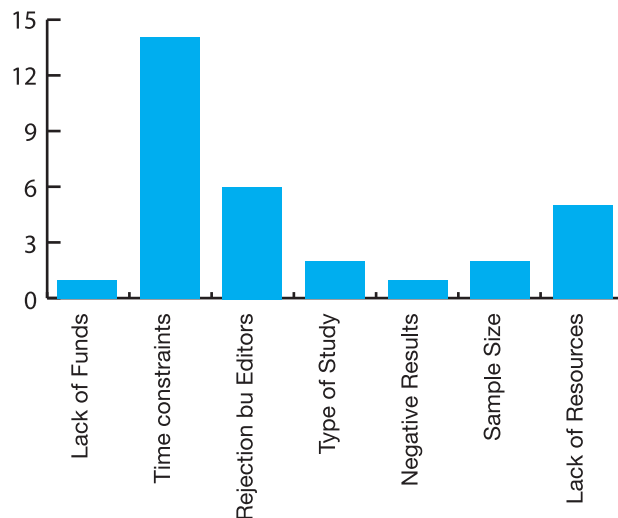


Figure 2: Barriers to publication

The 27.7% of research protocols not published was attributed to time-constraints, a lack of resources and rejection by editors (Figure 2). Other barriers to publishing mentioned included lack of funds, type of study, negative results and sample size (Figure 2).

Publications from the different departments for this period vary and the prevalence of publications per department reported in Table 1 should be interpreted with caution. These data may be influenced by the size of the department, clinical workload, research interests

of individuals and other personal reasons shared above. Detailed analysis of the publications using the designed checklist may provide some answers to the varied prevalence of output per department; this will be explained further.

In accord with the guidelines of most journals, abstracts were included for the majority of publications, but the format differed; it was either in summary form or had a structured outline. The aim of the study was always shared, but the objectives were not always clearly outlined. The inclusion of a research question with the patient, intervention, comparison and outcomes (PICO) format and/or its derivatives were never used.¹¹

A total of 291 publications were critically evaluated. The most popular format for study design was a case report (31%) and this increased the rate of publications for these departments, particularly in Oral Medicine and Periodontology, Radiology and Oral Pathology. The Department of Community Health produced mostly literature reviews (17%) and cross-sectional studies (19%), with the Department of Restorative Dentistry producing the most laboratory studies. Only one systematic review was conducted for this period and only two randomized and non-randomized clinical trials were completed (Figure 3).

Sample size estimation is an important step when conducting clinical patient-based or laboratory-based research.¹³ Thus completing power calculations to include an adequate number of participants/ samples will ensure reliable results and more importantly confirm applicability of outcomes.¹³ For most of the

Table 1: Descriptive statistics of included publications per department

		Maxillofacial/ Oral Surgery	Paedodontics/ Orthodontics	Oral Medicine	Restorative	Community Dentistry	Radiology/ Pathology	Oral Hygiene	Education
Articles		36	14	45	39	82	56	7	12
Design:	Systematic Reviews	0	1	0	0	0	0	0	0
	Randomized Clinical Trials	1	0	0	0	1	0	0	0
	Controlled Trials	0	1	0	1	0	0	0	0
	Cohorts	0	0	1	0	0	0	0	0
	Case - Control	0	1	0	0	2	0	0	0
	Cross-Sectional	2	3	4	8	27	5	2	4
	Case Reports	1	0	36	2	3	45	1	1
	Descriptive	32	1	2	0	0	6	3	0
	Laboratory-Based	0	2	1	1	35	0	0	7
	Literature Reviews	0	5	1	1	35	0	0	7
	Other	0	0	0	2	13	0	0	0
Sample:									
	Power Calculations	1	0	0	0	2	0	0	0
	Not Applicable	33	6	39	3	34	45	2	8
Abstract:									
	Structured	2	8	6	39	12	8	5	9
Sampling:									
	Randomized	1	1	0	0	0	1	0	0
	Controlled	0	2	0	0	2	0	1	0
	Convenient	3	3	38	7	23	48	3	1
	Random	0	0	0	6	10	0	0	0
	Purposive	0	3	4	0	2	6	2	7
	Not applicable	32	5	3	26	44	0	1	4

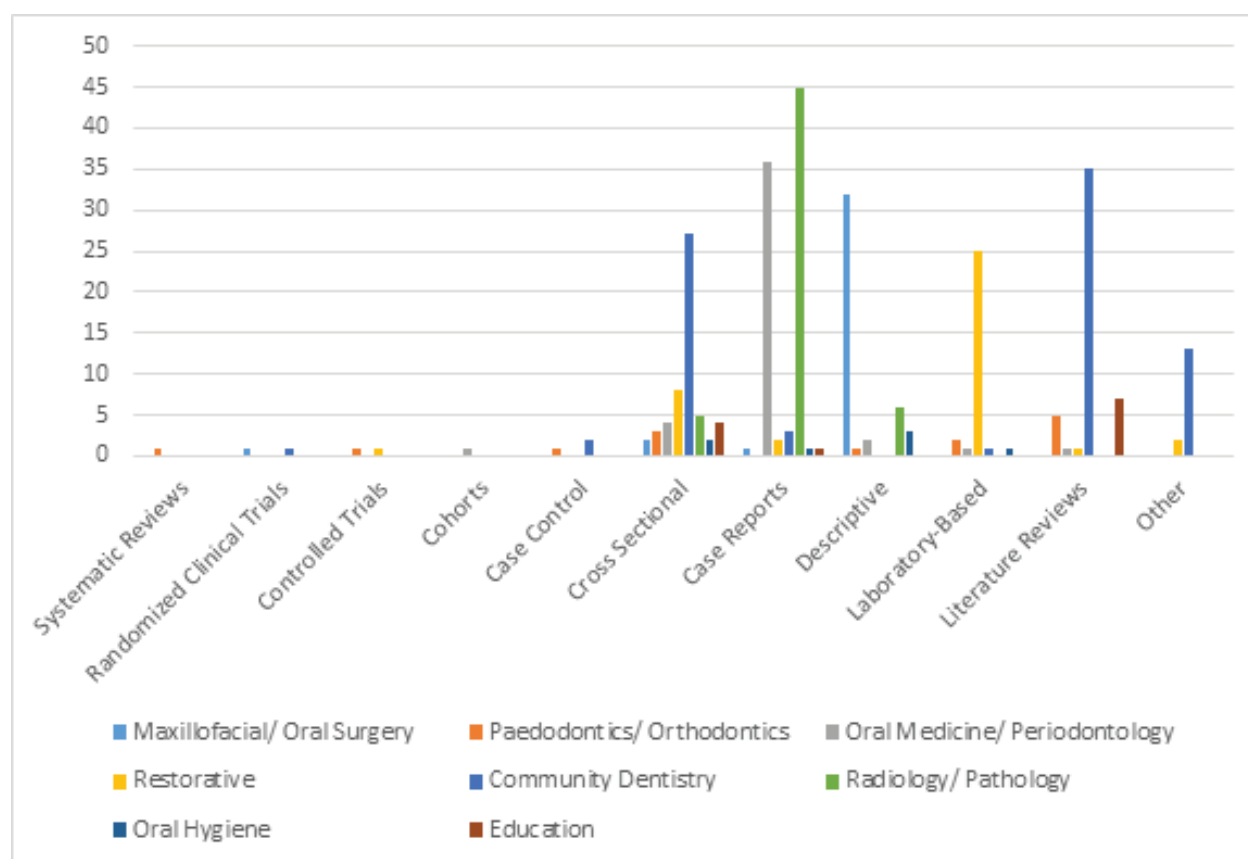


Figure 3: Study design types per Department at the Institution

research included in this study, the indication was that power calculations were not considered or the researcher neglected to report the process. However, the study showed that it was mostly case reports and literature reviews that were conducted, for which sample size estimation is not required. Where participants were required for a study, these were mostly gathered as either convenient samples or the study design type did not demand sampling.¹³

DISCUSSION

Questionnaire-based studies are considered useful for obtaining quick and easy responses and information related to any topic. Non-response from participants could be attributed to disinterest and the nature of the method employed or their skepticism of the researchers' intentions.²⁰ In addition, participants are also reluctant to respond as questionnaires are often time-consuming. It was no different with this study; the response rate was poor even with such an important topic which affects all staff at the institution.²¹ Efforts were made to increase the response rates by sending out a limited number of reminders via the online survey and in this way reducing the bias.

Some of the benefits of publishing accruing to the individual and to the institution, as reported in the literature, were also mentioned in the study questionnaire.^{2,8,22} Other advantages mentioned by respondents were, enquiries received from other researchers related to the research and invitations to present research at conferences (both nationally and internationally). These opportunities contribute to acknowledgement of the institution and internationalization in some circumstances.²

The list of barriers to publishing was also similar to that reported in the literature.^{8,22} Lack of time and support (related to finance and resources) were dominant reasons though barriers to ready publication such as type and quality of study, sample design and rejection by editors may have considerable influence.

Analysis of the publications indicated only one systematic review and a few randomized clinical studies. The majority of publications

considered in this study were case reports, cross-sectional and laboratory study design types. According to Feijoo et al. (2014), who investigated the top one hundred most cited articles in dentistry, the type of study designs predominantly included were case series and reviews.²³ Publication of laboratory research can be attributed primarily to the Restorative Department.²⁴

The majority of publications in this study can therefore be categorized as those with a low potential when referring to the evidence pyramid, were thus mostly from the base of the pyramid and an indication that the quality of research needs to be addressed.^{3,17,25} As mentioned previously, study design and structure contribute to publication success.^{5,6,15,16}

This study highlights the importance of monitoring the papers produced by researchers. The quality of the study needs to be assessed using the techniques of critical appraisal in order to achieve a requisite level of authority and credibility.²⁵ Such studies are indeed required to provide scientific support and to inform clinical practices.²⁴ Associated barriers to publication may be correlated and if addressed, the publication rate is likely to be further advanced.

CONCLUSIONS

Publications such as literature reviews and case reports formed the bulk of the publications and highly ranked quality evidence was minimal. Barriers in translating research into publications were identified which should be addressed to further improve support to staff and students and in turn will enhance the publication rate. Departments varied in their publication rates, and this is related to the quality of the research produced.

Conflict of Interest: None

IMPLICATIONS FOR RESEARCH

- Barriers identified should be addressed with the aim of further increasing the rate of publication,
- Research studies (laboratory-based, patient-based and clinical studies) should be reported and appraised using

- standardized checklists and
- Studies from the top end of the hierarchical evidence pyramid, considered to be rigorous studies, should be conducted to ensure more ready acceptance by accredited journals and appropriate translation into clinical practice.

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