

# SCHOLARLY PRODUCTIVITY: ARE NURSE ACADEMICS CATCHING UP?

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*Accepted for publication February 2002*

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**Key words: scholarship, scholarly productivity, journal articles, publishing, nurse academics, nursing faculty**

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## ABSTRACT

The aim of this study was to document the amount of recent change in Australian nurse academics' scholarly productivity and to investigate the influence of demographic factors such as gender, academic rank, qualifications, increase in qualifications, state of residence, university and university size. Scholarly productivity was calculated from an audit of journal articles. The findings of this study indicate that, while there has been a slight increase in scholarly productivity in the last five years, nursing still lags behind other disciplines. Scholarly productivity was found to be positively associated with highest academic qualification, academic rank and promotion. The study indicates the continuing need for senior nurse academics to provide mentoring to colleagues and foster the development of skills associated with scholarly productivity.

## INTRODUCTION

This study was undertaken to provide insights into ongoing patterns of scholarly productivity amongst Australian nurse academics. Scholarship is defined as the 'creative intellectual activity that involves generation, evaluation, synthesis and integration of knowledge based on theory, research and practice' (Roberts 1995). Scholarly productivity was defined, for the purposes of this study, as authorship of journal articles only, although it is recognised that there are other forms of scholarly productivity such as authorship of books and presentation at conferences. The study utilised a scholarship rating adapted from the then Australian Commonwealth Department of Employment, Education and Training Cumulative Research Index. This comprised a rating system whereby sole authorship of a journal article was equivalent to one point, with collaborative authorship attracting a lower score.

In contrast to traditional academic disciplines, mainstream nursing education (in Australia) has been located within the tertiary environment for less than two decades. During this time, many nurse academics had to adjust to a college of advanced education environment with very different expectations from the hospital based schools of nursing. With little time to adapt to the college ethos, they were then transferred into the university sector and expected to acquire university values. As part of this assimilation process, it has been necessary for nurse academics to substantially increase their academic qualifications, undertake research and publish. Scholarly productivity is viewed by academia as an indicator of the strength and rigour of the discipline.

A gap has remained between nursing and the traditional disciplines in regard to scholarly productivity (Roberts 1997). With the approach of the millennium the authors deemed it appropriate to determine what changes if any had occurred in the level of scholarly productivity and establish a benchmark for future studies or directions as the discipline of nursing continues to evolve. It was hypothesised that there would be an increase in scholarly productivity in the last half of the last decade of the 20th

century. It was also hypothesised there would be a positive association between scholarly productivity and highest academic qualification, membership of a professional college academic rank and promotion.

## PREVIOUS FINDINGS

The literature on scholarship shows that nurse-academics are not well published. In Australia, Roberts (1996) found that only 7% of nurse-academics were published in journals listed in the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and of that 7%, most published in Australian refereed journals. In another study, Roberts (1997) found that nurse-academics published the equivalent of 0.9 refereed articles per year on average, but that figure included books and conference proceedings as well as journal articles. She found that approximately one-third of respondents did not publish at all, while those who did publish averaged 1.4 journal articles per year and 6% published the equivalent of three or more refereed articles in a one-year period.

The findings for Australian nurse-academics' scholarly productivity were similar to those of overseas nurse-academics of a decade earlier. American nurse academics with doctorates had a scholarship index of just over 1 - as calculated from a finding of one refereed and one non-refereed article (Megel, Langston and Creswell 1988) - and Canadian nurse-academics published an average of 1.3 publications per year (Ostmoe 1986).

A comparison of nurse-academics' scholarly productivity with that of academics from other disciplines is difficult as the Department of Education, Training and Youth Affairs (DETYA) currently does not keep data that would facilitate such an analysis. However, a previous study found that the scholarly productivity of other disciplines in the early 1990s was 4.1 for social science, 4.1 for humanities, 1.5 for agricultural science and 1.1 for engineering (Roberts 1997). These figures are based on narrow DETYA criteria that exclude the type of conference presentations that make up the majority of nurse academics' scholarly productivity.

In terms of demographic influences, neither gender nor state or territory of employment has an influence on scholarly productivity (Roberts 1996; Roberts 1997). However, scholarly productivity rises with academic rank and postgraduate qualifications (Roberts 1996; Roberts 1997). Qualifications have also been found to affect scholarly productivity overseas (Acorn 1990; Ostmoe 1986).

In summary, scholarly productivity for nurse academics in the mid-1990s was less than that of other applied disciplines such as engineering and similar to that of overseas nurse academics of a decade earlier, and was influenced by academic rank and qualifications.

## METHODOLOGY

### Design of the study

The design of this study was descriptive and correlational. It aimed to describe the scholarly productivity of nurse-academics employed full time in Australian university schools or faculties of nursing. It further aimed to investigate the influence of demographic variables such as qualifications, academic rank, state, size of university and gender on scholarly productivity.

### The sample

A database of all full-time Australian nurse academics was used to construct a sampling frame for this study. This database was derived from a database constructed in 2000 to investigate the professional characteristics of nurse academics in the approach to the millennium, which is more fully described elsewhere (Roberts and Turnbull 2002).

The sample was stratified by academic rank with the intention of weighting it so that professors (Level E), associate professors (Level D), and senior lecturers (Level C), were over-represented. This was done because a random sample would have yielded a predominance of lecturers (Level B), and associate lecturers (Level A), who it is known from a previous study (Roberts 1997) publish proportionately much less than the higher academic ranks.

The selection process was as follows. All professors and associate professors, half of the senior lecturers and 20% of lecturers and associate lecturers were included in the sample. As 50% of senior lecturers were being chosen, they were selected by a coin toss. The associate lecturers and lecturers were selected by means of a random number generator as only one in five was being chosen.

The demographic characteristics of the authors were already on the database and included gender, academic rank, academic qualifications, increase in qualifications, state, and university.

Universities of authors were further broken down into categories on the basis of the number of staff. The categories were: small (25 staff or less), medium (26-39) and large (40 or more). Thirteen universities were small (for example Southern Cross University), nine universities were medium-sized (for example Griffith University) and seven universities were large (for example University of Western Sydney).

### Data extraction and analysis procedures

The productivity of the sample was calculated firstly by analysing articles published by the sample in a two-year period 1998-1999 and secondly by calculating a scholarship index score for each nurse-academic in the sample based on the number and type of articles published during that period. This was the same scholarship index used in a previous study by Roberts (1997).

The articles were identified by means of an audit of CINAHL and exploration of relevant staff lists on

university websites. In searching CINAHL, the researchers entered the author's name and selected articles on the basis of author affiliation, or where none was given, the researchers checked the origin of the article with the author. Care was taken to distinguish between articles by authors who had the same name.

A database was constructed that contained all articles. This is more fully described in another article (Roberts and Turnbull, under review). The type of article was entered, eg whether refereed or not. Information about the authorship was also entered including each author by authorship rank.

Scholarly productivity for each author in the sample (as per Roberts 1997, and derived from the DETYA index) was calculated from the database of articles, using number of articles, type of article, and number of authors per article. These classifications are shown in Table 1.

<b>Authorship</b>	<b>Score</b>
Sole author, refereed publication	1.0
First author, refereed publication	0.75
Second or later author, refereed publication	0.5
Sole author, non-refereed publication	0.2
First author, non-refereed publication	0.15
Second or later author, non-refereed publication	0.1
Editorial or book review, very short article	0.2
Letter to the editor	0.1

Those who had a scholarship index of more than zero were classified as published authors for the purposes of this study, and the remainder as unpublished.

Demographic data for the sample was also transferred from the population database. This included gender, size of university, highest academic qualification, academic rank, whether or not they had been promoted and/or increased their academic qualifications in the last five years, and movement, ie, new, transferred or none.

Descriptive statistics and frequency distributions were used to describe the characteristics of authors and their scholarly productivity. As the data were strongly skewed owing to the stratification of the sample, non-parametric analysis of variance (Kruskal Wallis test) and Mann-Whitney U-tests were used to investigate the effect of demographic factors on scholarly productivity.

The interaction and strength of the effect of the independent variables was tested by means of logistic regression. Two models were run to predict factors that influenced scholarly productivity: one on the dependent variable published/not published and one on the high/low scholarship index. For the purposes of this exercise, the dependent variable scholarship index was recoded to a categorical variable: high for those achieving over 0.5 and

low for the remainder. While 0.5 is not high in absolute terms, or in comparison with other traditional disciplines, it is approximately double the average scholarly output shown in the results of this study.

In order to determine the mean scholarly productivity for the whole population, the effect of stratifying the sample by academic rank was removed. The mean scholarship index for the population was calculated by multiplying the scholarship index for each academic rank by the number of that rank in the population, adding the total and dividing by the total number in the population.

### **Ethical aspects**

The authors received permission to conduct this study from the Northern Territory University Human Research Ethics Committee. Consent was not required for information in the public domain such as that on websites, CINAHL or professional journals. Informed consent was obtained from the few participants who were contacted by telephone to clarify authorship and asked to provide copies of their articles. Ethics clearance for the material on the 1999 nurse-academics' database was renewed.

## **RESULTS**

### **The sample**

The sample comprised 302 nurse academics, most of whom (86%) were female. Females comprised 83% of the population on the database from which the sample was drawn; therefore females were slightly over-represented in this sample. In terms of academic rank, this sample comprised: 17% professors; 15% Level Ds; 36% senior lecturers; 31% Level Bs; and, 1% associate lecturers. Of these: 8% had a bachelor's degree; 4% had a graduate diploma; half (52%) had a master's degree; and, just over a third (36%) had a doctoral degree. However, since this sample was not proportional to the population in terms of academic rank or highest qualification, comparisons with the population on these characteristics were not done.

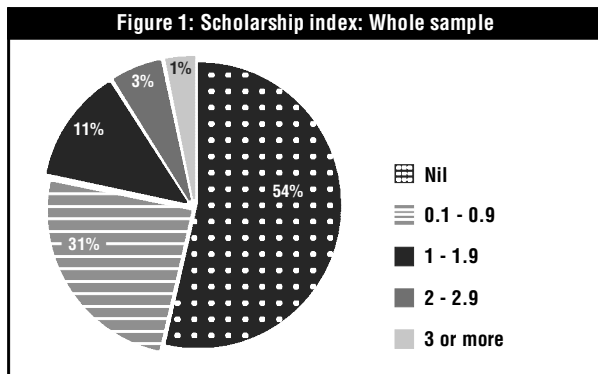
Of the sample: 41% were employed by large universities; 37% were employed by medium-size universities; and, 23% were employed by small universities.

### **Published and unpublished authors**

Almost half (46%) of the nurse academics in the sample had published in the period under investigation (figure 1). Figure 1 shows the scholarship index for the sample.

The mean scholarly productivity regarding journal publications of the whole sample was 0.28. This was the equivalent of sole authorship of just over one quarter of a refereed journal article or one non-refereed journal article, as per table 1.

Figure 1: Scholarship index: Whole sample



For the published authors the mean scholarship index was 0.4. Two thirds scored between 0.1 and 0.9 on the scholarship index, one-quarter scored between 1 and 1.9, a few scored between 2 and 2.9 and almost none scored 3 or more (figure 2).

Figure 2: Scholarship index: Published authors

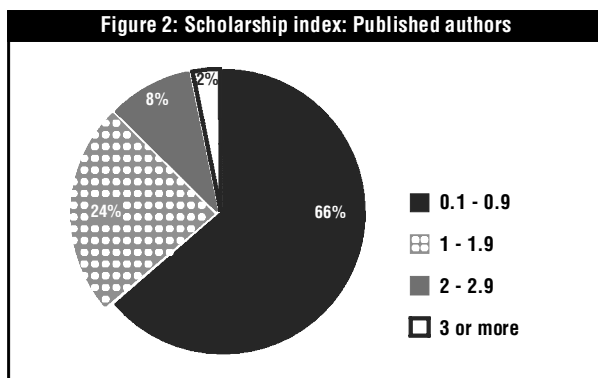


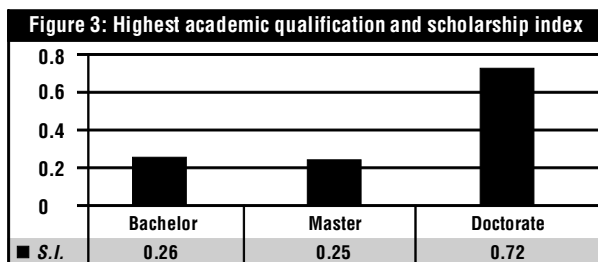
Figure 2 indicates that the majority of published authors published less than one journal article per year and almost none published three or more.

### Demographic variables and scholarly productivity

#### Qualifications

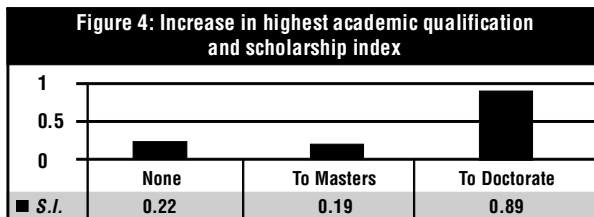
There was a positive association between scholarly productivity and highest academic qualification (figure 3). Nurse-academics with doctorates had a scholarship index three times greater than those with a masters or bachelor's degree ( $p=0.0001$ ).

Figure 3: Highest academic qualification and scholarship index



There was also a positive association between scholarly productivity and increased qualifications (figure 4). Those who increased their qualifications during the previous five years had a scholarship index that was double those who did not ( $p=0.04$ ).

Figure 4: Increase in highest academic qualification and scholarship index



Furthermore, those who acquired a doctorate had a scholarship index almost triple that of those who acquired a masters or who did not increase their qualifications ( $p=0.0003$ ).

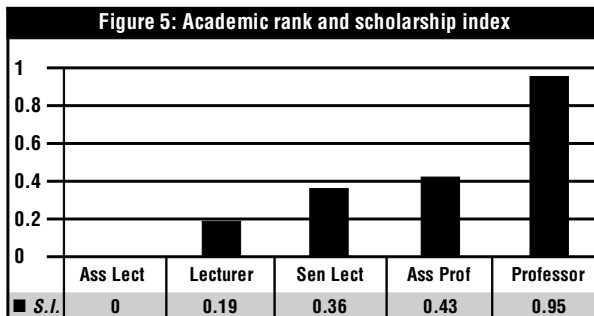
#### Membership of professional colleges

Nurse academics who held a fellowship in a professional college such as the Royal College of Nursing, Australia, (RCNA) or the New South Wales College of Nursing (NSWCON) had a significantly higher scholarship index (0.53) than those who held a membership (0.27) or did not belong to a college (0.36) ( $p=0.32$ ). Nurse academics who held fellowships in both colleges had a significantly higher scholarship index (0.67) than those who held membership in the RCNA only (0.42) or the NSW College of Nursing (0.2) or neither college (0.36).

#### Academic rank

There was a positive association of scholarly productivity with academic rank (figure 5).

Figure 5: Academic rank and scholarship index



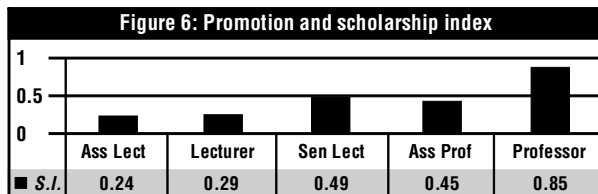
Associate lecturers are not publishing journal articles at all. Professors are publishing twice as much as associate professors or senior lecturers and five times as much as lecturers. ( $p<0.0001$ ) There was no significant difference in the scholarship index for lecturers and senior lecturers.

There was a strong positive association between scholarly productivity and promotion. Those who were promoted within the previous five years had double the scholarship index of those who were not ( $p=0.001$ ).

There was also a positive association between scholarship index and the level to which the nurse-academics were promoted (figure 6).

Those who were promoted to professor published significantly more than those who were promoted to lesser academic ranks ( $p=0.007$ ). People who were promoted to

Figure 6: Promotion and scholarship index

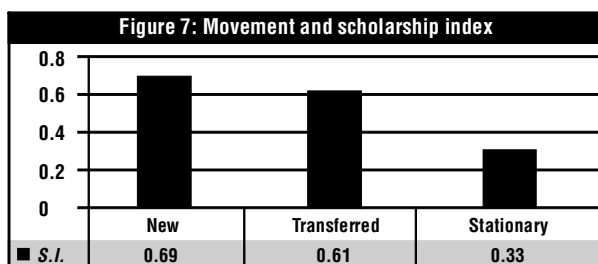


professor published almost twice as much as those who were promoted to senior lecturer or Level D and almost a two thirds again as much as those who were promoted to Level B or who were not promoted.

### Movement

There was a positive association between scholarly productivity and movement into and within the system (figure 7).

Figure 7: Movement and scholarship index



Those who remained in the same institution during that period had a scholarship index of approximately half of those who were new or who had transferred to another university within the last five years ( $p=0.003$ ).

### Other demographic variables

There was no association of scholarly productivity with gender ( $p=0.6$ ), state ( $p=0.8$ ) or size of university ( $p=0.8$ ). There was also no association with number of clinical certificates ( $p=0.9$ ), type of clinical certificate ( $p=0.4$ ), possession of functional diplomas such as a diploma of nursing education ( $p=0.6$ ), or type of functional diploma ( $p=0.5$ ).

### Impact of factors

In order to calculate the effect of the group of variables, two logistic regression models were run. In the first, factors affecting whether or not the nurse academic was published or not were investigated. The only factor that was significant in predicting whether or not the nurse-academics published was a doctoral degree. However, the whole group of variables only accounted for 2% of the variance. For high and low publication rates, no factor was significant.

In summary, scholarly productivity in general was low. Scholarly productivity was related to level of academic qualification and acquiring a higher qualification and college fellowship. Positive associations were demonstrated between academic rank and mobility, both within the system in terms of promotion, and to movement

into the system. Scholarly productivity was not related to state of employment, gender, size of university, clinical certificates or functional diplomas.

## DISCUSSION

In this study, most nurse academics who published produced the equivalent of one refereed article or less. This is in agreement with the earlier findings of Roberts (1996) five years previously. For this sample, the mean scholarship index was 0.28, less than 0.9 found in an earlier study (Roberts 1997); however, that study included other forms of scholarship such as book chapters, and conference presentations.

Nevertheless the present findings suggest that there has been a slight improvement in scholarly productivity in the last five years. In the earlier study, articles in nursing journals accounted for 23% of a scholarship index of 0.9, ie 0.25 (Roberts 1997). This indicates that the scholarly output for journal articles has risen slightly in the last five years to 0.28, particularly given that the scholarly output in the previous study may have been an over-estimate due to reporting bias. The slight increase in scholarship index observed in the present study might be linked to the 'downsizing' of the system if the group who left contained a disproportionate amount of the less productive nurse academics. That the rise is only slight might be explained by the continuing need for nurse-academics to upgrade their qualifications, which frequently precludes other scholarly activities.

The relatively low scholarly productivity demonstrated by this study could be related to lack of mentoring, with which it has been found to be associated in previous studies (Megel, Langston and Creswell 1988; Roberts 1997). The oral tradition of nursing has not lent itself to development of research and writing skills, and the applied nature of the discipline has traditionally valued practical skills rather than scholarly development. The skills of scholarship take time to develop and are more likely to flourish in an atmosphere of positive support and guidance. Collaborative writing also facilitates a greater variety of perspectives and insights as well as providing a positive environment for scholarly development.

The relatively low rate could also be related to nurses not yet having adopted the 'publish or perish' mentality that is prevalent in universities. Scholarly output is the benchmark by which we are judged in academia because it provides evidence of research. If we do not publish, then our work is unknown and our academic credentials are not fully established. Consequently, colleagues from other disciplines such as traditional university disciplines, medicine and allied health may consider our claim to be equal members of the university faculty and the health care team as spurious.

The slight improvement in scholarly productivity does not bring nurse academics within reach of the other

disciplines such as social science and humanities or even agricultural science or engineering. As stated earlier, the scholarly productivity of those disciplines was 1.5 and 1 respectively and this was based predominantly on research journal articles. This suggests that the productivity for nurse-academics at this time is approximately one quarter to one third of that of engineering a decade ago.

An explanation for this may be that nursing, as a relatively new academic discipline, has not yet fully developed the sort of research groups that are found in the other academic disciplines. These groups work on interwoven projects and membership in these research teams is associated with scholarly productivity. As is done in other disciplines, nursing needs to inculcate the value of research in its undergraduate programs if we are to develop nursing graduates with foundation skills in research and writing skills in addition to clinical competence. Traditional disciplines do this successfully by building on this foundation through honours or postgraduate pathways, thus instilling the philosophy of scholarship.

Higher qualifications and a rise in qualifications during the previous five years were clearly linked to scholarly output. The finding of the positive association between qualifications and scholarly output supports the earlier studies of Acorn (1990) and Ostmo (1986) for North Americans and the earlier studies of Roberts (1996; 1997) for Australia. The finding that the doctoral degree was the single predictor of scholarly productivity indicates that it is crucial for nursing academia to produce more doctorates if scholarly productivity is to increase. This can be promoted by mentoring, scholarships and preferential allocation of professional development leave.

The pathway for nurse academics has frequently been a long and arduous route through the various degree levels. As more nurses undertake honours degrees they may be able to complete their doctoral studies earlier. This would lighten the load of self and institutional expectation, and allow them more time to inculcate and hone the required skills in research and writing. It is the training in research and the development of skills in analytical thought and writing that lead to progress through scholarship. If this can be accomplished at an earlier age, the nurse academic will have a longer career period to be productive in terms of nursing scholarship.

For this sample, membership in a professional college was associated with scholarly productivity, particularly holding fellowships in both the RCNA and the NSWCON. It is likely that those who are committed to the profession are inclined to demonstrate that commitment both by publishing and belonging to one or both professional colleges. The finding that nurse academics who belong to both colleges have a higher scholarly productivity can perhaps be explained by the fact that professors are more likely to publish prolifically (Roberts 1997) and

to belong to colleges (Roberts and Turnbull 2002). The latter may relate to the higher remuneration given to professors.

Academic rank was also linked to scholarly output, as was found earlier by other studies of Roberts (1996; 1997). Professors publish considerably more than those of other academic ranks, which is not surprising since they are more likely to focus on scholarly development. The lower scholarly productivity at lecturer rank can be explained by the expectations of nurse academics at this level not necessarily being conducive to scholarly development. They are urged to maintain their clinical skills, demonstrate excellence in teaching, contribute to university governance, undertake community service, and engage in research, often studying for higher qualifications at the same time. Given such expectations, it is hardly surprising that scholarly output is low in a discipline still developing a tradition in research.

A rise in academic rank was also linked to scholarly output. It is not possible to know which is cause and which is effect, because a good publication list is one of the criteria for rising in academic rank, particularly to the rank of professor. However, it is important to note that qualifications were found to predict scholarly productivity better than academic rank.

In this study, those who had moved from one institution to another or who had newly joined the system published more prolifically than those who 'stayed put'. There may be several reasons for this. Firstly, as with promotion, to get a job at another institution, which may in fact be linked with promotion anyway, requires a superior publication list. This study did not distinguish between movement with and without promotion. However, a previous study (Roberts and Turnbull 2002) established that for Australian nurse academics, these factors were strongly associated. Secondly, those who did not move may be more engaged in governance activities since they are likely to have a great deal of corporate knowledge. This would reduce the opportunities for writing and publication. Finally, those who are not moving may tend to be nearer the end of their careers and thus less likely to publish.

In this study, no positive association was found between scholarly productivity and gender, state of employment or size of university. The findings for gender and state and territory support the earlier findings of Roberts (1996; 1997). It was surprising that size of university did not affect publication rates. Given the critical mass factor it might reasonably be expected that the larger universities would demonstrate higher scholarly productivity than smaller universities, yet this was not the case, at least for journal articles. It is easier in large universities to develop the type of research groups in which there is more potential for specialisation and thus specialised and prolific research output.

The strength of this study is that the data were taken from public documents and therefore represented a complete data set for which return rate was not an issue. Another strength was that it compared each individual's present demographic data with that of five years ago. A weakness was that it only determined scholarly productivity for journal articles and thus did not account for all of the nurse-academics' scholarly output. However, this approach had some advantages in that it facilitated comparisons with other disciplines because it conforms more closely with the DETYA criteria by which scholarly output is measured in the university system.

## CONCLUSION

This study has contributed to the literature on nurse-academics' scholarly productivity by documenting it at the turn of the millennium. It has demonstrated that a doctoral qualification is the single strongest predictor of scholarly productivity, but that scholarly productivity is also associated with movement, academic rank, rise in academic qualifications or academic rank, and membership in professional colleges. This study has

shown that while scholarly productivity is still low compared with other, more established academic disciplines, it is nevertheless rising despite a decade of diminishing resources within universities. It is to be hoped that it will continue to rise.

## REFERENCES

- Acorn, S. 1990. Scholarly productivity of university nursing faculty. *Canadian Journal of Nursing Research*, 22(2):7-13.
- Megel, M., Langston, N. and Creswell, J. 1988. Scholarly productivity: A survey of nursing faculty researchers. *Journal of Professional Nursing*, 4(1):45-54.
- Ostmoe, P. 1986. Correlates of university nurse faculty publication productivity. *Journal of Nursing Education*, 25(5):207-212.
- Roberts, K. 1995. Research, theoretical and clinical scholarship, connections and distinctions. In Gray, G. and Pratt, R. Eds. *Scholarship in the discipline of nursing*. Melbourne: Churchill Livingstone.
- Roberts, K. 1996. A snapshot of Australian nursing scholarship 1993-1994. *Collegian*, 3(1):4-10.
- Roberts, K. 1997. Nurse academics' scholarly productivity: Framed by the system, facilitated by mentoring. *Australian Journal of Advanced Nursing*, 14(3):5-13.
- Roberts, K. and Turnbull, B. 2002. From apprentices to academics: Are nurses catching up? *Collegian*, 9(1):24-30.
- Roberts, K. and Turnbull, B. 2002. Under review. A slice of scholarship: At the millennium (working title).